to that of the prolapse, so as to relieve the cord as much as possible from pressure, and at the same time elevating the hips by a pillow, it may slip back. Even after the membranes are ruptured, postural treatment in one form or another may succeed; and, as it is simple and harmless, it should certainly be always tried. Attempts at reposition, by one or other method described below, may also occasionally be facilitated by trying them when the patient is placed in the knee-shoulder position.

Failing by postural treatment, or in combination with it, it is quite legitimate to make an attempt to place the cord beyond the reach of dangerous pressure by other methods. Unfortunately reposition is too often disappointing, difficult to effect, and very frequently, even when apparently successful, shortly followed by a fresh descent of the cord. Provided the os be fully dilated and the presenting head engaged in the pelvis (for reposition may be said to be hopeless when any other part presents), perhaps the best way is to attempt it by the hand alone. Probably the simplest and most effectual method is that recommended by McClintock and Hardy, who advise that the patient should lie on the opposite side to the prolapsed cord, which should then be drawn toward the pubes as being the shallowest part of the pelvis. Two or three fingers may then be used to push the cord past the head, and as high as they can reach. They must be kept in the pelvis until a pain comes on, and then very gently withdrawn, in the hope that the cord may not again prolapse. During the pain external pressure may very properly be applied to favor descent of the head. This manœuvre may be repeated during several successive pains, and may eventually succeed. The attempt to hook the cord over the fœtal limbs, or to place it in the hollow of the neck, recommended in many works, involves so deep an introduction of the hand that it is obviously impracticable.

FIG. 128.

Braun's apparatus for replacing the cord.

Various complex instruments have been invented to aid reposition (Fig. 128), but even if we possessed them they are not likely to be at hand when the emergency arises. A simple instrument may be improvised out of an ordinary male elastic catheter, by passing the two ends of a piece of string through it, so as to leave a loop emerging from the eye of the catheter. This is passed through the loop of prolapsed cord, and then fixed in the eye of the catheter by means of the stilette. The cord is then pushed up into the uterine cavity by the catheter, and liberated by withdrawing the stilette. Another simple instrument may be made by cutting a hole in a piece of whalebone. A piece of tape is then passed through the loop of the cord and the ends threaded through the eye cut in the whalebone. By tightening the tape the whalebone is held in close apposition to the cord, and the whole is passed as high as possible into the uterine cavity. The tape can easily be liberated by pulling one end. If preferred, the cord can be tied to the whalebone, which is left *in utero* until the child is born. Nothing need be said as to the various other methods adopted for keeping up the cord, such as the insertion of pieces of sponge, or tying the cord in a bag of soft leather, since they are generally admitted to be quite useless.

It only too often happens that all endeavors at reposition fail. The subsequent treatment must then be guided by the circumstances of the case. If the pelvis be roomy, and the pains strong, especially in a multipara, we may often deem it advisable to leave the case to Nature, in the hope that the head may be pushed through before pressure on the cord has had time to prove fatal to the child. Under such circumstances the patient should be urged to bear down, and the descent of the head be promoted by uterine pressure, so as to get the second stage completed as soon as possible. If the head be within easy reach, the application of the forceps is quite justifiable, since delay must necessarily involve the death of the child. During this time the cord should be placed, if possible, opposite one or the other sacro-iliac synchondrosis according to the position of the head, as being the part of the pelvis where there is most room, and pressure would consequently be least prejudicial. If we have to do with a case in which the head has not descended into the pelvis, and postural treatment and reposition have both failed, provided the os be fully dilated, and other circumstances be favorable, turning would undoubtedly offer the best chance to the child. This treatment is strongly advocated by Engelmann, who found that 70 per cent. of the children delivered in this way were saved. There can be no question that, so far as the interests of the child are concerned, it is, under the circumstances indicated, by far the best expedient. Turning, however, is by no means always devoid of a certain risk to the mother, and the performance of the operation, in any particular case, must be left to the judgment of the practitioner. A fully dilated os, with membranes unruptured, so that version could be performed by the combined method without the introduction of the hand into the uterus, would be unquestionably the most favorable state. If it be not deemed proper to resort to it, all that can be done is to endeavor to save the cord from pressure as much as possible, by one or another of the methods already mentioned.

CHAPTER IX.

PROLONGED AND PRECIPITATE LABORS.

AMONG the difficulties connected with parturition there are none of more frequent occurrence, and none requiring more thorough knowledge of the physiology and pathology of labor, than those arising from

deficient or irregular action of the expulsive powers. The importance of studying this class of labors will be seen when we consider the numerous and very diverse causes which produce them.

Evil Effects of Prolonged Labor.—That the mere prolongation of labor is in itself a serious thing, is becoming daily more and more an acknowledged axiom of midwifery practice; and that this is so is evident when we contrast the statistical returns of such institutions as the Rotunda Lying-in Hospital of late years, with those which were published some twenty or thirty years ago. It may be fairly assumed that the practice of the distinguished heads of that well-known school represents the most advanced and scientific opinions of the day. When we find that, less than thirty years ago, forceps were not used more than once in 310 labors, while, according to the report for 1873, the late master applied them once in 8 labors, it is apparent how great is the change which has taken place.

Labor may be prolonged from an immense number of causes, the principal of which will require separate study. Some depend simply on defective or irregular action of the uterus; others act by opposing the expulsion of the child, as, for example, undue rigidity of the parturient passages, tumors, bony deformity, and the like. Whatever the source of delay, a train of formidable symptoms is developed which are fraught with peril both to the mother and the child. As regards the mother, they vary much in degree and in the rapidity with which they become established. In many cases, in which the action of the uterus is slight, it may be long before serious results follow; while in others, in which a strongly-acting organ is exhausting itself in futile endeavors to overcome an obstacle, the worst signs of protraction may come on with comparative rapidity.

The stage of labor in which delay occurs has a marked effect in the production of untoward symptoms. It is a well-established fact that prolongation is of comparatively small consequence to either the mother or child in the first stage, when the membranes are still intact, and when the soft parts of the mother, as well as the body of the child, are protected by the liquor amnii from injurious pressure; whereas if the membranes have ruptured, prolongation becomes of the utmost importance to both as soon as the head has entered the pelvis, when the uterus is strongly excited by reflex stimulation, when the maternal soft parts are exposed to continuous pressure, and when the tightly contracted uterus presses firmly on the fœtus and obstructs the placental circulation. It is in reference to the latter class of cases that the change of practice, already alluded to, has taken place, with the most beneficial results both to mother and child.

It must not be assumed, however, that prolongation of labor is never of any consequence until the second stage has commenced. The fallacy of such an opinion was long ago shown by Simpson, who proved in the most conclusive way, that both the maternal and fœtal mortality were greatly increased in proportion to the entire length of the labor; and all practical accoucheurs are familiar with cases in which symptoms of gravity have arisen before the first stage is concluded. Still, relatively speaking, the opinion indicated is undoubtedly correct.

In the present chapter we have to do only with those causes of delay connected with the expulsive powers. Inasmuch, however, as the injurious effects of protraction are similar in kind whatever be the cause, it will save needless repetition if we consider, once for all, the train of symptoms that arise whenever labor is unduly prolonged.

Delay in the First Stage is Rarely Serious.—As long as the delay is in the first stage only, with rare exceptions, no symptoms of real gravity arise for a length of time; it may be even for days. There is often, however, a partial cessation of the pains, which, in consequence of temporary exhaustion of nervous force, may even entirely disappear for many consecutive hours. Under such circumstances, after a period of rest, either natural or produced by suitable sedatives, they recur with renewed vigor.

Symptoms of Protraction in the Second Stage.—A similar temporary cessation of the pains may often be observed after the head has passed through the os uteri, to be also followed by renewed vigorous action after rest. But now any such irregularity must be much more anxiously watched. In the majority of cases any marked alteration in the force and frequency of the pains at this period indicates a much more serious form of delay, which in no long time is accompanied by grave general symptoms. The pulse begins to rise, the skin to become hot and dry, the patient to be restless and irritable. The longer the delay, and the more violent the efforts of the uterus to overcome the obstacle, the more serious does the state of the patient become. The tongue is loaded with fur, and in the worst cases dry and black; nausea and vomiting often become marked; the vagina feels hot and dry, the ordinary abundant mucous secretion being absent; in severe cases it may be much swollen, and if the presenting part be firmly impacted, a slough may even form. Should the patient still remain undelivered, all these symptoms become greatly intensified; the vomiting is incessant, the pulse is rapid and almost imperceptible, low muttering delirium supervenes, and the patient eventually dies with all the worst indications of profound irritation and exhaustion.

So formidable a train of symptoms, or even the slighter degrees of them, should never occur in the practice of the skilled obstetrician; and it is precisely because a more scientific knowledge of the process of parturition has taught the lesson that, under such circumstances, prevention is better than cure, that earlier interference has become so much more the rule.

Those who taught that nothing should be done until Nature had had every possible chance of effecting delivery, and who, therefore, allowed their patients to drag on through many weary hours of labor, at the expense of great exhaustion to themselves, and imminent risk to their offspring, made much capital out of the time-honored maxim that "meddlesome midwifery is bad." When this proverb is applied to restrain the rash interference of the ignorant, it is of undeniable value; but when it is quoted to prevent the scientific action of the experienced, who know precisely when and why to interfere, and who have acquired the indispensable mechanical skill, it is sadly misapplied.

State of the Uterus in Protracted Labor.—The nature of the pains and the state of the uterus, in cases of protracted labor, are peculiarly worthy of study, and have been very clearly pointed out by Dr. Braxton Hicks.[1] He shows that, when the pains have apparently fallen off and become few and feeble, or have entirely ceased, the uterus is in a state of continuous or tonic contraction, and that the irritation resulting from this is the chief cause of the more marked symptoms of powerless labor. If, in a case of the kind, the uterus be examined by palpation, it will be found firmly contracted between the pains. The correctness of this observation is beyond question, and it will, no doubt, often be an important guide in treatment. Under such circumstances instrumental interference is imperatively demanded.

Causes.—In considering the causes of protracted labor, it will be well first to discuss those which affect the expulsive powers alone, leaving those depending on morbid states of the passages for future consideration; bearing in mind, however, that the results, as regards both the mother and the child, are identical, whatever may be the cause of delay.

The general constitutional state of the patient may materially influence the force and efficiency of the pains. Thus it not unfrequently happens that they are feeble and ineffective in women of very weak constitution, or who are much exhausted by debilitating disease. Cazeaux pointed out that the effects of such general conditions are often more than counterbalanced by flaccidity and want of resistance of the tissues, so that there is less obstacle to the passage of the child. Thus, in phthisical patients reduced to the last stage of exhaustion, labor is not unfrequently surprisingly easy.

Long residence in tropical climates causes uterine inertia, in consequence of the enfeebled nervous power it produces. It is a common observation that European residents in India are peculiarly apt to suffer from post-partum hemorrhage from this cause. The general mode of life of patients has an unquestionable effect; and it is certain that deficient and irregular uterine action is more common in women of the higher ranks of society, who lead luxurious, enervating lives, than in women whose habits are of a more healthy character.

Tyler Smith lays much stress on frequent childbearing as a cause of inertia, pointing out that a uterus which has been very frequently subjected to the changes connected with pregnancy, is unlikely to be in a typically normal condition. It is doubtful, however, whether the uterus of a perfectly healthy woman is affected in this way; certainly, if childbearing had undermined her general health, the labors are likely to be modified also.

Age has a decided effect. In the very young the pains are apt to be irregular, on account of imperfect development of the uterine muscles. Labor taking place for the first time in women advanced in life is also apt to be tedious, but not by any means so invariably as is generally believed. The apprehensions of such patients are often agreeably

[1] Obst. Trans., 1867, vol. ix. p. 207.

falsified, and where delay does occur, it is probably more ofter referable to rigidity and toughness of the parturient passages than to feebleness of the pains.

Morbid states of the primæ viæ frequently cause irregular, painful, and feeble contractions. A loaded state of the rectum has a remarkable influence, as evidenced by the sudden and distinct change in the character of the labor which often follows the use of suitable remedies. Undue distention of the bladder may act in the same way, more especially in the second stage. When the urine has been allowed to accumulate unduly, the contraction of the accessory muscles of parturition often causes such intense suffering, by compressing the distended viscus, that the patient is absolutely unable to bear down. Hence the labor is carried on by uterine contractions alone, slowly, and at the expense of much suffering. A similar interference with the action of the accessory muscles is often produced by other causes. Thus if labor comes on when the patient is suffering from bronchitis or other chest disease, she may be quite unable to fix the chest by a deep inspiration, and the diaphragm and other accessory muscles cannot act. In the same way they may be prevented from acting when the abdomen is occupied by an ovarian tumor, or by ascitic fluid.

Mental conditions have a very marked effect. This is so commonly observed that it is familiar to the merest beginner in midwifery practice. The fact that the pains often diminish temporarily on the entrance of the accoucheur is known to every nurse; and so also undue excitement, the presence of too many people in the room, overmuch talking, have often the same prejudicial effect. Depression of mind, as in unmarried women, and fear and despondency in women who have looked forward with apprehension to the labor, are also common causes of irregular and defective action.

Undue distention of the uterus from an excessive amount of liquor amnii not unfrequently retards the first stage, by preventing the uterus from contracting efficiently. When this exists, the pains are feeble and have little effect in dilating the cervix beyond a certain degree. This cause may be suspected when undue protraction of the first stage is associated with an unusually large size and marked fluctuation of the uterine tumor, through which the fœtal limbs cannot be made out on palpation. On vaginal examination the lower segment of the uterus will be found to be very rounded and prominent, while the bag of membranes will not bulge through the os during the acme of the pain.

A somewhat similar cause is undue obliquity of the uterus, which prevents the pains acting to the best mechanical advantage, and often retards the entry of the presenting part into the brim. The most common variety is anteversion, resulting from undue laxity of the abdominal parietes, which is especially found in women who have borne many children. Sometimes this is so excessive that the fundus lies oves the pubes, and even projects downward toward the patient's knees. The consequence is, that, when labor sets in, unless corrective means be taken, the pains force the head against the sacrum, instead of directing it into the axis of the pelvic inlet. Another common

deviation is lateral obliquity, a certain degree of which exists in almost all cases, but sometimes it occurs to an excessive degree. Either of these states can readily be detected by palpation and vaginal examination combined. In the former the os may be so high up, and tilted so far backward, that it may be at first difficult to reach it at all.

Irregular and Spasmodic Pains.—Besides being feeble, the uterine contractions, especially in the first stage, are often irregular and spasmodic, intensely painful, but producing little or no effect on the progress of the labor. This kind of case has been already alluded to in treating of the use of anæsthetics (p. 308), and is very common in highly nervous and emotional women of the upper classes. In such cases cocaine has been of late used as a local application with decided benefit. It appears to act by deadening the pain resulting from the stretching of the nerves of the cervix, or from slight cervical lacerations. It has no effect in relieving the suffering caused by uterine contraction.[1] It has been applied by means of a cotton-wool tampon steeped in a 2 per cent. solution, and placed against the os. A much better way of using it is by "Moore's cones"[2] made with cacao-butter, one of which is placed on the examining finger like a thimble, and inserted within the os, where it rapidly melts. Antipyrine has been frequently used in this kind of labor as a uterine sedative, but its beneficial effects appear to be doubtful. Auvard and Lefebvre,[3] who have carefully studied and reported cases, come to the conclusion that it cannot be compared in efficacy with chloral, although occasionally useful. It may be given in a dose of fifteen grains, repeated in two hours. Such irregular contractions do not necessarily depend on mental causes alone, and they often follow conditions producing irritation, such as loaded bowels, too early rupture of the membranes, and the like. Dr. Trenholme, of Montreal,[4] believes that such irregular pains most frequently depend on abnormal adhesions between the decidua and the uterine walls, which interfere with the proper dilatation of the os, and he has related some interesting cases in support of this theory.

Treatment.—The mere enumeration of these various causes of protracted labor will indicate the treatment required. Some of them, such as the constitutional state of the patient, age, or mental emotion, it is, of course, beyond the power of the practitioner to influence or modify; but in every case of feeble or irregular uterine action, a careful investigation should be made with the view of seeing if any removable cause exist. For example, the effect of a large enema, when we suspect the existence of a loaded rectum, is often very remarkable; the pains frequently almost immediately changing in character, and a previously lingering labor being rapidly terminated.

Excessive distention of the uterus can only be treated by artificial evacuation of the liquor amnii; and after this is done, the character of the pains often rapidly changes. This expedient is indeed often of considerable value in cases in which the cervix has dilated to a certain extent, but in which no further progress is made, especially if the bag of membranes does not protrude through the os during the pains, and the cervix itself is soft, and apparently readily dilatable. Under such circumstances, rupture of the membranes, even before the os is fully dilated, is often very useful.

If we have reason to suspect morbid adhesions between the membranes and the uterine walls, an endeavor must be made to separate them by sweeping the finger or a flexible catheter around the internal margin of the os, or puncturing the sac. The former expedient has been advocated by Dr. Inglis,[1] as a means of increasing the pains when the first stage is very tedious, and I have often practised it with marked success. Trenholme's observation affords a rationale of its action. The manœuvre itself is easily accomplished, and, provided the os be not very high in the pelvis, does not give any pain or discomfort to the patient.

Attention should always be paid to remedying any deviations of the uterus from its proper axis. If this be lateral, the proper course to pursue is to make the patient lie on the opposite side to that toward which the organ is pointing. In the more common anterior deviation she should lie on her back, so that the uterus may gravitate toward the spine, and a firm abdominal bandage should be applied. This prevents the organ from falling forward, while its pressure stimulates the muscular fibres to increased action; hence it is often very serviceable when the pains are feeble, even if there be no anteversion.

In a frequent class of cases, especially in the first stage, the pains diminish in force and frequency from fatigue, and the indication then is to give a temporary rest, after which they recommence with renewed vigor. Hence an opiate, such as twenty minims of Battley's solution, which often acts quickest when given in the form of enema, is frequently of the greatest possible value. If this secure a few hours' sleep the patient will generally awake much refreshed and invigorated. It is important to distinguish this variety of arrested pain from that dependent on actual exhaustion; and this can be done by attention to the general condition of the patient, and especially by observing that the uterus is soft and flaccid in the intervals between the pains, and that there is none of the tonic contraction indicated by persistent hardness of the uterine parietes. When the pains are irregular, spasmodic, and excessively painful, without producing any real effect, opiates are also of great service; and it is under such circumstances that chloral is especially valuable.

Oxytocic Remedies.—Still a large number of cases will arise in which the absence of all removable causes has been ascertained, and in which the pains are feeble and ineffective. We must now proceed to discuss their management. The fault being the want of sufficient contraction, the first indication is to increase the force of the pains. Here the so-called *oxytocic* remedies come into action; and, although a large number of these have been used from time to time, such as borax,

1 "The Value of Cocaine in Obstetrics," by John Phillips, M.A., M.D. Lancet, Nov. 26, 1887.
2 Brit. Med. Journ., 1885, vol. ii. p. 1140.
3 Arch. de Tocol., 1888, p. 649, and 1889, p. 505.
4 Obst. Trans., 1873, vol. xiv. p. 231.

1 Sydenham Society's Year-book, 1867, p. 399.

cinnamon, quinine, and galvanism, practically the only one in which reliance is generally placed is the ergot of rye. This has long been the favorite remedy for deficient uterine action, and it is a powerful stimulant of the uterine fibres. It has, however, very serious disadvantages, and it is very questionable whether the risks to both mother and child do not more than counterbalance any advantages attending its use. The ergot is given in doses of fifteen or twenty grains of the freshly powdered drug infused in warm water, or in the more convenient form of the liquid extract in doses of from twenty to thirty minims, or, still better, in the form of ergotine injected hypodermically, three to four minims of the hypodermic solution being used for the purpose. In about fifteen minutes after its administration the pains generally increase greatly in force and frequency, and if the head be low in the pelvis, and if the soft parts offer no resistance, the labor may be rapidly terminated.

Were its use always followed by this effect there would be little or no objection to its administration. The pains, however, are different from those of natural labor, being strong, persistent, and constant. Its effect, indeed, is to produce that very state of tonic and persistent uterine contraction which has already been pointed out as one of the chief dangers of protracted labor. Hence, if from any cause the exhibition of the drug be *not* followed by rapid delivery, a condition is produced which is serious to the mother, and which is extremely perilous to the child, on account of the tonic contraction of the muscular fibres obstructing the utero-placental circulation. Dr. Hardy found that soon the fœtal pulsations fall to 100, and, if delivery be long delayed, they commence to intermit. He also observed that when this occurred the child was always born dead, and found that the number of still-born children after ergot has been exhibited was very large; for out of thirty cases in which he gave it in tedious labor, only ten of the children were born alive. Nor is its use by any means free from danger to the mother; a not inconsiderable number of cases of rupture of the uterus have been attributed to its incautious use. Hence, if it is to be given at all, it is obvious that it must be with strict limitations, and after careful consideration. It is worthy of note that in the Rotunda Hospital in Dublin, the use of ergot as an oxytocic before delivery has been prohibited by the present master.

The cardinal point to remember is that it is absolutely contra-indicated unless the absence of all obstacles to rapid delivery has been ascertained. Hence, it is only allowable when the first stage is over, and the os fully dilated; when the experience of former labors has proved the pelvis to be of ample size; and when the perineum is soft and dilatable. Perhaps, as has been suggested, the administration of small doses of from five to ten minims of the liquid extract every ten minutes, until more energetic action sets in, might obviate some of these risks.

The use of quinine as an oxytocic deserves much more attention than it has generally received. I frequently employ it in lingering labor with marked benefit, and it does not seem to have any of the bad effects of ergot. According to the observations of Dr. Albert H. Smith, in forty-two cases of parturition, it presented the following peculiar characteristics:

It has no power in itself to excite uterine contractions, but simply acts as a general stimulant and promoter of vital energy and functional activity. Dr. R. Doyle, of Trinidad, recently writes to point out that quinine given in malarial fever is constantly observed to produce uterine contractions and abortion.[1]

In normal labor at full term, its administration in a dose of fifteen grains is usually followed in as many minutes by a decided increase in the force and frequency of the uterine contractions, changing in some instances a tedious, exhausting labor into one of rapid energy, advancing to an early completion.

It promotes the permanent tonic contraction of the uterus, after the expulsion of the placenta; women that had flooded in former labors escaping entirely, there not having been an instance of post-partum hemorrhage in the whole forty-two cases.

It also diminishes the lochial flow where it had been excessive in former labors, the change being remarked upon by the patients, and consequently lessens the severity of the after-pains.

Cinchonism is very rarely observed as an effect of large doses in parturient women.[2]

Use of the Faradic Current.—The faradic current applied on either side of the uterine tumor, midway between the anterior-superior spine of the ilium and the umbilicus, has recently been strongly recommended by Dr. Kilner,[3] not only as a means of increasing uterine action, but of alleviating the sufferings of childbirth. I have tried it in several cases, but am not satisfied as to its possessing the properties attributed to it.

If we had no other means of increasing defective uterine contractions at our disposal, and if the choice lay only between the use of ergot and instrumental delivery, there might not be so much objection to a cautious use of the drug in suitable cases. We have, however, a means of increasing the force of the uterine contractions so much more manageable, and so much more resembling the natural process, that I believe it to be destined to entirely supersede the administration of ergot. This is the application of manual pressure to the uterus through the abdomen, an expedient that has of late years been much used in Germany, and has begun to be employed in English practice. I believe, therefore, that ergot should be chiefly used for the purpose of exciting uterine contraction after delivery, when its peculiar property of promoting tonic contraction is so valuable, and that it should rarely, if at all, be employed before the birth of the child.

The systematic use of uterine pressure as an oxytocic was first prominently brought under the notice of the profession by Kristeller, under the name of *expressio fœtus*, although it has been used in various forms from time immemorial. Albucasis, for example, was clearly acquainted with its use, and referred to it in the following terms:

[1] Brit. Med. Journ., 1889, vol. ii. p. 689.
[2] Trans. Coll. Phys., Philadelphia, 1875, p. 188.
[3] Obst. Trans. for 1884, vol. xxvi. p. 93.

"Cum ergo vides ista signa, tunc oportet, ut comprimatur uterus ejus ut descendat embryo velociter." It was known to Guillemeau, who says: "Quelquefois j'ai ordonné à l'une des dites femmes de presser fort doucement du plat de la main, les parties supérieures du ventre en ramenant l'enfant, petit à petit, en bas; telle médiocre compression facilitait l'accouchement en faisant que les tranchées se supportaient plus aisément et facilement.[1] There are some curious obstetric customs among various nations, which probably arose from a recognition of its value; as, for example, the mode of delivery adopted among the Kalmucks, where the patient sits at the foot of the bed, while a woman, seated behind her, seizes her around the waist and squeezes the uterus during the pains. Amongst the Japanese, Siamese, North American Indians, and many other nations, pressure, applied in various ways, is habitually used.[2]

Kristeller maintains that it is possible to effect the complete expulsion of the child by properly applied pressure, even when the pains are entirely absent. Strange as this may appear to those who are not familiar with the effects of pressure, I believe that, under exceptional circumstances, when the pelvis is very capacious, and the soft parts offer but slight resistance, it can be done. I have delivered in this way a patient whose friends would not permit me to apply the forceps, when I could not recognize the existence of any uterine contraction at all, the fœtus being literally squeezed out of the uterus. It is not, however, as replacing absent pains, but as a means of intensifying and prolonging the effects of deficient and feeble ones, that pressure finds its best application.

Its effects are often very remarkable, especially in women of slight build, where there is but little adipose tissue in the abdominal walls, and not much resistance in the pelvic tissues. If the finger be placed on the head while pressure is applied to the uterus, a very marked descent can readily be felt, and not infrequently two or three applications will force the head on to the perineum. There are, however, certain conditions in which it is inapplicable, and the existence of which should contra-indicate its use. Thus if the uterus seem unusually tender on pressure, and, *a fortiori*, if the tonic contraction of exhaustion be present, it is inadmissible. So also if there be any obstruction to rapid delivery, either from narrowing of the pelvis or rigidity of the soft parts, it should not be used. The cases suitable for its application are those in which the head or breech is in the pelvic cavity, and the delay is simply due to a want of sufficiently strong expulsive action.

It may be applied in two ways. The better plan is to place the patient on her back at the edge of the bed, and spread the palms of the hands on either side of the fundus and body of the uterus, and, when a pain commences, to make firm pressure during its continuance downward and backward in the direction of the pelvic inlet. As the contraction passes off the pressure is relaxed, and again resumed when a fresh pain begins. In this way each pain is greatly intensified, and

[1] L'Obstétrique aux XVII. et XVIII. Siècles. Paris, 1892.
[2] Labor Among Primitive Peoples. Geo. J. Engelmann, St. Louis, 1883. 8vo. pp. 227.—Ed.]

its effect on the progress of the fœtus much increased. It is not essential that the patient should lie on her back. A useful, although not so great, amount of pressure can be applied when she is lying in the ordinary obstetric position on her left side, the left hand being spread out over the fundus, leaving the right free to watch the progress of the presenting part *per vaginam*.

Special Value of Uterine Pressure.—The special value of this method of treating ineffective pains is, that the amount and frequency of the pressure are completely within the control of the practitioner, and are capable of being regulated to a nicety in accordance with the requirements of each particular case. It has the peculiar advantage of closely imitating the natural means of delivery, and of being absolutely without risk to the child; nor is there any reason to think that it is capable of injuring the mother. At least I may safely say that, out of the large number of cases in which I have used it, I have never seen one in which I had the least reason to think that it had proved hurtful. Of course, it is essential not to use undue roughness; firm and even strong pressure may be employed, but that can be done without being rough, and, as its application is always intermittent, there is no time for it to inflict any injury on the uterine tissues.

Pressure is specially valuable when it is desirable to intensify feeble pains. It may be serviceably employed when the pains are altogether absent, to imitate and replace them, provided there be nothing but the absence of a *vis à tergo* to prevent speedy delivery. In such cases an endeavor should be made to imitate the pains as closely as possible, by applying the pressure at intervals of four or five minutes, and entirely relaxing it after it has been applied for a few seconds.

Instrumental Delivery.—When all these means fail we have then left the resource of instrumental aid, and we have now to consider the indications for the use of the forceps under such circumstances. It has been already pointed out that professional opinion on this point has been undergoing a marked change; and that it is now recognized as an axiom by the most experienced teachers that, when we are once convinced that the natural efforts are failing, and are unlikely to effect delivery, except at the cost of long delay, it is far better to interfere soon rather than late, and thus prevent the occurrence of the serious symptoms accompanying protracted labor. The recent important debate on the use of the forceps at the Obstetrical Society of London remarkably illustrated these statements, for while there was much difference of opinion as to the advisability of applying the forceps when the head was high in the pelvis, a class of cases not now under consideration, it was very generally admitted that the modern teaching was based on correct scientific grounds. This is, of course, directly opposed to the view so long taught in our standard works, in which instrumental interference was strictly prohibited unless all hope of natural delivery was at an end; and in which the commencement at least, if not the complete establishment, of symptoms of exhaustion, was considered to be the only justification for the application of the forceps in lingering labor.

The reasons which led the late distinguished master of the Rotunda Hospital to a more frequent use of the forceps are so well expressed in his report for 1872, that I venture to quote them, as the best justification for a practice that many practitioners of the older school will, no doubt, be inclined to condemn as rash and hazardous. He says:[1] "Our established rule is that so long as Nature is able to effect its purpose without prejudice to the constitution of the patient, danger to the soft parts, or the life of the child, we are in duty bound to allow the labor to proceed; but as soon as we find the natural efforts are beginning to fail, and after having tried the milder means for relaxing the parts or stimulating the uterus to increased action, and the desired effects not being produced, we consider we are in duty bound to adopt still prompter measures, and by our timely assistance relieve the sufferer from her distress and her offspring from an imminent death. Why, may I ask, should we permit a fellow-creature to undergo hours of torture when we have the means of relieving her within our reach? Why should she be allowed to waste her strength, and incur the risks consequent upon long pressure of the head on the soft parts, the tendency to inflammation and sloughing, or the danger of rupture, not to speak of the poisonous miasma which emanates from an inflammatory state of the passages, the result of tedious labor, and which is one of the fertile causes of puerperal fever and all its direful effects, attributed by some to the influence of being confined in a large maternity; and not to its proper source, *i. e.*, the labor being allowed to continue till inflammatory symptoms appear? The more we consider the benefits of timely interference, and the good results which follow it, the more are we induced to pursue the system we have adopted, and to inculcate to those we are instructing the advantages to be gained by such practice, both in saving the life of the child as well as securing the greater safety of the mother." It would be impossible to put the matter in a stronger or clearer light, and I feel confident that these views will be indorsed by all who have adopted the more modern practice.

Effect of Early Interference on the Infantile Mortality.—In the first edition of this work I used the statistics of Dr. Hamilton, of Falkirk, and other modern writers, as proving that a more frequent use of the forceps than had been customary diminished in a remarkable degree the infantile mortality. Dr. Galabin[2] has recently published an admirable paper on this subject, in which, by a careful criticism of these figures, he has, I think, proved that the conclusions drawn from them are open to doubt, and that the saving of infantile life following more frequent forceps delivery is by no means so great as I had supposed. Dr. Roper, in his remarks in the recent debate in the Obstetrical Society, brought forward some strong arguments in support of the same view. This, however, does not in any way touch the main points at issue referred to in the preceding paragraph.

Possible Dangers attending the Use of the Forceps.—It is, of course, right that we should consider the opposite point of view, and reflect on the disadvantages which may attend the interference advocated. Here I should point out that I am now writing only of the use of the forceps in simple inertia, when the head is low in the pelvic cavity, and when all that is wanted is a slight *vis à fronte* to supplement the deficient *vis à tergo*. The use of the instrument when the head is arrested high in the pelvis, or in cases of deformity, or before the os uteri is completely expanded, is an entirely different and much more serious matter, and does not enter into the present discussion. The chief question to decide is, if there be sufficient risk to the mother to counterbalance that of delay. It will, of course, be conceded by all that the forceps in the hands of a coarse, bungling, and ignorant practitioner, who has not studied the proper mode of operating, may easily inflict serious damage. The possibility of inflicting injury in this way should act as a warning to every obstetrician to make himself thoroughly acquainted with the proper mode of using the instrument, and to acquire the manual skill which practice and the study of the mechanism of delivery will alone give; but it can hardly be used as an argument against its use. If that were admitted, surgical interference of any kind would be tabooed, since there is none that ignorance and incapacity might not render dangerous.

Assuming, therefore, that the practitioner is able to apply the forceps skilfully, is there any inherent danger in its use? I think all who dispassionately consider the question must admit that, in the class of cases alluded to, the operation is so simple that its disadvantages cannot for a moment be weighed against those attending protraction and its consequences. Against this conclusion statistics may possibly be quoted, such as those of Churchill, who estimated that one in twenty mothers delivered by forceps in British practice was lost.[1] But the fallacy of such figures is apparent on the slightest consideration; and by no one has this been more conclusively shown than by Drs. Hicks and Phillips in their paper on tables of mortality after obstetric operations,[2] where it is proved in the clearest manner that such results are due not to the treatment, but rather to the fact that the treatment was so long delayed.

It is quite impossible to lay down any precise rule as to when the forceps should be used in uterine inertia. Each case must be treated on its own merits, and after a careful estimate of the effects of the pains. The rules generally taught were that the head should be allowed to rest at or near the perineum for a number of hours, and that interference was contra-indicated if the slightest progress were being made. It is needless to say that both of these rules are incompatible with the views I have been inculcating, and that any rule based upon the length of time the second stage of labor has lasted must necessarily be misleading. What has to be done, I conceive, is to watch the progress of the case anxiously after the second stage has fairly commenced, and to be guided by an estimate of the advance that is being made and the character of the pains, bearing in mind that the risk to the mother, and still more to the child, increases seriously with

[1] Fourth Clinical Report of the Rotunda Lying-in Hospital, Dublin, for the year ending 1872.
[2] Obstet. Journ., 1877–78, vol. v. p. 561.

[1] Churchill's statistics were collected in so unreliable a way, that I have long since ceased to put any faith in them.—Ed.]
[2] Obst. Trans., 1872, vol. xiii. p. 55.

each hour that elapses. If we find the progress slow and unsatisfactory, the pains flagging and insufficient, and incapable of being intensified by the means indicated, then, provided the head be low in the pelvis, it is better to assist at once by the forceps, rather than to wait until we are driven to do so by the state of the patient.[1]

[1] It may, perhaps, be of interest in connection with this important topic in practical midwifery if I reprint a letter I published some years ago in the *Medical Times and Gazette*. An historical case, such as that of which it treats, will better illustrate the evil effects that may follow unnecessary delay than any amount of argument. It seems to me impossible to read the details of the delivery it describes without being forcibly struck with the disastrous results which followed the practice adopted, which, however, was strictly in accordance with that considered correct, up to a quite recent date, by the highest obstetric authorities.

ON THE DEATH OF THE PRINCESS CHARLOTTE OF WALES.

(To the Editor of the *Medical Times and Gazette*.)

SIR: The letter of your correspondent, "An Old Accoucheur," regarding the death of the Princess Charlotte, raises a question of great interest—viz., whether the fatal result might have been averted under other treatment? The history of the case is most instructive, and I think a careful consideration of it leaves little room to doubt that, though the management of the labor was quite in accordance with the teaching of the day, it was entirely opposed to that of modern obstetric science. The following account of the labor may interest your readers, and will probably be new to most of them. It is contained in a letter from Dr. John Sims to the late Dr. Joseph Clarke, of Dublin:

"LONDON, November 15, 1817.

"MY DEAR SIR: I do not wonder at your wishing to have a direct statement of the labor of her Royal Highness the Princess Charlotte, the fatal issue of which has involved the whole nation in distress. You must excuse my being very concise, as I have been, and am, very much hurried. I take the opportunity of writing this in a lying-in chamber. Her Royal Highness's labor commenced by the discharge of the liquor amnii about seven o'clock on Monday evening, and the pains followed soon after. They continued through the night and a greater part of the next day—sharp, soft, but very ineffectual. Toward the evening Sir Richard Croft began to suspect that labor might not terminate without artificial assistance, and a message was despatched for me. I arrived at two on Wednesday morning. The labor was now advancing more favorably, and both Dr. Baillie and myself concurred in the opinion that it would not be advisable to inform her Royal Highness of my arrival. From this time to the end of her labor the progress was uniform, though very slow, the patient in good spirits, the pulse calm, and there never was room to entertain a question about the use of instruments. About six in the afternoon the discharge became of a green color, which led to a suspicion that the child might be dead; still the giving assistance was quite out of the question, as the pains now became more effectual, and the labor proceeded regularly, though slowly. The child was born without artificial assistance at nine o'clock in the evening. Attempts were made for a good while to reanimate it by inflating the lungs, friction, hot baths, etc., but without effect; the heart could not be made to beat even once. Soon after delivery, Sir Richard Croft discovered that the uterus was contracted in the middle in the hour-glass form, and as some hemorrhage commenced it was agreed that the placenta should be brought away by introducing the hand. This was done about half an hour after the delivery of the child, with more ease and less blood than usual. Her Royal Highness continued well for about two hours; she then complained of being sick at stomach, and of noise in the ears, began to be talkative, and her pulse became frequent; but I understand she was very quiet after this, and her pulse calm. About half-past twelve o'clock she complained of severe pain in the chest, became extremely restless, with rapid, weak, and irregular pulse. At this time I saw her for the first time. It has been said that we had all gone to bed, but that is not a fact: Croft did not leave her room, Baillie retired about eleven, and I went to my bedchamber and laid down in my clothes at twelve. By dissection, some bloody fluid (two ounces) was found in the pericardium, supposed to be thrown out *in articulo mortis*. The brain and other organs all sound, except the right ovarium, which was distended into a cyst the size of a hen's egg. The hour-glass contraction of the uterus still visible, and a considerable quantity of blood in the cavity of the uterus—but those present dispute about the quantity, so much as from twelve ounces to a pound and a half—her uterus extending as high as her navel. The cause of her Royal Highness's death is certainly somewhat obscure; the symptoms were such as attend death from hemorrhage, but the loss of blood did not seem to be sufficient to account for a fatal issue. It is possible that the effusion into the pericardium took place earlier than was supposed, and it does not seem to be quite certain that this might not be the cause. That I did not see her Royal Highness more early was awkward, and it would have been better that I had been introduced before the labor was expected; and it should have been understood that when labor came on I should be sent to without waiting to know whether a consultation was necessary or not. I thought so at the time, but I could not propose such an arrangement to Croft. But this is entirely *entre nous*. I am glad to hear that your son is well, and with all my family, wish to be remembered to him. We were happy to hear that he was agreeably married.

"I remain, my dear Doctor,
"Ever yours most truly,
"JOHN SIMS, M.D.

"This letter is confidential, as perhaps I might be blamed for writing any particulars without the permission of Prince Leopold."

What are the facts here shown? Here was a delicate young woman, prepared for the trial before her, as Baron Stockmar tells us, by "lowering the organic strength of the mother by bleeding, aperients, and low diet," who was allowed to go on in lingering feeble labor for no less than fifty hours after the escape of the liquor amnii! Such was the groundless dread of instrumental interference then prevalent that, although the case dragged on its weary length with feeble, ineffectual pains, every now and then increasing in intensity and then falling off again, it is stated "there never was room to entertain a question about the use of instruments"; and even "when the discharge became of a green color, ... still the giving assistance was quite out of the question"! Can any reasonable man doubt that if the forceps had been employed hours and hours before—say on Tuesday, when the pains fell off—the result would probably have been very different, and that the life of the child, destroyed by the enormously prolonged second stage, would have been saved? It must be remembered that early on Tuesday morning delivery was expected, so that the head must then have been low in the pelvis (*vide* Stockmar's *Memoirs*, vol. i. p. 63). It would be difficult to find a case which more forcibly illustrates the danger of delay in the second stage of labor. Then what follows? The uterus, exhausted by the lengthy efforts it should have been spared, fails to contract effectually; nor do we hear of any attempts to produce contraction by pressure. The relaxed organ becomes full of clots, extending up to the umbilicus, and all the most characteristic symptoms of concealed post-partum hemorrhage develop themselves. She complained "of being sick at stomach, and of noise in her ears, began to be talkative, and her pulse became frequent." Before long other symptoms came on, graphically described by Baron Stockmar, and which seem to point to the formation of a clot in the heart and pulmonary arteries—a most likely occurrence after such a history. "Baillie sent me word that he wished me to see the Princess. I hesitated, but at last went with him. She was suffering from spasms of the chest and difficulty of breathing, in great pain, and very restless, and threw herself continually from one side of the bed to the other, speaking now to Baillie, now to Croft. Baillie said to her, 'Here comes an old friend of yours.' She held out her left hand to me, hastily, and pressed mine warmly twice. I felt her pulse; it was going very fast—the beats now strong, now feeble, now intermittent."

Here was evidently something different from the exhaustion of hemorrhage: and no one who has witnessed a case of pulmonary obstruction can fail to recognize in this account an accurate delineation of its dreadful symptoms. Surely this lamentable story can only lead to the conclusion that the unhappy and gifted Princess fell a victim to the dread of that bugbear, "meddlesome midwifery," which has so long retarded the progress of obstetrics.

I am, etc., W. S. PLAYFAIR.

CURZON STREET, MAYFAIR, W., November 29, 1872.

Precipitate Labor Less Common than Lingering. — Undue rapidity of labor is certainly more uncommon than its converse, but still it is by no means of unfrequent occurrence. Most obstetric works contain a formidable catalogue of evils that may attend it, such as rupture of the cervix, or even of the uterus itself, from violence of the uterine action; laceration of the perineum from the presenting part being driven through before dilatation has occurred; fainting from the sudden emptying of the uterus; hemorrhage from the same cause. With regard to the child it is held that the pressure to which it is subjected, and sudden expulsion while the mother is in the erect position, may prove injurious. Without denying that these results may possibly occur now and again, in the majority of cases over-rapid labor is not attended with any evil effects.

[As an instance of rapid delivery, I report the following case: In September, 1848, a III-para of twenty-seven, in Philadelphia, was awakened in the night by a violent uterine pain, followed at once by a sensation of approaching delivery. Her husband, a noted accoucheur, was only up in time to receive the fœtus, which came by the same pain that awakened his wife. A second fœtus (both females) soon followed, and the whole labor, in all its stages, occupied but forty-five minutes. In two prior and two subsequent labors there was no marked haste in uterine action. The mother, who is living at seventy-two, has never been a strong woman.—ED.]

Precipitate labor may generally be traced to one of two conditions, or to a combination of both; excessive force and rapidity of the pains, or unusual laxity and want of resistance of the soft parts. The precise causes inducing these it is difficult to estimate. In some cases the former may depend on an undue amount of nervous excitability, and the latter on the constitutional state of the patient tending to relaxation of the tissues.

Whatever the cause, the extreme rapidity of labor is occasionally remarkable, and one strong pain may be sufficient to effect the expul-

sion of the child with little or no preliminary warning. I have known a child to be expelled into the pan of a water-closet, the only previous indication of commencing labor being a slight griping pain, which led the mother to fancy that an action of the bowels was about to take place. More often there is what may be described as a storm of uterine contractions, one pain following the other with great intensity, until the fœtus is expelled. The natural effect of this is to produce a great amount of alarm or nervous excitement, which of itself forms one of the worst results of this class of labor. It is under such circumstances that temporary mania occurs, produced by the intensity of the suffering, under which the patient may commit acts, her responsibility for which may fairly be open to question.

Little Treatment Possible.—Little can be done in treating undue rapidity of labor. We can, to some extent, modify the intensity of the pains by urging the patient to refrain from voluntary efforts, and to open the glottis by crying out, so that the chest may no longer be a fixed point for muscular action. Opiates have been advised to control uterine action, but it is needless to point out that, in most cases, there is no time for them to take effect. Chloroform will often be found most valuable, from the rapidity with which it can be exhibited; and its power of diminishing uterine action, which forms one of its chief drawbacks in ordinary practice, will here prove of much service.

CHAPTER X.

LABOR OBSTRUCTED BY FAULTY CONDITION OF THE SOFT PARTS.

Rigidity of the Cervix a Frequent Cause of Protracted Labor.—One of the most frequent causes of delay in the first stage of labor is rigidity of the cervix uteri, which may depend on a variety of conditions. It is often produced by premature escape of the liquor amnii, in consequence of which the fluid wedge, which is Nature's means of dilating the os, is destroyed, and the hard presenting part is consequently brought to bear directly upon the tissues of the cervix, which are thus unduly irritated, and thrown into a state of spasmodic contraction. At other times it may be due to constitutional peculiarities, among which there is none so common as a highly nervous and emotional temperament, which renders the patient peculiarly sensitive to her sufferings, and interferes with the harmonious action of the uterine fibres. The pains, in such cases, cause intense agony, are short and cramp-like in character, but have little or no effect in producing dilatation; the os often remaining for many hours without any appreciable alteration, its edges being thin and tightly stretched over the head.

Less often, and this is generally met with in stout, plethoric women, the edges of the os are thick and tough.

The effects of prolongation of labor from this cause will vary much under different circumstances. If the liquor amnii be prematurely evacuated, the presenting part presses directly upon the cervix, and the case is then practically the same as if the labor was in the second stage. Hence grave symptoms may soon develop themselves, and early interference may be imperatively demanded. If the membranes be unruptured, delay will be of comparatively little moment, and considerable time may elapse without serious detriment to either the mother or child.

The treatment will naturally vary much with the cause and the state of the patient. In the majority of cases, especially if the membranes be intact, patience and time are sufficient to overcome the obstacle; but it is often in the power of the accoucheur materially to aid dilatation by appropriate management. Sometimes Nature overcomes the obstruction by lacerating the opposing structures; and cases are on record in which even a complete ring of the cervix has been torn off and come away before the head.

Many remedies have been recommended for facilitating dilatation, some of which no doubt act beneficially. Among those most frequently resorted to was venesection, and with it was generally associated the administration of nauseating doses of tartar emetic. Both these acted by producing temporary depression, under which the resistance of the soft parts was lessened. They probably answer best in cases in which there was a rigid and tough cervix; and they might prove serviceable, even yet, in stout, plethoric women of robust frame. Practically they are now seldom, if ever, employed, and other and less debilitating remedies are preferred. The agent, *par excellence*, most serviceable is chloral, which is of special value in the more common cases in which rigidity is associated with spasmodic contraction of the muscular fibres of the cervix. Two or three doses of fifteen grains, repeated at intervals of twenty minutes, are often of almost magical efficacy, the pains becoming steady and regular, and the os gradually relaxing sufficiently to allow the passage of the head. Should the chloral be rejected by the stomach, it may be satisfactorily administered per rectum. Chloroform acts much in the same way, but on the whole less satisfactorily, its effects being often too great; while the peculiar value of chloral is its influence in promoting relaxation of the tissues, without interfering with the strength of the pains.

Various local means of treatment may be also advantageously used. One is the warm bath, which is much used in France. It is of unquestionable value where there is mere rigidity, and may be used either as an entire bath, or as a hip-bath, in which the patient sits from twenty minutes to half an hour. The objection is the fuss and excitement it causes, and, for this reason, it is an expedient seldom resorted to in this country. A similar effect is produced, and much more easily, by a douche of tepid water upon the cervix. This can be very easily administered, the pipe of a Higginson's syringe being guided up to the cervix by the index finger of the right hand, and a stream of water