preventing the sutures and fontanelles being felt. Its situation varies according to the position of the head: thus, in the first (O.L.A.) and fourth (O.L.P.) positions it forms on the right parietal bone, in the second (O.D.A.) and third (O.D.P.) on the left; and we may therefore verify, by inspection of its site, the accuracy of our diagnosis.

An ordinary mistake which has been made by obstetricians is to regard the caput succedaneum as formed at the point where the head has been most subjected to pressure; while, in fact, it forms on that part which is most unsupported by the maternal structures, and where the swelling may consequently most readily occur. Therefore, in the early stages of the labor, it always forms on the part of the head which lies in the circle of the os uteri; while in subsequent stages, it forms on that which lies in the axis of the vaginal canal, and eventually is most prominent on the part that is first expelled from the vulva.

Alteration in the Shape of the Head from Moulding.—A few words may be said as to the alteration in the form of the fœtal head which occurs in tedious labors, and results from the moulding which it has undergone in its passage through the pelvis. The smaller the pelvis, and the greater the pressure applied to the head during delivery, the more marked this is. The result is, that in vertex presentations the occipito-mental and occipito-frontal diameters are elongated to the extent of an inch, or even more, while the transverse diameters are lessened, from compression of the parietal bones. This moulding is of unquestionable value in facilitating the birth of the child. The amount of apparent deformity is very considerable, and may even give rise to some anxiety. It is well to remember, therefore, that it is always transient, and that in a few hours, or days at most, the elasticity of the soft cranial bones causes them to resume their natural form. The caput succedaneum also disappears rapidly; therefore no amount of deformity from either of these causes need give rise to anxiety, or call for any treatment.

CHAPTER III.

MANAGEMENT OF NATURAL LABOR.

ALTHOUGH labor is a strictly physiological function, and in a large majority of cases might, no doubt, be safely accomplished without assistance from the accoucheur, still medical aid, properly given, is always of value in facilitating the process, and is often absolutely essential for the safety of the mother and child.

Preparatory Treatment.—The management of the pregnant woman before delivery is a point which should always receive the attention of the medical attendant, since it is of consequence that the labor should come on when she is in as good a state of health as possible. For this

purpose ordinary hygienic precautions should never be neglected in the latter months of gestation. The patient should take regular and gentle exercise, short of fatigue, and if the weather permit, should spend as much of her time as possible in the open air. Hot rooms, late hours, and excitement of all kinds should be strictly avoided. The diet should be simple, nutritious, and unstimulating. The state of the bowels should be particularly attended to. During the few days preceding labor the descent of the uterus often causes pressure on the rectum, and prevents its evacuation. Hence it is customary to prescribe occasional gentle aperients, such as small doses of castor oil, for a few days before the expected period of delivery. Some caution, however, is necessary, as it is certainly not very uncommon for labor to be determined rather sooner than was anticipated, in consequence of the irritation of too large a purgative dose. The state of the bowels should always be inquired into at the commencement of labor, and, if there be any reason to suspect that they are loaded, a copious enema should be administered. This is always a proper precaution to take, for a loaded rectum is a common cause of irregular and ineffective uterine action; and even when it does not produce this result, the escape of the feces, in consequence of pressure on the bowel during the propulsive stage, is always disagreeable both to patient and practitioner.

The dress of the patient during pregnancy may be here adverted to; for much discomfort may arise, and the satisfactory progress of labor may even be interfered with, from errors in this respect.

After the uterus has risen out of the pelvis the ordinary corset which most women wear is apt to produce very injurious pressure; still more so when attempts are made to conceal the increased size by tight lacing. After the fourth or fifth month, therefore, the comfort of the patient is much increased by wearing a specially constructed pair of stays with elastic let into the sides and front, so that they accommodate themselves to the gradual increase of the figure. Such are made by all stay-makers, and should be worn whenever the circumstances of the patient permit. Failing this, it is better to avoid the use of the corset altogether, and to have as little pressure on the uterus as possible; although many women cannot do without the support to which they are accustomed. To multiparæ, especially if there be much laxity of the abdominal parietes, a well-fitting elastic abdominal belt is often a great comfort. This is constructed so that it can be tightened when the patient is walking and in the erect position, when such support is most required, and readily loosened when desired.

Necessity of Attending to the First Summons.—It is hardly necessary to insist on the necessity of the practitioner attending immediately to the first summons to the patient. It is true that he may very often be sent for long before he is actually required. But, on the other hand, it is quite impossible to foresee what may be the state of any individual case. By prompt attention he may be able to rectify a malposition, or prevent some impending catastrophe, and thus save his patient from consequences of the utmost gravity.

The practitioner should always be provided with the articles which he may require. The ordinary obstetric cases, containing one or two

bottles and a catheter, such as are sold by most instrument-makers, are cumbrous and useless; while "obstetric bags" are expensive luxuries not within the reach of all. Everyone can manufacture an excellent obstetric bag for himself, at a small expense, by having compartments for holding bottles stitched on to the sides of an ordinary leather bag, such as is sold for a few shillings at any portmanteau-maker's. It is a great comfort to have at hand all that may be required, and the bag should contain chloroform or other anæsthetic, antiseptics in a concentrated form,[1] chloral, laudanum, the liquor ferri perchloridi of the Pharmacopœia, the liquid extract of ergot, and a hypodermatic syringe, with bottles containing carbolized oil, ether, and a solution of ergotine for subcutaneous injection. If it also contain a Higginson's syringe, a small elastic catheter, a good pair of forceps, and one or two suture needles, with some silver wire or chromic gut, the practitioner is provided against any ordinary contingency. Other articles that may be required, such as thread, scissors, and the like, are generally provided by the nurse or patient.

Duties on First Visiting the Patient.—On arriving at the house the practitioner should have his visit announced to the patient, and he will very often find that the first effect of his presence is to arrest the pains that have been hitherto progressing rapidly; thereby affording a very conclusive proof of the influence of mental impressions on the progress of labor. If the pains be not already propulsive, it is well that he should occupy himself at first in general inquiries from the attendants as to the progress of the labor, and in seeing that all the necessary arrangements are satisfactorily carried out, so as to allow the patient time to get accustomed to his presence. If he have any choice in the matter, he should endeavor to secure a large, airy, and well-ventilated apartment for the lying-in room, as far removed as possible from without. He may also see to the bed, which should be without curtains, and prepared for the labor by having a waterproof sheeting laid under a folded blanket or sheet, on which the patient lies. These receive the discharges during labor, and can be pulled from under the patient after delivery, so as to leave the dry clothes beneath. Among the lower classes, the lying-in chamber is considered a legitimate meeting-place for numerous female friends to gossip, whose conversation is often distressing, and is certainly injurious, to a woman in the excitable condition associated with labor. The medical attendant should, therefore, insist on as much quiet as possible, and should allow no one in the room except the nurse and some one friend whose presence the patient may desire. The husband's presence must be left to the wishes of the patient. Some women like their husbands to be with them, while others prefer to be without them, and the medical attendant is bound to act in accordance with the patient's desire.

Antiseptic Precautions.—Here it is necessary to describe the antiseptic precautions which should be adopted in the practice of modern

[1] Dr. Cullingworth recommends a very handy form in which these can be carried. He has a box of powders prepared, each of which contains 10 grains of corrosive sublimate, 50 of tartaric acid, and 1 of cochineal. One of these, dissolved in a pint of water, makes a 1 : 1000 solution of the perchloride of mercury.—*Brit. Med. Journ.*, October 6, 1888.

midwifery. The marvellous results which have followed the introduction of antiseptic midwifery into lying-in hospitals in all parts of the world, and which have converted these institutions from hotbeds of disease into safer places for delivery than the most luxurious homes, form one of the most striking chapters in the history of modern medicine. These will call for more detailed notice when we come to treat of puerperal septicæmia. Here it will suffice to state that by universal consent it is now recognized as essential that similar care should be taken in private practice, and the more scrupulous the practitioner is, the less will be the mortality and morbidity he has to deal with among his patients. Every practitioner who is old enough to have practised before antiseptics were used, and who has rigorously employed them of late years, will gratefully recognize the comparative comfort of his present work. The relief from the haunting dread of septic infection, which was one of the bugbears of practice in days gone by, is of itself an unspeakable boon. It cannot, therefore, be too strongly insisted on that minute care in this respect should be taken, both as regards the practitioner and the nurse, on whom the subsequent care of the patient devolves.

Strict asepsis in midwifery is, of course, impossible; but absolute cleanliness in connection with labor, along with the free use of suitable disinfectants, will reduce to a minimum the risk of infection by germs from without. The first thing to be done before making a vaginal examination is thoroughly to scrub the hands with soap and water, and the nails with a hard brush. This should be insisted on as regards the nurse also. A basin containing a 1 : 1000 solution of perchloride of mercury should be placed by the side of the bed, and the hands should be thoroughly washed in the fluid before making a vaginal examination. This ablution should be repeated frequently during the course of the labor. It has been conclusively shown that no other antiseptic is so reliable,[1] and no other should be used for the hands. Instead of using ordinary lard or cold cream for lubricating the examining finger, the practitioner should carry in his bag for this purpose some disinfecting unguent, such as carbolized or eucalyptus vaseline. As soon as labor is established the vulva should be thoroughly washed with soap and water, and then wetted with the 1 : 1000 solution and for this purpose cotton-wool soaked in the solution should be used. Sponges, so generally employed in labor, should be banished from the lying-in room, since it is practically impossible to keep them perfectly clean.

The use of antiseptic injections before, during, and after labor is a point on which there is a considerable divergence of opinion. Many object to them altogether as necessitating unnecessary manipulations, which may tend to the introduction of infective germs rather than to their destruction. Frequent douching during labor is certainly altogether needless, and has the drawback of washing away the lubricating mucous secretion of the vagina. I am myself in the habit of ordering a single vaginal injection of 1 : 1000 at the commencement of labor,

[1] See Boxall on "Fever in Childbed," Obst. Trans., vol. xxxii. p. 224.

and no more, and to this there can be no reasonable objection. The use of an occasional warm irrigation after labor has always seemed to me to increase the comfort of the patient; but this rather comes to be considered under the head of puerperal convalescence.

Attention to Cleanliness.—The most scrupulous care as to the cleanliness of the lying-in room and its furniture is an important point to consider. The sheets and linen should be clean and frequently changed, and sanitary towels should be used to receive the discharges instead of napkins, which are apt to be imperfectly cleansed. These are points which chiefly concern the nurse, but which it is the duty of the practitioner to supervise. It is most important that the nurse should have thoroughly impressed on her the necessity of the antiseptic precautions we are discussing, since she is in contact with the genitals of the patient many times daily, and for many days in succession, while the duties of the medical attendant in this respect are generally at an end when the labor is over.

Vaginal Examination.—If pains be actually present a vaginal examination is essential, and should not be delayed. It enables us to ascertain whether the labor has commenced or not, and whether the presentation is natural or otherwise. The pains, although apparently severe, may be altogether spurious, and labor may not have actually commenced. It is of much importance, both for our own credit and comfort, that we should be able to diagnose the true character of the pains; for if they be so-called "false" pains, we might wait hours in fruitless expectation of progress, while delivery is still far off. The necessity of ascertaining, therefore, the actual state of affairs need not further be insisted on. [We would, in this connection, particularly recommend to accoucheurs the caoutchouc dam and apron devised as a protector and conduit by Prof. Howard A. Kelly, of Baltimore, as it not only prevents the soiling of the bed and the undergarments of the patient, but will admit of a reliable measurement of the amniotic fluid when in excess, and of that removed from the head by tapping in hydrocephalus. It has been found specially useful in cases of emergency and in practice among the poor and unprepared.—Ed.]

False pains are chiefly characterized by their irregularity, sometimes coming on at short intervals, sometimes with many hours between them; they also vary much in intensity, some being very sharp and painful, while others are slight and transient. In these respects they differ from the *true* pains of the first stage, which are at first slight and short, and gradually recur with increased force and regularity. The situation of the two kinds of pains also varies; the false pains being chiefly situated in front, while the true pains are felt most in the back, and gradually shoot around toward the abdomen. Nothing short of a vaginal examination will enable us to clear up the diagnosis satisfactorily. If the labor have actually commenced, the os will be more or less dilated, and its edges thinned; while with each pain the cervix will become rigid, and the membranes tense and prominent. The false pains, on the contrary, have no effect on the cervix, which remains flaccid and undilated; or, if the os be sufficiently open to admit the tip of the finger, the membranes will not become prominent

during the contraction. Under such circumstances we may confidently assure the patient that the pains are false, and measures should be taken to remove the irritation which produces them. In the large majority of cases the cause of the spurious pains will be found to be some disordered state of the intestinal tract; and they will be best remedied by a gentle aperient—such as castor oil, or the compound colocynth pill with hyoscyamus—followed by, or combined with, a sedative, such as twenty minims of laudanum or chlorodyne. Shortly after this has been administered the false pains will die away, and not recur until true labor commences.

Mode of Conducting a Vaginal Examination.—For a vaginal examination the patient is placed by the nurse on her left side, close

Fig. 109.

Examination during the first stage.

to the edge of the bed, with the legs flexed on the abdomen. The practitioner being seated by the edge of the bed, passes the index finger of the right hand, the proper antiseptic precautions having previously been taken, up to the vulva, and gently insinuates it into the orifice of the vagina, then pushes it backward in the axis of the vaginal outlet, and finally turns it upward and forward so as to more readily reach the cervix (Fig. 109). This it may not always be easy to do, for at the commencement of labor the cervix may be so high as to be reached with difficulty, or it may be directed backward so as to point toward the cavity of the sacrum. The exploration is often much facilitated by depressing the uterus from without, by the left hand placed on the abdomen. Our object is not only to ascertain the state of the cervix as to softness and dilatation, but also the presentation, the condition of the vagina, and the capacity of the

pelvis. The examination is generally commenced during a pain, at which time it is less depressing to the patient; but in order to be satisfactory the finger must remain in the vagina until the pain is over, the examination being concluded in the interval between this pain and the next.

In head presentations the round mass of the cranium is generally at once felt through the lower part of the uterus, and then we have the satisfaction of being able to assure the patient that all is right. If the os be sufficiently dilated, we can also feel through it the occiput covered by the membranes. It is impossible at this time to make out the exact position of the head by means of the sutures and fontanelles, which are too high up to be within reach. Nor should any attempt be made to do so, for fear of prematurely rupturing the membranes. The fact that the head is presenting is all that we require to know at this stage of the labor.

The condition of the os itself, as to rigidity and dilatation, will materially assist us in forming an opinion as to the progress and probable duration of the labor; but, although the friends will certainly press for an opinion on this point, the cautious practitioner will be careful not to commit himself to a positive statement, which may so easily be falsified. It will suffice to assure the friends that everything is satisfactory, but that it is impossible to say with any certainty how rapidly, or the reverse, the case may progress.

If the pains be not very frequent or strong, and the os not dilated to more than the size of a shilling, a considerable delay may be anticipated, and the presence of the medical attendant is useless. He may, therefore, safely leave the patient for an hour or more, provided he be within easy reach. It is needless to say that this should never be done unless the exact presentation be made out. If some part other than the head be presenting, it will probably be impossible to make it out until dilatation has progressed further; and the practitioner must be incessantly on the watch until the nature of the case be made out, so as to be able to seize the most favorable moment for interference, should that be necessary.

Position of Patient during First Stage.—The position of the patient in the first stage is a matter of some moment. It is a decided advantage that she should not be then in a recumbent position on her side, as is usual in the second stage; for it is of importance that the expulsive force should act in such a way as to favor the descent of the head into the pelvis, *i. e.*, perpendicularly to the plane of its brim, and also that the weight of the child should operate in the same way. Therefore, the ordinary custom of allowing the patient to walk about, or to recline in a chair, is decidedly advantageous; and it will often be observed that the pains are more lingering and ineffective if she lie in bed. If the patient be a multipara, or if the abdomen be somewhat pendulous, an abdominal bandage, by supporting the uterus, will greatly favor the progress of this stage. Keeping the patient out of bed has the further advantage of preventing her being unduly anxious for the termination of the labor; and a little cheerful conversation will keep up her spirits, and obviate the mental depression which is so common. Good beef-tea may be freely administered, with a little brandy-and-water occasionally if the patient be weak, and will be useful in supporting her strength.

Over-frequent vaginal examinations at this period should be avoided, for they serve no useful purpose, and are apt to irritate the cervix. It will be necessary, however, to ascertain the progress of the dilatation at intervals.

When once the os is fully dilated the membranes may be artificially ruptured if they have not broken spontaneously, for they no longer serve any useful purpose, and only retard the advent of the propulsive stage. This can be easily done by pressing on them, when they are rendered tense during a pain, by some pointed instrument, such as the end of a hairpin, which is always at hand. In some cases, indeed, it is even expedient to rupture the membranes before the os is fully dilated. Thus it not unfrequently happens, when the amount of liquor amnii is at all excessive, that the os dilates to the size of a five-shilling-piece or more; but, although it is perfectly soft and flaccid, it opens up no further until the liquor amnii is evacuated, when the propulsive pains rapidly complete its dilatation. Some experience and judgment are required in the detection of such cases, for if we evacuate the liquor amnii prematurely the pressure of the head on the cervix may produce irritation, and seriously prolong the labor. This manœuvre is most likely to be useful when the pains are strong and the os perfectly flaccid, but when the membranes do not protrude through the os so as to effect further dilatation.

It is sometimes not easy to ascertain whether the membranes are ruptured or not. This is most likely to be the case when the head is low down, and the amount of liquor amnii is so small that the pouch does not become prominent during the pains. A little care, however, will enable us, if the membranes be ruptured, to feel the rugosities of the scalp covered with hair, and to distinguish it from the smooth polished surface of the membranes.

After the evacuation of the liquor amnii there is generally a lull in the progress of the labor, the pains, however, soon recurring with increased force and frequency, and propelling the head through the pelvic cavity. The change in the character of the pains is soon appreciated by the bearing-down efforts by which they are accompanied, as well as by their increased length and intensity.

Position of the Patient during the Second Stage.—It is now advisable that the patient be placed in bed; and in England it is usual for her to lie on her left side, with her nates parallel to the edge of the bed, and her body lying across it. This is the established obstetric position in our country, and it would be useless to attempt to insist on any other, even if it were advisable. Although the dorsal position is preferred on the Continent, it is difficult to see wherein its advantages consist. It certainly leads to unnecessary exposure of the person, and it is, on the whole, less easy to reach the patient, so placed, for the necessary manipulations. Moreover, the dorsal position increases the risk of laceration of the perineum, by bringing the weight of the child's head to bear more directly upon it. Thus Schroeder

found that lacerations occurred in 37.6 per cent. of cases delivered on the back, as against 24.4 per cent. in other positions.

The patient usually remains in bed during the whole of this stage, and it is customary for the nurse to tie to the foot of the bed a jack-towel, which is laid hold of and used as a support in making bearing-down efforts. If the pains be few and far between, and the patient finds it more comfortable to get up occasionally, there is no reason why she should not do so. On the contrary, as we shall subsequently see, in treating of lingering labor, the pains under such circumstances are often increased in the sitting posture in consequence of the weight of the child producing increased pressure on the nerves of the vagina.

At this time vaginal examination, which should be more frequently repeated than in the first stage, enables us to ascertain precisely the position of the head, by means of the sutures and fontanelles, as well as to watch its progress.

It not unfrequently happens that the head descends into the pelvis, even to its floor, without the os having entirely disappeared. The anterior lip especially is apt to get caught between the head and pubes, to become swollen by the pressure to which it is subjected, and thus to retard the progress of the labor. There can be no reasonable objection to attempting to prevent this cause of delay by pressing on the incarcerated lip during the interval of the pains, so as to push it above the head, and maintain it there during the pains until the head descends below it. This manœuvre, if done judiciously, and without any undue roughness or force, is certainly not liable to be attended by any of the evil consequences which many obstetricians have attributed to it; it is indeed a matter of common sense that the injury to the cervix is likely to be less if it be pushed gently out of the way than if it be left to be tightly jammed for hours between the presenting part and the bony pelvis. This mode of assistance is very different from the digital dilatation of a rigid cervix, which was formerly much practised, especially in Edinburgh, in consequence of the recommendation of Hamilton, and which was properly objected to by the great majority of obstetricians.

If the pains be producing satisfactory progress, no further interference is required. The medical attendant should, however, see that the bladder is evacuated; and if it have not been so for some hours, it may be necessary to draw off the urine by the catheter. Whenever the labor is lengthy, he should occasionally practise auscultation, so as to satisfy himself that the fœtal circulation is being satisfactorily carried on.

The regulation of the bearing-down efforts at this time is of importance. It is common for the nurse to urge the patient to help herself by straining, and it is certain that by voluntary action of this kind she can materially increase the action of the accessory muscles of parturition. If the pains be strong, and the labor promise to be rapid, such voluntary exertions are not likely to be prejudicial. On the other hand, if the case be progressing slowly, they only unnecessarily fatigue the patient, and should be discouraged. When the perineum is distended we may even find it advisable to urge the patient to cease all voluntary effort, and to cry out, for the express purpose of lessening the tension to which the perineum is subjected. This is the stage in which anæsthesia is most serviceable, but its employment must be separately discussed.

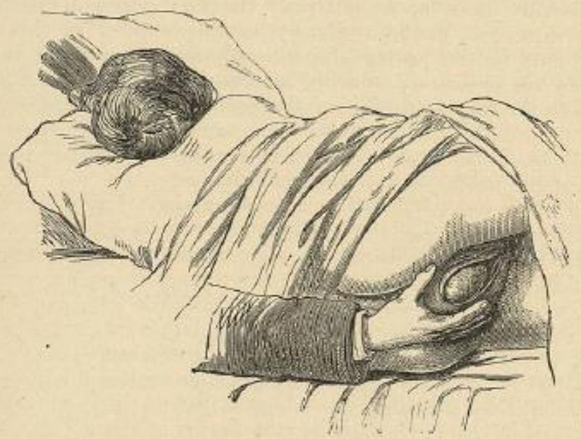
Distention of the Perineum.—As the head descends more and more the perineum becomes distended, and there is considerable difference of opinion amongst accoucheurs as to the management of the case at this time. In most obstetric works the practitioner is advised to endeavor to prevent laceration by the manœuvre that is described as *supporting the perineum*. By this is meant, laying the palm of the hand on the distended structures, and pressing firmly upon them during the acme of the pain, with the view of mechanically preventing their tearing. There can be little doubt that this, or some modification of it, is the practice followed by the large majority of practitioners. Of late years the evil effects likely to attend it have been specially dwelt upon by Graily Hewitt, Leishman, Goodell, and other writers, who maintain that by pressure exerted in this fashion we not only fail to prevent, but actually favor, laceration, in consequence of the pressure producing increased uterine action, just at the time when forcible distention of the perineum is likely to be hurtful. Therefore some hold that the perineum ought to be left entirely alone, and that the head should be allowed gradually to distend it, without any assistance on the part of the practitioner.

Much error may be traced to a misconception of what is required. The term "supporting the perineum" conveys an unquestionably erroneous idea, and it is certain that no one can prevent laceration by mechanical support. If the term *relaxation of the perineum* were employed, we should have a far more accurate idea of what should be aimed at, and, if this be borne in mind, I think it cannot be questioned that Nature may be most usefully assisted at this stage.

Dr. Goodell, of Philadelphia, has specially studied this subject, and has recommended a method the object of which is to relax the perineum. His advice is, that one or two fingers of the left hand should be inserted into the rectum, by which the perineum should be hooked up and pulled forward over the head, toward the pubes, the thumb of the same hand being placed on the advancing head, so as to restrain its progress if needful. I have adopted this plan frequently, and believe that it admirably answers its purpose, especially when the perineum is greatly distended, and laceration is threatened. It must be admitted that the insertion of the fingers into the anal orifice, in the manner recommended, is repugnant both to the practitioner and patient, and the same result can be obtained in a less unpleasant way. I mention it, however, to show what it is that the practitioner must aim at. If, when the head is distending the perineum greatly, the thumb and forefinger of the right hand are placed along its sides, it can be pushed gently forward over the head at the height of the pain, while the tips of the fingers may, at the same time, press upon the advancing vertex, so as to retard its progress if advisable (Fig. 110). By this means the sudden and forcible stretching of the perineal structures is prevented, and the chance of laceration reduced to a minimum,

while Nature's mode of relaxing the tissues, by dilatation of the anal orifice, is favored. This is very different from the mechanical support that is usually recommended, and the less pressure that is applied directly to the perineum the better. Nor is it either needful or advisable to sit by the patient with the hand applied to the perineum for hours, as is so often practised. Time should be given for the gradual distention of the tissues by the alternate advance and recession of the head, and we need only intervene to assist relaxation when the stretching has reached its height, and the head is about to be expelled. A napkin may be interposed between the hand and the skin, for the purpose of cleanliness. Should the perineum be excessively tough and resistant, assiduous fomentation with a hot sponge may be resorted to, and will be of some service in promoting relaxation.

FIG. 110.



Mode of effecting relaxation of the perineum.

Incision of the Perineum.—When the tension is so great that laceration seems inevitable, it is generally recommended that a slight incision should be made on each side of the central raphé, with the view of preventing spontaneous laceration. This may no doubt be done with perfect safety, but I question if it is likely to be of use. The idea is that an incised wound is likely to heal more readily than a lacerated one. When, however, a distended perineum ruptures, its structures are so thinned that the tear is always linear; and, as a matter of fact, the edges of the tear are always as clean, and as closely in apposition, as if the cut had been made with a knife. Moreover, the laceration invariably heals perfectly, if only the edges be brought into contact at once with one or two sutures. I believe, therefore, that Goodell is right in stating that incision of the perineum is rarely, if ever, necessary, unless it is hardened by previous cicatrization. In almost all first labors the fourchette is torn, but requires no treatment

of any kind. In some cases, do what we will, more or less laceration occurs, and the perineum should always be examined after the expulsion of the child, to see if any tear has taken place.

If it has given way to any extent, I believe that it is good practice to insert one or two interrupted sutures of silver wire or chromic gut at once. Immediately after delivery the sensibility of the tissues is deadened by the distention to which they have been subjected, and the sutures can be inserted with little or no pain. It is quite true that lacerations of an inch or less will generally heal perfectly well of themselves; but this is not invariably the case, while healing almost certainly follows if the edges be brought together at once. In the severer forms of laceration, extending back to, or even through, the sphincter, the precaution is all the more necessary, and a subsequent operation of gravity may in this way be avoided. The sutures can be removed without difficulty in a week or so, when complete adhesion has taken place.

Expulsion of the Child.—The head, when expelled, should be received in the palm of the right hand, while the left hand is placed upon the abdomen to follow down the uterus as it contracts and expels the body. There is generally some little delay after the expulsion of the head, and we should now see if the cord surround the neck, and, if it does so, it should be drawn over the head, and, if this is not possible, it may be tied and divided between the ligatures. The expulsion of the body should be left entirely to the uterine contractions. If there be undue delay we may endeavor to excite uterine action by friction on the fundus, and it will rarely happen that sufficient contraction does not now come on. If we display undue haste in withdrawing the body, we run the risk of emptying the uterus while its tissues are relaxed, and so favor hemorrhage. If, however, there seems serious danger of the child being asphyxiated, its expulsion may be favored by gently passing the forefinger of each hand within the axillæ, and using traction; but it is only very exceptionally that such interference is required.

Promotion of Uterine Contraction after the Birth of the Child.—As the uterus contracts, it should be carefully followed down through the abdominal parietes by the left hand, which should grasp it as the body is expelled, with the view of seeing that it is efficiently contracted. This is a point of vital importance in preventing hemorrhage, which will presently be more especially considered.

As soon as the child cries we may proceed to tie and separate the cord. For this purpose the nurse usually provides ligatures composed of several strands of whitey-brown thread; but tape, or any other suitable material, may be employed. It is important, especially if the cord be very thick and gelatinous, to see that it is thoroughly compressed, so that the vessels are obliterated, otherwise secondary hemorrhage might occur. The cord is tied about an inch and a half from the child, and it is usual, though, of course, not essential, to place a second ligature about two inches nearer the placental extremity of the cord. The latter is, perhaps, of some use by retaining the blood, and thus increasing the size of the placenta, and favoring its more ready

expulsion by uterine contraction. The cord is then divided with scissors between the ligatures, the child wrapped up in flannel, and given to the nurse, or to a bystander, to hold, while the attention of the practitioner is concentrated on the mother, with a view to the proper management of the third stage of labor. The researches of Budin,[1] Ribemont,[2] and others show that there is a distinct advantage in not tying the cord until the child has cried lustily, as the act of respiration tends to withdraw the placental blood, and thus increases the entire amount of blood in the fœtus. It is said that after late ligature of the cord the child is more vigorous and active than when it is tied too early.

The cord may, if preferred, be treated with perfect safety by laceration. This method was first brought under my notice by the late Dr. Stephen, who employed it for many years, and in several hundred cases. The cord is twisted round the index fingers of both hands, and torn through, the lacerated vessels retracting without any hemorrhage. It is a close imitation of the method instinctively adopted by the lower animals, who gnaw the cord asunder, and has the advantage of dispensing with ligatures altogether. I have used it myself in a large number of cases, but prefer, on the whole, the plan usually adopted.

Importance of Proper Management of Third Stage.—There is unquestionably no period of labor where skilled management is more important, and none in which mistakes are more frequently made. By proper care at this time the risk of post-partum hemorrhage is reduced to a minimum, the efficient contraction of the uterus is secured, the amount and intensity of after-pains are lessened, and the safety and comfort of the patient greatly promoted. Moreover, the general practice, as to the management of this stage, is opposed to the natural mechanism of placental expulsion, and is far from being well adapted to secure the important objects which we ought to have in view. Let us see what is the practice usually recommended and followed, and then we shall be in a position to understand in what respects it is erroneous. For this purpose I cannot do better than copy the directions contained in one of our most deservedly popular obstetric text-books, which undoubtedly expresses the usual practice in the management of this stage: "When the binder is applied, the patient may be allowed to rest a while, if there is no flooding; after which, *when the uterus contracts*, gentle traction may be made by the funis, to ascertain if the placenta be detached. If so, and especially if it be in the vagina, it may be removed by continuing the traction steadily in the axis of the upper outlet at first, at the same time making pressure on the uterus."[3]

[In this country, for many years, the uniform teaching has been that the binder should not be applied until the uterus has expelled the placenta and become firmly contracted. Although the plan of expression was not carried out as completely as is now taught under the Credé method, that of stimulating the contractions of the uterus by manipulation and pressure was certainly in use forty years ago. When the size and solidity of the uterus, as ascertained by the compressing hand, indicate that the placenta has been expelled into the vagina, it is a question whether we shall cause it to be forced through the vulva by pressing down the uterus upon it, or make traction upon it by the finger hooking down its edge. Occasionally we find a patient who is very sensitive to pressure made upon her uterus after it has become firmly contracted; and in such a case it may be well to depend partly upon traction for completing the delivery of the secundines. That it is possible for the uterus to expel the placenta suddenly from the vagina where no pressure has been made is evident from the fact that a physician of this city, who was making traction upon the cord under the old method some years ago, was surprised to find the placenta shoot out from the vulva and dangle by the funis as he held it in his hand. In such a case the uterus must have been aided during a contraction by voluntary abdominal pressure, causing the os to descend nearly to the vulva. It is very evident that the uterus is subject to muscular fatigue and to the exhaustion of its contractile power when long in action; hence there is a greater risk of uterine atony and hemorrhage after a long labor than a short one, and we may expect a more complete expulsion of the placenta in the latter. It is also clear, from cases in my own experience, that the muscular power of the uterus is by no means in proportion to the general strength of the woman. The power to assist by bearing down no doubt is, but the independent power of the organ itself does not appear to be. Certainly some of the most perfect in parturient power that have come under my care were small women with little general muscular force. One little woman of eighty-six pounds weight appeared almost to have escaped the curse pronounced upon Eve; and another, still smaller, expelled a placenta from her vagina almost without any loss of blood.—Ed.]

This may fairly be taken as a sufficiently accurate description of the practice usually followed.[1] The objections I have to make are: 1. That it inculcates the common error of relying on the binder as a means of promoting uterine contraction, advising its application before the expulsion of the placenta; while I hold that the binder should never be applied until after the placenta is expelled, and not even then, unless the uterus is perfectly and permanently contracted. 2. That it teaches that traction on the cord should be used as a means of withdrawing the placenta; whereas the uterus itself should be made to expel the afterbirth, and in nineteen cases out of twenty, the finger need never be introduced into the vagina after the birth of the child, nor the cord touched. This may seem an exaggerated statement to those who have accustomed themselves to the usual method of dealing with the placenta; but I feel confident that all who have learnt the method of expression would testify to its accuracy.

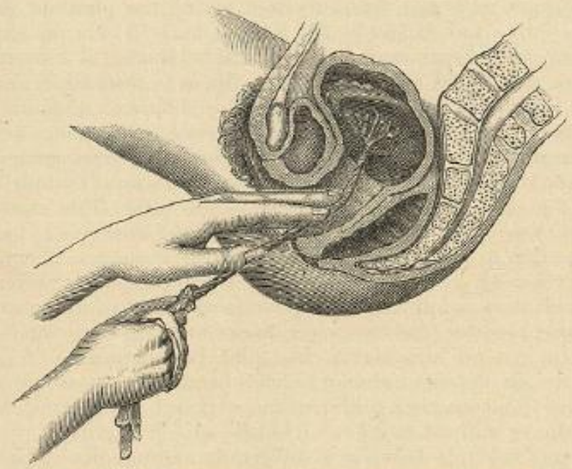
Expression of the Placenta: Its Object.—The cardinal point to bear in mind is, that the placenta should be expelled from the uterus

[1] Budin: Progrès Médical, 1876, tom. iv. pp. 2, 26.
[2] Archiv. de Tocologie, 1879, p. 577.
[3] Churchill's Theory and Practice of Midwifery, p. 162.

[1] This practice is further illustrated by the annexed diagram, contained in most obstetric works, which represents the accoucheur as withdrawing the placenta by traction, and which I insert as an illustration of what ought *not* to be done (Fig. 111).

by a *vis a tergo*, not drawn out by a *vis a fronte*. That uterine pressure after the birth of the child has been recommended by many English writers is certain, and the Dublin school especially have dwelt on its importance as a preventive of post-partum hemorrhage; but the distinct enunciation of the doctrine that the placenta should be pressed, and not drawn out of the uterus, we owe to Credé and other German writers; and it is only of late years that this practice has become at all common. Those who have not seen placental expression practised find it difficult to understand that, in the large majority of cases, the uterus may be made to expel the placenta out of the vagina; but such

FIG. 111.



Usual method of removing the placenta by traction on the cord.

is unquestionably the fact. A little practice is no doubt necessary to effect this satisfactorily; but when once the knack has been learned, there is little difficulty likely to be experienced.

Before describing the method of placental expression, a word of caution may be said against undue haste in attempting expression of the placenta, a mistake that is often made, and which, I believe, tends to increase the risk of post-partum hemorrhage. So long as we satisfy ourselves that the uterus is fairly contracted so as to avoid the possibility of its distention with blood, a certain delay after the birth of the child is useful, from its giving time for coagula to form within the uterine sinuses, by which their open mouths are closed up. The importance of this point has been specially dwelt upon by McClintock, who lays down the rule that fifteen or twenty minutes should be allowed to elapse after the birth of the child, before any attempt to remove the afterbirth is made. This is a good and safe practical rule, as it gives ample time for the complete detachment of the placenta and the coagulation of the blood in the uterine sinuses.

During this interval the practitioner or nurse should sit by the bedside, with the hand on the uterus to secure contraction and prevent distention; but not kneading or forcibly compressing it. When we judge that a sufficient time has elapsed, we may proceed to effect expulsion. For this purpose the fundus should be grasped in the hollow of the left hand, the ulnar edge of the hand being well pressed down behind the fundus, and, *when the uterus is felt to harden*, strong and firm pressure should be made downward and backward in the axis of the pelvic brim. If this manœuvre be properly carried out, and sufficiently firm pressure made, in almost every case the uterus may be made to expel the placenta into the bed, along with any coagula that may be in its cavity (Fig.

FIG. 112.

Illustrating expression of the placenta.

112). The uterine surface of the placenta is generally expelled first, as is represented in the diagram, the cord being within the membranes; whereas the fœtal surface, and root of the cord, are the parts which appear first when the placenta is removed by traction (Fig. 111). If we do not succeed at the first effort, which is rarely the case if extrusion be not attempted too soon after the birth of the child, we may wait until another contraction takes place, and then reapply the pressure. I repeat that, after a little practice, the placenta may be entirely expelled in this way, in nineteen cases out of twenty, without even touching the cord, and the bugbear of retained placenta will cease to be a source of dread.

Should we fail in causing the uterus to expel the placenta, a vaginal examination may be made, and, if the placenta be found lying entirely in the vagina, it may be carefully withdrawn. If, however, the cord can be traced up through the os, showing that the placenta is still within the uterine cavity, we must again resort to pressure to effect its expulsion, and not attempt to withdraw it by traction. Such cases may fairly be classed as retained placenta, but they should be very rarely met with, and are discussed elsewhere. When they do occur

often in the hands of the same practitioner, it is fair to conclude that he has not properly acquired the art of managing this stage of labor. Generally speaking, the placenta should be expelled within twenty minutes after the birth of the child; but no doubt, in the large majority of cases, expulsion might be effected sooner were it advisable to attempt it.

Management of the Membranes.—When the mass of the placenta is expelled, the membranes generally still remain in the vagina, and they should be twisted into a rope, and very gently withdrawn, so as not to leave any portion behind. This is a precaution the importance of which I would strongly urge, for I believe that the chance of part of the membranes being torn off and left *in utero* is the one objection to the method recommended. With due care, however, this accident may be avoided, and the risk will be lessened if the placenta is received into the palm of the right hand, on expression, so as to avoid any strain on the membranes.

The duties of the medical attendant are not even now over. For at least ten minutes after the extrusion of the placenta, he should keep his hand on the firmly contracted uterus, gently kneading it, without any force, for the purpose of promoting firm and equable contraction, and causing it to throw off the coagula that may form in its cavity.

The subsequent comfort and safety of the patient may be promoted by administering at this time a full dose of ergot of rye, such as a drachm, or more, of the liquid extract. The property possessed by this drug of producing tonic and persistent contraction of the uterine fibres, which renders it of doubtful utility as an oxytocic during labor, is of special value after delivery, when such contraction is precisely what we desire. I have long been in the habit of administering the drug at this period, and believe it to be of great value, not only as a prophylactic against hemorrhage, but as a means of lessening after-pains.

Examination of the Placenta.—The accoucheur should always satisfy himself as to the integrity of the placenta, and not be satisfied with the report of the nurse. It should be carefully examined in every case, to make sure that no portion of it, nor of the membrane, is left behind. It is well to re-invert the membranes, and examine the uterine surface of the placenta in the first instance, and then to satisfy oneself that the membranes, both chorion and amnion, are entire. If any portion is absent, it must be carefully searched for in the clots, or in the vagina or uterine cavity. Should it be necessary to introduce the finger or hand for this purpose, even when carefully asepticized, the uterus should subsequently be washed out with a douche of hot water at 110° F., to which a few drops of creolin have been added, or with a solution of perchloride of mercury (1 : 2000), at the same temperature.

Application of the Binder.—When we are satisfied that the uterus is permanently contracted, we may apply the binder, but this should rarely be done until at least half an hour after the birth of the child. The soiled clothes should be gently withdrawn from under the patient, moving her as little as possible, and the binder should be, at the same

time, slipped under the body, taking care that it is passed well below the hips so as to secure a firm hold. No kind of bandage is better than a piece of stout jean, of sufficient breadth to extend from the trochanters to the ensiform cartilage; a jack-towel or bolster slip answers the purpose very well. These are preferable, at any rate at first, to the shaped binders that are often used. One or two folded napkins are generally placed over the uterus, so as to form a pad to keep up the pressure. Once in position, the binder is pulled tight, and fastened by pins. The utility of careful bandaging after delivery can scarcely be doubted, although some years ago it became the fashion to dispense with it. It gives a comfortable support to the lax abdominal walls, keeps up a certain amount of pressure on the uterus, and tends to restore the figure of the patient. After the bandage is applied, a warm antiseptic pad or napkin should be placed on the vulva, as a means of estimating the quantity of the discharge, and the patient may be allowed to rest.

Examination of the Perineum.—In every case, especially in primiparæ, the perineum should be visually examined. This can easily be done after the placenta is expelled, without distressing the patient. If this precaution were habitually adopted many lacerations would be detected, which would otherwise escape observation.

After-Treatment.—Unless the labor has been very long and fatiguing, an opiate, often exhibited as a matter of routine, is unadvisable; although it may be well to leave one with the nurse, to be given if the patient cannot sleep, or if the after-pains be very troublesome. The practitioner may now leave the room, but not the house, and at least an hour should elapse after delivery before he takes his departure. Before doing so he should visit the patient, inspect the napkin to see that there is not too much discharge, and satisfy himself that the uterus is contracted, and not distended with coagula. He should also count the pulse, which, if the patient be progressing satisfactorily, will found at its normal average. If, however, it be beating over 100 per minute, he should on no account leave, for such a rapidity of the circulation renders it extremely probable that hemorrhage is impending. This is a good practical rule laid down by McClintock in his excellent paper "On the Pulse in Childbed," attention to which may often save the patient from disastrous consequences.

Before leaving, the practitioner should see that the room is darkened, all bystanders excluded, and the patient left as quiet as possible to recover from the shock of labor.