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Thesis:

The Use of the Forceps
in Labour.

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Introductory

I have no fresh discovery to relate, but that what I have to say regarding the use of the forceps, is of sufficient importance to warrant me in giving the results of my experience.

In obstetrics as in medicine generally, a great deal remains undiscovered. We have still to learn what determines the sex of the ovum, and nature of the specific poison of puerperal fever; i.e. whether it consists of living organisms or is due to other putrefactive agencies. Such questions, however, belong to the realm of theory, and though, no doubt, very important, yet to the medical practitioner, the acquaintance with the instruments

of his profession, the knowledge of the time when to use them, and the manner of doing so are greatly more important. The instruments science has supplied the obstetrician with are numerous, and from the delicate nature of his work, accurate knowledge of them, and of the way and time to use them is of the greatest importance.

Among these instruments the Midwifery Forceps, holds a high place in so far that it has effected a great saving of life, and a large diminution of suffering, and has been the means of largely reducing the number of gynaecological cases. The introduction of the forceps and its skilful employ:

ment led to the rescue of midwifery from female practitioners, and brought it under the care and culture of scientific physicians and surgeons; hence I think we are warranted in predicting that its more frequent use at the present day will operate in retaining this branch of medical practice in the hands of accoucheurs.

History of the Forceps.

The ancient physicians of Arabia had knowledge of a midwifery instrument formed upon the same principle as our forceps, but it is unknown at what period it was invented. According to Dr. Aveling the re-invention in England is due to Dr. Peter Chamberlen who lived about 1640. During his lifetime and that of his brother Paul the instrument was kept professionally a secret, and in the hands of the Chamberlen family success attended its use; for in 1716, Dr. Hugh Chamberlen, says in a preface to his English translation of a work on midwifery by Mauriceau referring to the use of the crotchet,

"but I can neither approve of that practice, nor of those delays, beyond twenty-four hours, because my father, brothers, and myself (though none else in Europe, as I know) have, by God's blessing and our industry, attained to and long practised a way to deliver women in this case, without any prejudice to them or their infants, though all others (being obliged, for want of such an expedient, to use the common way) do and must endanger, if not, destroy, one or both, with hooks." Gradually the secret, oozed out, and became general property, about 1715, when every one thought he could use the forceps, and

consequently a great deal of mischief was done from its use in cases wholly unsuitable.

As a result of this unscientific procedure, the instrument was for a time, comparatively thrown aside, and was only brought into requisition as a last resource. The practice of our day now recognises the importance of a logical appreciation of the forceps, and to that extent it has been the gainer. Within a certain range of action, all unprejudiced operators use it without hesitation.

The Chamberlen forceps, as perpetuated, were articulated together at the shank by means of a pivot with, or without, a screw. The essential difference of our

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instrument, consists in what is called the English lock, which was contrived by Smellie. There are, however, many minor varieties of form.

Formerly, for all operations above or below the brim only one kind of forceps was in use. It had only one curve, adapted to the spheroidal shape of the child's head; otherwise the instrument was straight. Levret, a French obstetrician, invented a forceps having an additional curve of the blades, corresponding with the curved axis of the pelvic canal, and hence called the "pelvic curve". The fenestra are thus directed forwards from the perinaeum, however high

the situation of the head. In addition to extra length there is also added to the "long forceps" this second curve.

Such an instrument, can be used whether the head is above, or below the brim, but it is more convenient to have a short forceps, which may either be straight or curved for those cases where the head has entered the pelvic cavity.

Action of the Forceps.

The forceps acts principally as a means of traction, but its mechanical action also includes a double lever action, and compression, both, however, subordinate to tractile force. The place of uterine action is supplied by traction in the proper axis of the parturient canal, conducted at the time of the pains, only, as the head makes no advance, during the cessation of uterine action, while in complete inertia of the uterus nature is imitated by applying extracting force corresponding to the ordinary duration of the pains: rapid extraction ought not to be indulged in, unless under excep:

tional, circumstances. It is also necessary to observe the natural movement of rotation to either side performed by the head, according to position, and if necessary, assisted by "humouring" the forceps.

A slight degree of Compression is always essential in order to prevent the blades slipping; but sometimes, a secure hold of the head, cannot be obtained without much force being expended in this manner, only during traction however, for sustained pressure, especially if excessive, may endanger the life of the child. Excess of compression is avoided by judicious traction and leverage, and in using an instrument

having the tips of the blades one inch, or at least six eighths of an inch apart.

The mechanical effect exercised through leverage, depends upon a combination of two levers, each having its fulcrum in the lock; this part of the mechanism of the instrument is situated between the handles and the blades. This allows an alternate lateral lever movement of the nature of a pendulum by which force can be brought to bear upon each side of the head successively, and, as an aid to direct traction, is not un frequently required, care being taken not to carry the swaying action too far.

Application of the Forceps.

The tyro generally experiences anxiety while introducing the blades, in accordance with the usual instructions, lest the soft parts of the mother receive injury, but gradually the process, from practice, is accomplished without fear of this injury resulting.

The sense of touch becomes developed whereby ^{a contact almost as efficient} ~~an agency~~ tactile ^{information as that of the fingertips} ~~is~~ nature, is established between the accoucheur and the subject, safely directing the blades to the child's head. The best grasp obtained is when they pass over the parietal protuberances, and always, if the case will admit, fixing the blades upon each side of the child's head; a procedure which does not require

as an essential condition the ear
 to be felt, provided the position
 can be made out. But in
 circumstances requiring the use
 of the forceps when the head
 is at the brim, the obstructing
 cause to the labour is frequently
 owing to moderate contraction
 of the conjugate diameter, and
 to grasp the head in the opposite
 oblique diameter of the pelvis
 would necessarily add to the
 cause of the obstruction, so, in
 such a case, the blades are in-
 troduced along the respective
 sides of the pelvis, and the grasp
 made in its transverse diameter,
 which is the position that the
 head generally occupies at the
 brim. At first sight it might
 appear that the grasp of the head

would be found occupying its antero-posterior diameter, but this is not exactly the case, for the blades have a tendency to adapt themselves to one or other oblique diameter of the pelvis by which the head comes to be secured in a diagonal manner, one blade being found behind the ear, while the other is situated over the frontal bone on the opposite side, and consequently causing the handles to be more apart. Evidence for a favourable result is indicated when the forceps can be properly locked. These are the rules for our guidance, but it will occasionally happen, that owing to the nature of the case, our method of application

will depend upon how the pelvis is circumstanced as to room, the direction given to the blades being governed solely by the maternal structures.

They are, therefore, introduced in the direction in which most room is found. The application of the short and the long forceps is conducted, on two different principles, the short being governed by the position of the child's head, and the long solely by the course of the pelvic axis, it must follow the pelvic axis irrespective of the position of the foetal head: forceps with a double curve are thus essential, and should also be sixteen and a half inches long, made of material

ensuring strength with light-
ness, and having handles of
sufficient size to be grasped
by both hands.

Mechanism of Parturition

Before proceeding, more particularly to consider the cases requiring the use of the forceps, our attention may with advantage be directed to a sketch of the mechanical laws which govern labour; for, the accoucheur, who is not acquainted with the keystone of the art of obstetrics, cannot render scientific, instrumental aid.

There is, a determinate, relation between the pelvis, and the child's head, during the whole time of labour. The long diameter of the foetal, cranium (occipito-frontal) may lie at the brim of the pelvis, in the conjugate, oblique, or transverse, diameter, or in any diameter between these, and enters the pelvis in either the right, or left oblique diameter, most frequently the right: the centre of the occiput is directed towards the ilio-pectineal eminence on the left side, and the forehead is

directed to the right sacro-iliac syn-
 chondrosis. That is the First Position.
 Before the head reaches the pelvis
 so as to assume the first position
 its long diameter is parallel to
 the brim with the face to the right,
 but on entering the pelvis, it does
 so in the oblique diameter, and
 at the same time ~~the head itself~~
 assumes the occipito-frontal
 obliquity with the occiput directed
 downwards, and the chin bent
 on the sternum. This approximation
 of the chin towards the sternum
 is due to the vis a tergo, acting
 upon the foetal vertebral column,
 which by its curving gives addi-
 tional impetus to the movement.
 As the case proceeds, the long diameter
 of the head gradually assumes a
 parallelism with the conjugate

diameter of the pelvis. This change, is effected by a movement of rotation, which is greatest at the height of a pain, while as the pain passes off, the head resumes somewhat its former position. When accomplished, the occiput looks forwards to the sub-pubic angle, and the forehead backwards to the hollow of the sacrum. Rotation backwards of the occiput is prevented by the left ischial spine, and from the situation of the forehead immediately behind the right ischial spine, it is unable to rotate forwards. Thus, the head is compelled to move forwards, and at last the occiput becomes wedged against the pelvic arch, and remains stationary until the forehead and face descend along the perineum, when the direction given to the head

is downwards and forwards, owing to the propelling force being the resultant of that from above and that below. The coccyx yields about one inch and the head at last emerges under the pubic arch, sustaining the movement of extension.

During the progress of the head from brim to outlet of the pelvis, it has hitherto been held, in accordance with the view of Naegele, that there existed from first to last a bi-parietal obliquity of the head by which one ear is approximated to the corresponding shoulder. Now, however, the most recent writers are opposed to this doctrine, and hold that no such bi-parietal obliquity forms an element of the mechanism of parturition: their argument being in favour of the

parallelism or "Synclitism" of the bi-parietal and cervico-bregmatic planes of the child's head, with the planes of the pelvis and the vagina.

The Secunda Positum is the converse of the first, and cæteris paribus, undergoes the same mechanism. Our subject is more particularly concerned with occipito-posterior positions as the use of the forceps, in them, is ~~of~~ not unlikely required.

Occipito-Posterior Positions.

ON account of the forehead presenting forwards, the mechanism of this class of labours is more difficult.

In all cases in which the forehead is borne forwards, the ordinary process of moulding is reversed, and the head presents a remarkable appearance from the flattening of the occipital, and bulging of the

frontal regions.

Third Position. This bears the same relation to the fourth that the second does to the first, and on that account, only calls for description. The head enters the brim of the pelvis in the right oblique diameter, with the forehead turned towards the left ilio-pectineal eminence, and the occiput to the right sacro-iliac synchondrosis. The posterior fontanelle is generally lower. The labour may terminate in two ways. The rule is, that rotation of the head takes place into the second position. The posterior fontanelle descends and flexion of the head becomes so complete that its occipito-mental diameter approaches the axis of the brim, and presently, a rotation is performed equal in extent to the quadrant of a circle, and the head

occupies the second position. a capacious pelvis facilitates this change; for should the head pass down so that the occiput takes up a position behind the right ischial spine, this presents a barrier over which the occiput cannot pass, and, consequently rotation is rendered impossible. The head is compelled to descend, which it does by the occiput passing along the sacrum and perineum, greatly increasing the risk of laceration of the latter structure.

In the second mode of termination of occipito-posterior positions, the forehead continues to descend, and may pass under the pubis, as the difficulty of rotation in those cases is increased, in consequence of the preliminary flexion of the head, necessitating that the occipito-frontal

diameter be thrown across the pelvis.

In a few cases rotation of the head on its transverse axis may occur to the extent of forming a presentation of the face; and as the chin is forwards such a termination is favourable.

Face Presentations, Cranial, are converted into facial positions by a simple movement of extension of the head on its transverse axis. They follow the same mechanical laws as those which govern the vertex, and are, ^{also} divided into four positions.

The chin is regarded as the mechanical equivalent of the occiput, and from this, it follows, that the natural termination of all face cases is that in which the forehead is backwards. Of the two Mento-Anterior varieties, ^{that called} the fourth is the most frequent

Fourth Position of the Face. On exam-
 ination the long diameter of the face
 (fronto-mental) is found situated
 in the left oblique diameter of the
 pelvis, with the forehead towards
 the left sacro-iliac synchondrosis,
 and the chin to the right ilio-pu-
 bical eminence. When the face
 reaches the floor of the pelvis, the
 chin is directed by the right ischial
 spine downwards and forwards
 along the corresponding anterior
 ischial plane, while the forehead
 glides along the left sacro-sciatic
 ligaments towards the hollow of
 the sacrum. At the perinaeum
 the chin moves forwards under the
 pubic arch, and by a movement
 of flexion the face is born ~~upwards~~
 forwards and upwards.

Cases requiring the Use of the Forceps.

This part of our subject may be arranged under three heads, comprehending, 1st Uterine Inertia; 2nd Mechanical Obstruction; and 3rd Threatened danger to the life of Mother or child.

First, Uterine Inertia or failure of the vis à tergo is a frequent cause of delay in parturition. The labour may owe its postponement to feebleness of uterine contraction or there may be absolute paralysis of action; and disease of the auxiliary forces may have a share in the cause.

Delay, beyond the normal time, which varies with individual idiosyncrasy, is attended with danger both to mother and child; and in proportion to the length of delay, beyond the second stage of labour

the risk increases. In a certain pro:
 portion of cases the unaided powers
 of nature cannot complete the
 labour. The effect of this long con:
 tinued pressure on the maternal
 soft parts may, not unlikely, be
 followed by inflammation with
 its sequelae, and at all times, occasion
 more or less general disturbance of
 the system, leading to a low physical
 tone in which floating disease may,
 find a nidus. We recognise the
 dangers which accompany ^{can} unduly
 protracted labour, but it is no un:
 common thing to find that a rest
 in the process enables the uterus to
 regain sufficient strength to expel
 the child, so that too eager resort
 to the use of the forceps is not to
 be recommended as a mode of
 treatment absolutely necessary

in all cases of delayed labour. On the other hand with the head low in the pelvis our practice is more conservative by early application than resort to its use as a last resource. The mother is ^{spared} ~~saved~~ much suffering, makes a better recovery and the life of the child is probably saved. The forceps is an operation of election, having the important difference from its alternatives of certainty in action, without their attendant danger to infantile life.

In many cases where the head is delayed low down in the pelvis, only a slight *vis à fronte* is required to supplement the deficient *vis à tergo*; and, as a rule, when the brim has been passed by the head, it is seldom the

catheter is required, following the use of the forceps, as the maternal parts do not sustain any injury during extraction, ^{which might} leading to inflammation.

In occipito-posterior positions if it be thought advisable to attempt rectification, this can only be done at two stages of the labour: either when the head is free at the brim or when it has reached the floor of the pelvis. It is related in Leishman's System of Midwifery that "more than a century ago, Smellie, after having repeatedly but in vain attempted to drag the head through in a case of this kind, both thought him of trying to turn the face backwards into the hollow of the sacrum." Success attended his first attempt—a result which

"gave him great joy," and opened his eyes to a new field of improvement in the method of using the forceps in this position."

It is needless to attempt rotation when the head has passed the brim, but has not as yet reached the floor of the pelvis, for the ischial spines interpose a barrier which it is impossible to surmount, and if we do not succeed with the finger, alone, when the head is free at the brim, it is as a rule, much better to leave the case to nature, which at this stage in many instances effects a favourable change in faulty positions. But should the head engage the pelvis, with the occiput situated posteriorly, it then becomes our duty to see that the

forehead by means of the finger is pressed upwards, so as to promote the preliminary flexion of the head. The pressure is made during a pain in the direction of the iliopectineal eminence, on the side in which the forehead lies; and as the case proceeds this may have the effect of causing a recession of the frontal pole of the long diameter. But the process can be materially assisted by extractive force being directed from the occiput, with the forceps, after having used pressure with the fingers in the first instance. When the forehead is high enough to pass above one ischial spine, and the occiput low enough to pass beneath the other, a rotatory movement is given to the forceps, which will

have a direction corresponding to what nature would do under the circumstances: the third position naturally terminating in the second, and the fourth position as the first. It sometimes happens, as I have, myself, experienced, while using the forceps in occip. its posterior position that the head may be directly expelled before this rotation takes place there being no indication on the part of nature to effect rotation, while the head remained within the lower part of the parturient canal, no aid of a rotatory nature was considered necessary, but when the head was expelled under direct traction the rotatory action took place by the effort of nature alone.

In all cases of occipito-posterior position we should direct our efforts so as to get the occiput over the Perinaeum.

In presentation of the face, should the forceps be required from uterine inertia, so long as the chin is turned forwards, the rules of operative procedure are the same as those which have been described for occipito-anterior positions of the vertex, mutatis mutandis. But in those cases where the head descends into the pelvic cavity with the chin situated posteriorly, two methods of treatment may be adopted. In theory, that which seems best is rotation with the straight forceps. Success has also been obtained by the application of extracting force over the occiput,

so as to convert it into an ordinary
cranial position.

Pelvic Deformity. In this condition the laws of the mechanism of parturition are rendered inoperative from disturbance in the relation of the various pelvic diameters, and this may be due to some abnormality emanating either from the hard or soft structures or both combined. But the important causes of pelvic distortion are Rachitis and Malacosteon; and from the circumstance that the one has its beginning in childhood, while the other pertains to adult life, a distinction of practical importance to the accoucheur, exists between the two diseases. In rachitis we are dealing with the effects of disease, in which the pelvis is often more dense in structure, but in malacosteon the disease is going on, so that

there is the possibility of some yielding of the bones, sufficient to admit of the expulsum of the child by nature, or with the aid of the forceps. The pelvic deformity characteristic of each disease is opposed in direction, the rachitic pelvis being reduced antero-posteriorly, and the osteo-malacic transversely.

Two varieties of conformation of pelvis require to be mentioned, specially.

The pelvis *aequaliter justo-major*, and the pelvis *aequaliter justo-minor*. In both, the shape and relative measurements are normal, while symmetry is respectively increased or diminished. Where all the diameters are less than usual, it is evident that a special impediment to the labour exists, which allows no compensation in one direction for a deformity

existing in another, but on the other hand pronounced flexion^{of the head}, may on that very account take place high up in the pelvis, rendering the anterior fontanelle inaccessible, whilst the posterior fontanelle comes low down and lies near the line of the pelvic axis: in this our index is to be found for favourable application of the forceps. Other varieties of pelvic deformity - as the funnel-shaped pelvis, coccygeal anchylosis, small tumours, &c., may call for the use of the forceps, and in all of them the dipping of the occiput makes us hopeful of securing a satisfactory grasp and a safe extraction. The variety of most frequent occurrence is that in which the conjugate diameter of the brain is diminished. As to

the best method of its detection, the
 finger claims preference, being compar-
 atively easy of application, and does
 not require the same degree of caution
 as mechanical appliances. The degree
 of pelvic contraction that requires and
 permits the application of the forceps
 ranges from a line less than 4" to 3 $\frac{1}{4}$ "
 in the conjugate diameter of the brim;
 and its employment may sometimes
 be successful in a pelvis in which
 this diameter is even reduced to 3",
 but in such a case the head must
 be small; for if it be apparent
 that the head cannot pass without
 a reduction in its bulk, persistence
 at extraction is not justifiable, seeing
 that diminution in one direction is
 usually compensated by increase in
 another. The ^{method of} application of the forceps
 in pelvic deformity depends upon

the nature of the case. Generally, it may be said the blades are introduced in the direction in which most room is found and where the firmest grip of the head can be secured. In contraction of the conjugate diameter where arrest of the head takes place at the brim, the grasp is made in the transverse diameter of the pelvis, obviating increase to the already diminished antero-posterior diameter.

Allusion to this part of our subject was made in considering the Application of the Forceps, and in further dealing with the matter I would state as the result of my experience that in contraction of the pelvic brim, depending upon the undue projection of the sacral promontory, where the head has to some

slight extent engaged the brim, the obstruction has been in many such cases successfully overcome by applying the blades to the sides of the child's head, and using a ^{double} curved forceps 13½ inches long. But when the head has not engaged the brim, owing to the obstruction, long, 16½ inch double curved forceps is imperative in order that the extractive force be directed according to the brim axis. Where dexterity has been acquired from frequent performance of the low operation, the danger of the use of the forceps with the head in this situation is to a great ^{degree} ~~may~~ avoided. Caution as to the amount of extractive force ^{expended} is necessary, and we are only justified in persevering if after due elapse of time there be some

indication of yielding. Perseverance conducted in a cautious manner, not unfrequently succeeds. Leishman in his work on Midwifery, page 554, writes that "If, in a deformed pelvis, the face presents at the brim, turning is better than the long forceps in most cases; and if the chin is backwards, there can be no doubt about it." This leads us to consider the ^{general} question of Turning versus the Long Forceps. Podalic Version was practised long before the forceps was discovered, but with the extended knowledge of the instrument, turning fell into disuse. The operation was revived by Simpson, who adduced able arguments in its favour, but it has been said that turning in cases of contracted brim was

adopted more because he had not forceps long enough. He pointed out the advantage in the manner in which "the transit of the cone shaped head of the child, through a somewhat narrow brim, is facilitated by the narrow end of the cone (or bi-mastoid diameter of the head) being made to enter and engage first in the contracted brim; and the hold which we obtain of the extracted body of the child enables us to employ so much extractive force upon the engaged foetal head, as to make the elastic sides of the upper and broader portion of the cone (or bi-parietal diameter of the cranium) to become compressed, and if necessary indented between the sides of the contracted brim."

Many accoucheurs holding this opinion substitute turning for the long forceps, as it has hitherto been held that the operation can be performed at an earlier stage of labour, with the os and cervix, only dilated to the extent of allowing the passage of the hand, but it has also been proved (as we shall see further on) that for the safe employment of the forceps full dilatation of the os is not absolutely necessary. Under both methods of delivery the quality of dilatability of the os, being present, facilitates success, for, although, full dilatation has not occurred, if no resistance be experienced to its gradual dilatation, careful extraction with the hand or instrument will not occasion injury to a soft

expanding os. Many of the risks to the mother of the ordinary operation of turning may be avoided by having recourse to the bi-polar method of version, but in cases of moderate contraction of the pelvic brim, in my opinion the long forceps should first receive a trial as being still a safer operation to the mother, and the child has a better chance of life; for in version, whilst the head is being moulded to the requirements of the brim, the cord is undergoing compression. A prolonged degree of moulding in presentation of the head may be undergone with impunity as the circulation is not interfered with, and the child does not suffer much from the compression of the head; but in

footling cases, do what we will, the cord can scarcely be preserved from fatal pressure during the delay which ensues when the head engages in a contracted brim. When these contingencies are taken into consideration along with the difficulty which always exists of ascertaining the exact dimensions of the head and pelvis, our safest practice, then, is to make a cautious attempt with the long pelvic curved forceps, making traction with due regard to the varied direction of the pelvic axis, and failing that, to proceed at once to turn.

Is the application of the forceps ever necessary or useful before the full dilatation of the cervix uteri?

This question has been adverted to in the previous part of our subject, and answered in the affirmative. We now proceed to state our views more fully.

The definition of the first stage of labour, according to Désormeaux, comprehends that variable period, from the beginning of labour until complete dilatation of the os uteri. When the first efficient uterine contractions have resulted in some opening of the cervix, the membranes commence to protrude and gradually form the "bag of waters," to which the special function pertains of effecting the further dilatation of the os by means of hydrodynamic

force, besides protecting the head from all pressure during the first stage. In addition to the operation of this mechanical force, the longitudinal fibres of the uterus which are directed towards the cervix, tend to drag the margin of the os upwards at the same time the fluid is being forced downwards. Should the membranes rupture prematurely, dilatation of the os will depend upon this subsidiary force, and thus become a very slow process, attended with danger from pressure to the os itself. But on examination the os may be found dilatable so as not to offer any obstacle to the passage of the child's head, and consequently not forbid the application of the forceps for

the purpose of overcoming the osseous mal-formation, the principal cause of delay. In thus dealing with the case, we are here, especially, impressed with the necessity of avoiding rapid extraction, even if such were possible with brim contraction; for at this stage of labour in which the os is undergoing dilatation haste in delivery would probably result in laceration.

The operation may sometimes occupy three or four hours, but as long as urgent symptoms do not show themselves our duty lies in imitating the natural process by which the various soft structures become prepared for the passage of the head. In his report of the Rotunda Hospital for 1872, Dr. George Johnston remarks: "In thirty-five instances, we

were obliged to employ the forceps before the os was fully dilated, twenty-seven being primiparæ and eight multiparæ. In thirty of these, the interference was considered necessary in consequence of the os uteri continuing undilated, apparently the result of too early rupture of the membranes and the escape of the liquor amnii." Further, to illustrate the use of the forceps in the first stage of labour we have the report of Dr. Johnston for 1873, in which he gives thirty six cases where the forceps was again applied before the os uteri was fully dilated, and remarks: "As there may still be many astonished at this apparently bold mode of practice, and may perhaps question its justifiability, I beg leave to assure them that, having adopted it for the last two years, during

which time we delivered seventy-one such cases, we are more and more convinced every day of its great advantage in saving the lives both of mother and child." He then gives an analysis of the above thirty-six cases, and calculates the amount of expansion of the os uteri in each at the time of the operation, four inches being assumed to be the utmost dilatation of the os uteri, and this diameter of four inches is divided into five parts. "In eleven instances, the forceps was applied when the os was but two-fifths dilated, when, in fact, we were obliged to expand it with our fingers before we could pass the blades, and in every instance both mother and child were saved, with one exception, a case of

The experience of this accomplished
achievement is thus entirely in our
favour, as to the necessity and utility
of the use of the forceps before
the os is fully dilated; but, at
the same time, according to my
observation, the operation is seldom
imperatively demanded, so that
as long as the case continues free
from urgent symptoms, we do
well not to interfere by having
recourse to the forceps. No doubt,
when properly performed the
operation is safe and useful,
but it requires a considerable
amount of that "tactus eruditus",
only acquired by practice, and
to which reference was made, while
considering the application of
the forceps. My own practise,
during the last twelve years,

convulsions, which was brought in comatose. In twenty-two instances, where the os was three fifths dilated, all the mothers recovered but one, and all the children but two, which were cases of prolapsed funis. In three instances where the os was four-fifths dilated, the mothers recovered and children lived. The position of the head, with regard to the pelvis, at the time when the forceps was employed:— In two cases, the head was above the brim; in fourteen, in the brim, and in twenty it was in the cavity. Result: all the mothers recovered but two, one of which, a primipara, who was very delicate and anaemic on admission, died of peritonitis, with uterine diphtheritis; the other, also a primipara, was admitted comatose and in convulsions."

enables me to speak favourably of the procedure. From it I select four cases:

Case T. St. Jam. on, ^{16th} Nov 1849, at the request of a midwife I attended a M^{rs} L., in her seventh confinement. Labour had been going on for twenty-four hours, and patient presented a worn out appearance. Dilatation of the os had occurred to about three inches, and the membranes were ruptured. The head was at the brim, in the first position, but the occiput was resting on the symphysis pubis, towards the left side, in consequence of diminution of the antero-posterior diameter of the pelvis, from encroachment by the sacral promontory. The beat of the foetal heart could not be detected at the maternal abdo:

Men

From the os being in a soft and dilatable condition I managed with my hand to effect its dilatation to about three and a half inches, and introduced the forceps, and gradually effected extraction of a large male child, but dead. The os uteri and perinaeum presented little obstacle to the passage of the head.

Case II. On 21st Dec. 1881. I was again called to attend M^{rs} L. No midwife had this time been engaged. Labour pains had begun at 12 p. m. on the previous night, and at 5. a. m. I found the head at brim, in first position. The os was dilated about two inches. At 10, a. m. the "bag of waters" were protruding in the pelvic cavity, and the os was dilated, but

but not to its full extent. The pains from the first, continued to be strong and regular, but the brim deformity was as before acting obstructively, in so far that the head could not enter the pelvis. During the pains, that part of the head near to the anterior fontanelle at the edge of the left parietal bone was found impinging against the distortion at the sacral promontory, and I could just reach the ear behind the right pubis, the membranes having by this time become ruptured. I introduced the long forceps, which was locked with the head grasped upon each side, and in half an hour delivered my patient of a large male child, alive and vigorous. She recovered well.

Case III Mrs. M^c L. This patient has been attended by me in five successive labours, all of which have been characterised by arrest of the head at the brim, owing to sacral distortion. Upon each occasion I have applied the forceps before the full dilatation of the os uteri had been accomplished, and have always succeeded in effecting the delivery of living and vigorous children; and the mother always has made a good recovery.

Case IV on September 5, 1881. I attended M^{rs} S. She was of medium height, robust in body, and 23 years of age. Married three years. Labour commenced three days previously, and the pains of the first stage continued at intervals all that time. The os was rigid and

yielded slowly, the head had entered the pelvic cavity, and shortly after my arrival the membranes ruptured. After four hours had elapsed, the os would be dilated a little over three inches, and as the case had become tedious I applied the forceps and effected delivery in two hours. The child was a male, and lived. Mother did well.

Rupture of the Perinaeum.

In acknowledging the important service rendered to midwifery by the use of the forceps, all contingencies having relation thereto should be mentioned; and as rupture of the perinaeum is one of these, the causal relation which the one bears to the other requires investigation.

In normal labour when the progress of the case has brought the head to press against the perinaeum it distends that structure downwards, more and more, during every succeeding pain, but the axis of motion now being directed forwards in the direction of the sub-pubic angle, the perinaeum is relieved from undue pressure during the process of its gradual

dilatation for the emergence of the head. In first cases the fourchette is slightly lacerated, and in a small proportion of cases the laceration extends deeply into the perinaeum, no matter how affairs have been managed, so that it cannot be obviated by "support" as some writers advise; for, in these cases this procedure in whichever way rendered can make no difference in point of size between the head of the child and the outlet. The perinaeum at last must yield, and by adopting "support" we oppose the progress of the head, and thus act unnaturally, while the reflex action induced from the pressure is actually exciting the uterus to increased contraction.

In using the forceps the perinaeum, as a rule, must be allowed to

to expand, in accordance with the method adopted by nature, and the extractive force exercised with proper regard to the direction of the axis of the parturient canal, so that when the head of the child has reached the floor of the pelvis and is beginning to press against the perinaeum, the handles of the instrument are directed in a forward direction. In pelvic deformity of the transverse diameter of the outlet, involving an approximation of the tuberosities of the ischia, and abnormal acuteness of the sub-pubic angle, the head would be compelled to pass further downwards in the direction of the perinaeum, before it could move forwards under the arch, if extracting force were not applied so as to direct the head forwards

under the arch, whilst relieving the perinaeum of a certain amount of pressure entailing laceration.

The conclusion at which I have arrived in regard to this accident is, that the risk of its occurrence diminishes, as skill in using the forceps, in accordance with the known laws of the mechanism of parturition, increases, but should the evil unfortunately happen in spite of all precaution, it is entirely outweighed by the saving of human life.

The Third Division of cases requiring the use of the forceps, is, as we have stated, comprehended in, Threatened Danger to Mother or Child.

In so far that a human life is in those cases immediately at stake, the operation requires to be conducted with speed, even at the risk of rupture of the perinaeum.

The conditions calling for rapid delivery are:— convulsions, rupture of the uterus, placenta praevia, funis presentation, some cases of breech presentation or after turning, and as has been stated under inertia of the uterus, delay in the second stage of labour may result in death of the child.

Puerperal eclampsia is a disease essentially connected with uraemic poisoning of the system. The convulsions which occur during labour lose force and frequency as soon as delivery has been accomplished, hence operative procedure becomes indicated whenever it can be done with safety. The results of the law of reflex action forbid forcible dilatation of the os, but with partial dilatation, and there also being the quality of dilatability, the membranes should be ruptured, and when the head is pressing on the perinaeum, or even before that, if the os be dilated, the time has arrived when the forceps may be used with safety. The case throughout, will of course require, otherwise appropriate treatment,

including the administration of chloroform or chloral.

Rupture of the uterus may be due to (1) Mechanical obstruction to delivery; (2) Mechanical injury, (including the improper use of the forceps); (3) disease of the uterine tissue. From whatever cause this serious injury arises, the actual duration of labour, when characterised by strong uterine action must be reckoned as an assistant factor, at least, so that should the patient complain of acute pain in some localised part of the uterus, accompanied with morbid excess in its expulsive efforts, proving unamenable to the employment of anaesthetic agents, and if under this excessive action of the uterus slow progress is made by the head, then, if

the case otherwise admits, the use of the forceps is indicated. The accoucheur who is experienced in the employment of the instrument would probably not hesitate to resort to its use with the os uteri "dilated and dilatable", for, although, operative assistance might excite the uterus to more violent contraction, the possible result of rapid delivery where it can be accomplished, would not be so serious as rupture of the uterus. In actual rupture, immediate delivery affords the mother the best chance of recovery, and may save the child's life, consequently, if a grasp of the head can be obtained from it being still in the pelvic cavity we may be able to save both lives.

Placenta Praevia, strictly does not come under our notice, for when the placenta wholly occupies the passage through which the child has to pass, the accepted treatment is the bi-polar method of version, but even here, the forceps may be required to terminate the case. When the presentation of the placenta is of a partial nature, in which the bulk of the placenta is situated above the cervix of the uterus, the efforts of nature may check dangerous haemorrhage by causing the head to descend and so to act as a plug, and in the event of this not succeeding the labour may be completed by the use of the forceps.

Bruno's Presentation. In cranial presentations with prolapse of the cord, where on the rupture of the membranes of their own accord, it has been found impossible to effect its reposition, the use of the forceps whilst the cord has been directed to that sacro-iliac synchondrosis which corresponds to the side of the child's head, when the head has descended into the pelvis, will generally be preferable to turning; for, as has been previously pointed out, the operation of turning does not necessarily relieve the child from danger; renewed pressure during the passage of the head may prove fatal.

Conclusion.

My experience in using the forceps has enabled me to arrive at three conclusions:- (1) In cases where the os uteri is fully dilated, with the head in the pelvis, the application of the forceps is safe, and in uterine inertia preferable to ergot, which is uncertain in action; and that with the os dilated so as freely to admit the passage of the blades, whilst also being dilatable we are warranted in having recourse to the forceps should need arise, but when the delay in labour arises from a rigid cervix its use is improper. (2) Where the head is arrested at the brim of the pelvis from some degree of disproportion the use of the

forceps is preferable to turning.

(3) Where the pelvis is irregular, and the head very high above the pelvis, turning is preferable to the forceps.

The coiling of the umbilical cord, in consequence of undue length, round the neck of the child may be met with, and present a source of danger by being in a position subject to pressure of the blades. When the head is high in the pelvis, detection of this unusual disposition of the cord may be impracticable, but the risk from pressure is greatly lessened, through exercising intermittent compression, which also everts danger proceeding from the head itself when the compression is continuous, as may

be the case even in ordinary labour, during the process of "moulding," from this being carried beyond a certain point of intensity or duration.

In regard to the question as to the use of anaesthetics in operative midwifery, while recognising the invaluable aid rendered by the administration of chloroform, particularly in certain cases when pelvic deformity detains the head above the brim, this must also be said, that when the averaged sized head is delayed at the brim in consequence of moderate diminution of the conjugate diameter, no special difficulty may be experienced in applying the

forceps, and thus the induction of anaesthesia would not be required. Therefore, two dangers would be avoided which are a possible effect of deep anaesthesia. These are the dangers of post-partum haemorrhage and failure of the heart's action.

When the head is delayed, at the perineum the case, as a rule simply requires the application of the forceps; and, according to my observation the use of the instrument, alone, whether for the high, or low operation entails no special tendency to post-partum haemorrhage.