The whole uterus is narrower from side to side than usual.

On vaginal examination the presenting part is small and soft.

It is not uncommon to mistake a deeply engaged breech with extended legs for a vertex, and if any doubt is felt it is best to have an *x*-ray done.

In an occasional case of breech with extended legs spontaneous version occurs. This happened in a case at Queen Charlotte's recently, in which the *x* rays showed a breech with extended legs. The patient was delivered of a vertex normally. It is a very rare occurrence.

Occasionally an unsuspected twin pregnancy is found by *x*-ray examination in cases where version has failed. In cases of breech presentation where hydramnios is present it is very unusual to be able to maintain a vertex presentation. In mild cases version is easy, but the presentation is apt to recur.

VERSION IN BREECH WITH EXTENDED LEGS.

It is revealed by *x*-ray examination whether the legs are fully extended—that is, whether the child's feet are lying close to the head or not. If the legs are extended but not close to the head, and therefore where there is often fairly good flexion of the child's body, it is possible to turn the child with anaesthesia without risk.

If the legs are extended fully and there is also extension of the child's body it is wiser not to do version, as where this is performed with force under anaesthesia damage may be done, and also there is a risk of bringing a hand or arm down by the side of the head, which will cause difficulty in labour. In such cases it is best not to attempt version.

THE MANAGEMENT OF BREECH LABOUR*

BY

ALECK BOURNE, M.B., F.R.C.S.

OBSTETRIC SURGEON TO OUT-PATIENTS, ST. MARY'S HOSPITAL; SENIOR
OBSTETRIC SURGEON, QUEEN CHARLOTTE'S HOSPITAL

The risks of breech delivery to the child and, to a lesser extent, to the mother, are great enough to call for considerable skill in its management, and, in view of certain new observations which have recently been made, it may be of interest to devote a little time to its consideration. Expressed in figures, the results at Queen Charlotte's Hospital show a foetal mortality of 11 per cent. for primiparae and 8 per cent. for multipara. These percentages may be a little higher than those of some private practices, because a large number of breech deliveries at the hospital are sent there as emergencies in obstructed labour due to extended legs.

Before describing any details of management let us first consider the particular dangers to which the child is exposed. An appreciation of the nature of the risks will assist in understanding the reasons for the rules of management.

CAUSES OF FOETAL DEATH

The causes of foetal death as shown by post-mortem examinations are intracranial injuries, injuries of the abdominal viscera, and asphyxia. Up to recent years it was thought that the predominant danger was asphyxia, but an investigation by the President, Mr. Eardley Holland, and his fellow workers, has shown that the majority (14 out of 16 cases examined) of stillbirths are due to tears of the intracranial septa leading to intracranial haemorrhage. It is not necessary to go into the exact nature of these injuries to-day, but the mere fact of their occurrence shows that sudden severe compression

of the head is the most formidable risk which the foetus has to face. Herbert Spencer showed in 1891 that abdominal injuries of suprarenal capsules, kidneys, liver, spleen, and other organs, as well as intracranial lesions, all involving haemorrhage, were to be found in nearly all still-born children, and that a high proportion of abdominal injuries occurred in breech-delivered babies. He showed that intracranial haemorrhage occurred oftener in still-born breech babies than in spontaneously delivered vertex cases. Spencer considered that these injuries were caused by too great pressure on the baby's body, as often follows premature rupture of the membranes, too rapid delivery, and also improper handling of the child's trunk as it is in the act of being delivered. Some of these risks are unnecessarily incurred in an attempt to deliver quickly to save the child from asphyxia, the result of age-long teaching that this is the greatest danger. On the other hand, too great deliberation in extracting the head will certainly cause asphyxia. In the management of breech labour we are therefore sailing between two rocks, and it is incumbent upon us to steer so carefully as to avoid collision with either.

Considering the lesser danger first—*asphyxia*—we have little control over the death of the child during the first stage of labour by prolonged pressure after a rupture of the membranes. Whether it is due to true asphyxia, caused by pressure of the uterus on the cord and placenta against the child's body, or by depression of the medullary centres, we are often powerless to expedite the dilatation of the os without risk of serious injury to the mother. The child is more likely to suffer from the almost constant pressure of an irritable uterus than from the effects of strong but separate rhythmic contractions with good relaxation between the pains. If, therefore, the uterus does not relax sufficiently, and the foetal heart is quickening or failing during the first stage, it is well to give the mother morphine and hyoscine hypodermically, and chloral by the mouth. A slow dilatation, especially after half completed, can often be expedited by pulling one foot down into the vagina. When the os is fully, or nearly fully, dilated, it is well to examine vaginally to find out whether the feet are within reach through the os, or out of reach—that is, displaced upwards by extended legs. I advise that this should be done in order that if the legs are extended they should be brought down at the beginning of the second stage of labour, except the child be so small that no obstruction need be anticipated. Much discussion has taken place on the question of whether extended legs should be brought down unless, or until, actual delay due to obstruction has occurred. My own views on this point are quite definite, and are founded on painful experience gained during the early days while a resident medical officer. I believe that it is wise to bring down at least one leg, and often two, depending on the size of the baby, in all cases as early as the os will conveniently and safely admit the hand.

DIFFICULTY DUE TO EXTENDED LEGS

Before we go further, I would like to spend a moment in explaining how I think extended legs cause difficulty in labour. The text-books state that the delay is due to the inability of the child's spine to flex laterally and follow the curve of Carus of the birth canal, by reason of the splinting of the legs as they lie alongside the child's abdomen and chest. I could imagine that the spine might be splinted if the two rigid bars were bound to the spine after the manner of actual splints, but it is absurd to suppose that the spine can be prevented from making a relatively small curvature laterally by two non-rigid limbs which are not in any place bound to the dorso-lumbar spine. Mere apposition of the legs to the child's abdomen

* Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Eastbourne, 1931.

cannot have any possible effect in preventing the spine flexing in any direction. The first attempt to bring down the leg in a case of impacted breech delivery makes quite clear the reason for delay or obstruction. As the hand is passed up alongside the child's impacted trunk it is readily conscious of the tightness of the fit, and how fully the available pelvic capacity is filled by the body of the child. If a cross section through the abdomen and thighs, with the legs in the extended position, be examined, it can easily be realized what a great deal of extra pelvic accommodation is required to pass the child without difficulty. The mechanics of the difficulty are merely one of relative sizes of the cross sections of the body and the pelvic cavity. When the child is quite small there is plenty of room, and obstruction does not arise, though, surely, if the legs acted as splints even the premature spine would also be unable to flex laterally. Lastly, in most cases the difficulty is relieved by bringing down one leg—that is, by reducing the cross section of the foetus. But if one leg is left extended, it should, according to the orthodox theory, be sufficient to act as a splint and prevent spinal flexion.

I believe, therefore, that the indication for bringing down the leg is present in all cases where the child is of average or large size. I admit that here and there we see the seven- or eight-pound baby expelled with the legs in the extended position, and if they had been brought down in such a case the operation would have been done unnecessarily, but, as I said at the outset, it is a far more serious blunder to fail to bring down legs before impaction. The result is the inevitable difficulty of a struggle to reach and flex the legs with all the risk of vaginal and bladder injuries and foetal fractures. All who have had this experience in a really difficult case will, I feel sure, agree with me that it is a lesser mistake to bring the legs down easily at an early stage, before deep descent into the pelvic cavity, in an occasional case where it might not have been absolutely necessary. Hence, my rule is to examine for the feet when the os is nearly fully dilated, and, if not felt, to pass the hand up and bring one, or both, down after making an estimate of the probable size of the baby. Having brought the legs down they should be folded, as far as possible, in the normal position by the buttocks. The reason for this is twofold. First, it may be possible to attain a little wider dilatation of the os as the uterus pushes both buttocks and legs through; and, secondly, that the sight of a foot at the vulva provides such a strong stimulus to pull on it in order to hurry the labour that it is better to avoid the means of the temptation. It is of the greatest importance not to pull on the child, especially if the mother is a primipara, at this stage. I believe that more babies are lost in breech labour indirectly by this cause than by any other in the management.

EXTENDED ARMS

When, therefore, the legs are in normal position, with the feet alongside the buttocks, the accoucheur should wait with the utmost patience. The only assistance that may be given for ordinary mild delay is pressure on the fundus with each pain. As the feet appear at the perineum they should be disengaged, but still there should be no pulling on the child, and as the body appears it should be wrapped in a towel, and grasped by the ankles only. At this point it is, as stated above, most important not to hold the child's body. It is by this rather excited grip of the abdomen around the loins that the suprarenals and other viscera are liable to be injured. A grip of the ankles is easy and firm. At this stage an anxious moment arrives. While the body is carried forward away from the perineum by the right hand gripping the ankles, a

finger of the left hand is passed along the child's chest to find the elbows. If they are not felt folded on the chest, the arms are extended, and a most difficult manoeuvre is necessary to bring them down. Extended arms are, in my opinion, the most serious of the common complications of breech labour. It is not only usually difficult to pass sufficient of the hand past the child's body to reach the arm high enough to flex it, but it all has to be done fairly quickly. When extended legs are being flexed, the operation can be done with the greatest deliberation without harm, but if too much time is taken up in flexing the arms the child may be lost by asphyxia.

It is necessary to remember that everything possible should be done to avoid extended arms. The cases fall into two groups. The first group is primary—that is, the arms are extended when legs are extended as a foetal attitude before labour begins. This was once shown by the late Dr. Briggs of Liverpool, by a very early x-ray photograph during pregnancy, before the sixth month, while, since this publication, we have very often seen extended arms in x-ray photographs taken at the end of pregnancy. Of this primary group it is obvious that we have no control. The secondary extension is produced during labour entirely by pulling on the foetus during delivery before the elbows can be reached and hooked out from the perineum. If the exciting cause be pulling on the child's body, the predisposing cause is insufficient dilatation of the cervix as the comparatively narrow breech passes through it tightly stretched. We can imagine, as the child's body, with the arms properly folded on the chest, scrapes past the thin, tight edge of the os, the elbows will be caught and lifted up above the shoulders. Not only is the incompletely dilated os responsible for this displacement of the arms, but also the too close pressure on the child's trunk by the incompletely stretched vagina which is liable to occur in all primigravida. We can see, therefore, now the useful effect of allowing both breech and legs, in a flexed position, to pass through the os and vagina in one mass, for they form a larger mass than the breech alone with both legs either extended or brought down, and, therefore, the os will be dilated to a greater extent, with consequently a smaller risk of the arms being displaced upwards.

Recovery of the extended arms is clearly described and illustrated in all the text-books, and need not be given here. There is a useful tip, however, which I learnt by seeing Potter deliver a breech presentation. Taking care not to pull too hard on the body so as to imprison the arms firmly between the head and the brim, press the axillary border of the scapula firmly inwards. This will have the effect of bringing the humerus downwards within reach of the internal hand. Observation of the baby's arm and scapula will show that the humerus can only be fully extended above the head by a movement of the scapula outwards, and it can easily be demonstrated that pressure of the scapula in the opposite direction will have a corresponding effect on the movement of the humerus.

DELIVERY OF THE HEAD

On the delivery of the head largely depends the fate of the child. If done too quickly from a primigravida, especially if the head is not well flexed, there will be too sudden moulding of the cranial bones, with the serious risk of tears of the dural septa and intracranial haemorrhage, while if too much time is allowed, the child will die of asphyxia. Of these dangers the commonest is to deliver the head too quickly. As a stimulus to excited action we have, first, our teaching, and instinctive knowledge of the possibility of asphyxia, and, secondly, the alarm occasioned by the frequent sight of the child's chest attempting premature inspirations. We have been taught

that by these movements the child is sucking in quantities of liquor amnii by which it will be drowned. Surely the child's mouth and nose are pressed tightly against the wall of the vagina, and not free in a bath of fluid, so that literally no liquor amnii can be inspired at this stage of delivery. It is a fallacy that the child can drown himself during extraction of the head, and therefore the inspiratory movements should not influence the accoucheur during his efforts to deliver the head.

The first point to try to be sure of is whether or not the child's head is flexed as it lies in the antero-posterior direction—that is, with its back facing anteriorly. Difficulties will depend more upon absence of flexion than size of head and pelvis; in fact, where the pelvis is normal incomplete flexion is the cause of nearly all difficulty. When, therefore, can we *suspect* that flexion will be imperfect? First, in all cases in which legs and arms have been extended, then in most cases in which the child's body has been pulled down by the contracting uterus, and, rarely, in some cases of flat pelvis. We can, however, *expect* complete flexion in all multigravida where legs and arms have been normally flexed, in all small or premature babies, and in nearly all cases in which the delivery of the child's body has been accompanied by firm pressure on the head through the fundus of the uterus. The last contingency implies the necessity in all cases of instructing the nurse to press firmly on the fundus during the delivery of the body.

THREE CLINICAL TYPES

In practice, therefore, we have three clinical types. The first is where a multipara has delivered herself of the legs, body, and arms normally and easily. Here we may assume the head will be flexed and give no trouble. The direction is to deliver by the simplest method, which is to grasp the feet in the right hand and lift them gently and gradually up to the mother's abdomen, while the left hand, or a nurse, presses firmly above the symphysis. No other manipulation, or grasp, of the child's body is necessary.

The second clinical type is the primigravida who has been slow and "difficult," possibly with some slight general contraction of the pelvis. Here the head *may* not be fully flexed, and, therefore, for these patients it is well first to pass a finger up to the chin and feel whether it is pressed well down on the sternum. If it is flexed, deliver the child by a grip which will allow some harmless traction—that is, by the so-called Prague manoeuvre. Take the feet in the right hand and place the first and second fingers over the child's shoulders. Traction is made on the shoulders, while the feet are carried to the mother's abdomen as the head is pulled down, while, again, the nurse presses firmly above the symphysis. Care must be taken to deliver the chin and face slowly from under the perineum; in fact, as soon as the mouth and nose are liberated there should be a pause for the sake of both the head and the perineum.

The third clinical type is that in which we can assume that the head is extended; for example, where we have already brought down arms and legs from the extended position. It is also likely to be extended if it does not descend well through the brim, and thus appears to be high up with stretching of the neck. Here the "jaw traction" method should be adopted. The right hand is passed into the pelvic cavity so that the index finger slips readily over the lower jaw into the mouth, the child's body lying astride on the right forearm. The first and second fingers of the left hand are placed over the shoulders. Before there is any traction made on the shoulders the head should be flexed by gentle traction on the lower jaw and simultaneous firm pressure on the fundus. Usually the head can be

made to flex by this manoeuvre, and then firm traction is made on the shoulders, which are, as the head descends, carried towards the mother's abdomen.

Some accoucheurs prefer to deliver all difficult cases by forceps, but of this I, personally, cannot speak from experience.

THE PROGRESS OF ANAESTHESIA*

BY

R. J. CLAUSEN, M.C., M.B., B.S.

It is no doubt fairly generally believed that very considerable progress has been made in recent years in the art or science of anaesthesia, and that great benefit has resulted therefrom to those undergoing surgical operations. New drugs, machines, and methods have been introduced from time to time with a greater or less flourish of trumpets, the echoes of which have occasionally reached the public through the daily press. It has in fact occurred to me on more than one occasion that a patient has remarked in the course of preliminary conversation how much these things have improved since the occasion of a previous operation, perhaps ten or twenty years ago, and what wonderful people we doctors are.

Such a state of mind is doubtless very beneficial to the patient, but the flattery though pleasing to us seems hardly justified if, as may well be the case, nothing more remarkable is about to be given than ether or chloroform on a mask, perhaps preceded by a hypodermic injection of 1/100 grain of atropine. However, there is no doubt that the resources at our command have considerably increased, and the object of this paper is to suggest that full advantage has not been taken of them, to inquire into the causes of this neglect, and, if possible, to suggest remedies for it.

It will be obvious that without a very exhaustive inquiry it is impossible to assess the state or progress of anaesthesia as a whole throughout the land with any degree of accuracy, and an incomplete inquiry may be as misleading as none at all or even more so. For operative surgery is carried out not only in the accessible city hospitals but also in numberless small hospitals, nursing homes, and private houses scattered over the country. An example of an incomplete inquiry was provided in a recent number of a periodical devoted to anaesthesia and analgesia, in which a writer made a rather ambitious attempt to survey world conditions. Such an article must be either very general or quite complete, but the author made the mistake of mentioning a few names of individuals; I was mentioned, for instance, as having the only large experience of ethylene in this country, but I am sure that the President of this Section, to name only one other, has a very much greater experience of this anaesthetic than I can claim.

For the purposes of this paper, therefore, I have not attempted any inquiry whatever, and it follows that any criticisms I shall make may be entirely unjustified. A good deal of information may, however, be gathered and inferences drawn from articles and correspondence in the journals, conversation with colleagues, the equipment of cottage hospitals and nursing homes, and so on. Further, to establish my credentials at any rate as regards London, and to avoid any suggestion of individual prejudice, I may mention that during the last ten years I have held resident or honorary anaesthetic appointments in nine hospitals, of which two have medical schools attached. It should also be understood that conditions in this country alone

* Read in opening a discussion in the Section of Anaesthetics at the Annual Meeting of the British Medical Association, Eastbourne, 1931.