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ON THE
"SYNCLITISM"
OF THE
FŒTAL HEAD IN NATURAL LABOUR.

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(WITH TWO WOOD-CUTS.)

THE number of the *Edinburgh Medical Journal* for June last contains some critical remarks by Dr. J. Matthews Duncan, on what M. Kueneker terms the synclitic movement of the fœtal head during its descent through the cavity of the pelvis and vagina, in natural labour. Not having seen M. Kueneker's work, my only knowledge of his views of the mechanism of labour is derived from Dr. Duncan's paper, and I am, therefore, unable to express any opinion as to how far these views may be consistent with the idea of the synclitic movement of the head, or to what extent he is amenable to criticism.

The whole subject, however, is most interesting and important, and its practical value can hardly be estimated. This circumstance, with a sincere desire of having this subject fully examined, induces me to offer to the consideration of the profession my views in regard to it.

In all such scientific discussions it is very difficult to express our ideas with so much precision as to be clearly understood. Hence differences of opinion are often more apparent than real, a little explanation often resolving the difficulty. Perhaps, therefore, the theory of M. Kueneker may be reconcilable to correct views upon the mechanism of labour.

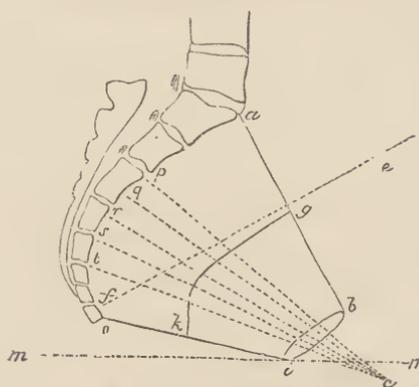
Synclitism, or parallelism of the plane of the child's head, in cases of natural presentation, to the planes of the pelvis and of the vagina, is one of my favourite doctrines, and has been taught by me with more or less fulness and precision, since the year 1832. My confidence in its truth has been continually strengthened by careful observation, and the ideas I entertain in regard to it are detailed at length, and to a considerable extent illustrated, in my work on the *Principles and Practice of Obstetrics*.



I know, however, that it would be impossible for Dr. Duncan and myself to agree upon this point, unless, what seems to be equally impossible, we could come to some prior agreement as to the axis and planes of the pelvis and vagina, and as to the mode in which the head presents and moves through the obstetric canal.

First. As to the planes of the pelvis. There can be no doubt that the planes through which the child's head descends till the top of the head reaches the floor of the pelvis, are all parallel to each other as low down as the top of the arch of the pubis, and of course at right angles to the axis of the superior strait, or brim; but below this it is universally agreed that the planes are oblique; as to the degree of obliquity authors differ.

Fig. 1.



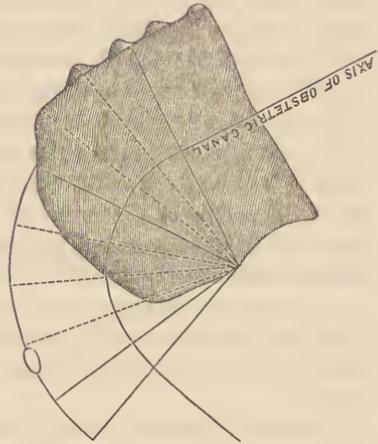
The most usual representation is given by lines drawn from various points on the sacrum and coccyx, below the third sacral vertebra, through the symphysis pubis, converging to a point exterior to the pelvis (see Fig. 1). Certainly the head does not pass perpendicular to such planes. If, however, from the same points in the posterior part of the pelvis, the lines should converge to the subpubic ligament, or top of the arch of the pubis they would represent planes of the pelvis through which the

child descends, I believe, perpendicularly, during the latter part of labour. Lines similarly converging to the pubis, drawn from the posterior wall of the distended vagina even to the frænum vaginæ, would represent the successive planes of this canal, through which the head passes synclitically until the parietal protuberances pass the vulva. My reason for thus describing these planes is that the child's head revolves under the arch of the pubis at the termination of labour; its sub-occipital or cervical region being applied to the top of the arch of the pubis. In other words, the cervico-bregmatic diameter of the child's head may be regarded as a radius describing the segment of a circle, the centre of which is at the subpubic ligament.

Second. As to the obstetric axis. The direction of this is perpendicular to the plane of the superior strait or brim, and then to each successive plane of the upper part of the pelvis, to the third sacral vertebra. Then it varies so as to correspond with the perpendicular of each plane through which the head passes. As these inferior planes represent radii of

a circle, the obstetric axis will here, of course, be represented by the circumference of a smaller circle, passing through the centre of each plane to that of the distended orifice of the vagina. The first part of the axis, therefore, is straight; being coincident with that of the brim; the lower part is the segment of a circle; the whole representing the line which the head follows during the progress of descent and delivery (see Fig. 2.)

Fig. 2.



As to the "curve of Carus," which has been often quoted with approbation by many high authorities in this country and Europe, I think it must be admitted to be erroneous. He describes a circle with a radius of two and a quarter inches, from the middle of the posterior margin of the symphysis pubis. This would indicate that the child's head describes a segment of a regular circle from the brim to the outlet, and is altogether inconsistent with the fact that the child descends directly in the axis of the brim till the sinciput reaches the floor of the pelvis, and, moreover, it would not be at the centre of the plane of the inferior outlet. It would approach too near the pubis.

Third. The lateral inclined planes of the pelvis, have not been brought into notice either by Dr. Duncan, or by the gentlemen whom he quotes. These planes exert a most important influence upon the progress of the head, especially as regards rotation. They are, I believe, four in number, two anterior and two posterior. Many authors ignore these planes, and few describe them with any degree of minuteness. In my work I have gone into details upon the subject, and endeavoured to show that the extremities of the spines of the ischia, indicate the boundaries between the anterior and posterior inclined planes, and also that these planes are greatly prolonged by the distension of the perineal tissues, to the middle line of the perineum. Rotation, therefore, is partially affected by the occiput pressing against the side of the pelvis and then against the levator ani muscle, covered by its fascia and other tissues, as it descends towards the rectum. I do not perceive how all the movements of descent in the oblique positions of the head can be explained without taking cognizance of these inclined surfaces and their influences upon the movements of the fetal head.

Fourth. As regards the word "vertex," obstetricians ought certainly to come to some understanding, if anything like precision is to be expected

as to the mechanism of labour. Nægelè virtually includes the whole upper part of the cranium in the idea of a vertical presentation. Others would restrict it to the central portion of the sagittal suture, and others again would refer it to the occipital region of the head. The true meaning of the word "vertex" is the apex or top of the head. Hence, if a person stood erect, with the head in a horizontal direction, the real top or apex of the head would be about the middle of the sagittal suture. But if the chin be approximated to the breast, the head being in a state of flexion, the apex will then be at the posterior extremity of the sagittal suture. Now, as the child descends in natural labour, with the head flexed, the region of the posterior fontanel, or "crown of the head," is usually called the vertex. This region may be described as a circle, the centre of which is the posterior termination of the sagittal suture, and its radius extending from this point to the occipital protuberance. This circle will extend as far forward as the middle of the sagittal suture, and constitutes, I believe, the real presenting part of the head, in favourable labours.

The word "Sinciput" is still more indefinitely employed. It may be considered as representing the region of the anterior fontanel.

Fifth. As to the presenting part, not "point," of the child's head, which has elicited so many definitions and given rise to so much discussion, and, I may add, to many errors, in the study of the mechanism of labour, Dr. Duncan's definition and my own are very similar. He defines it as "that point on the surface of the child's head through which the axis of the developed pelvic canal passes." My definition is, "that portion of the foetal ellipse which is recognized toward the *centre* of the canal of the pelvis and vagina." This portion, in cases of favourable labour, is the vertex; not merely a point in the sagittal suture, but any point between this and the occipital protuberance, according to the degree of flexion or extension of the child's head as it passes through the various planes of the obstetric canal.

I cannot help, therefore, agreeing with M. Kuenke, that this portion of the child's head, or vertex, presents towards the centre of the canal from the beginning to the end of descent, and, of course, differ from Dr. D. and most others, in transferring this portion from the line of the sagittal suture to the anterior parietal bone.

All these definitions involve many points of great importance, in which again Dr. D. and I appear to differ. The vertex, according to my views, cannot present, unless the head be in a state of flexion, so that while the vertex is the most dependent portion, the chin, at the breast of the child, is the most elevated point of the head. Hence the occipito-mental diameter, and not the vertical, as Dr. D. mentions, is parallel to the axis of the brim at the commencement of descent. Hence, also, the cervico-bregmatic circumference is parallel to the plane of the superior

strait, and not the occipito-frontal circumference, which would be the case if the vertical diameter of the head was coincident with that of the brim.

This occipito-bregmatic circumference is represented by a line drawn over the base of the occiput, the parietal protuberances, and the anterior extremity of the sagittal suture, and may be regarded, practically, as a *circle*; its two important diameters being the transverse or bi-parietal and the perpendicular, so-called, or cervico-bregmatic diameter. Hence a section of the head, through these points, may be called the plane of this circumference, and it is this plane which, in my judgment, presents parallel to all the planes of the pelvis and vagina, from the superior strait or brim, until the delivery at the vulva. The axis of this cervico-bregmatic plane is the occipito-mental diameter of the head, which diameter, therefore, is coincident with the axis of the obstetric canal, as above defined; that is, coincident with the axis of the brim, until the top of the head reaches the floor of the pelvis, and then with the axis of each of the successive oblique planes of the lower part of the pelvis and of the distended vaginal canal to its extreme orifice.

These views, which I have taught during the whole of my professorial course in the University of Pennsylvania, are, I suppose, in unison with what M. Kuenke terms the "synclitic" movement of the child's head in natural labour, although they may be inconsistent with some of his statements and with his ideas of the mechanism of labour, as Dr. Duncan has endeavoured to show. I did not originate these views, although I may have presented them with more precision and detail than my predecessors—they belong to the French school of obstetrics. Velpeau speaks of the parallelism of the head at the inferior strait in opposition to the views of the Heidelberg professor, M. Nægelè, which have been so generally adopted in modern times, especially in Great Britain. Cazeaux, one of their latest writers, although perfectly acquainted with Nægelè's theory upon this point, also insists upon this parallelism of the head. In this country, my predecessor in the obstetric chair, Dr. Wm. P. Dewees, who was familiarly called the "Baudelocque of America," taught the same doctrine more than fifty years ago, and by him it has been transmitted to the thousands of students of the University, and to the physicians who have read his invaluable writings.

Perhaps it will not be a vain repetition if I should endeavour to illustrate my views of the mechanism of labour in the occipito-anterior positions of the vertex, by tracing the descent of the child's head through the os uteri and the obstetric canal in a "given" position of a vertex presentation, in a primiparous woman.

I will simply premise that the child's head may be regarded as having passed *through* a plane when its parietal protuberances have passed, as these are the most prominent points upon its lateral surfaces. The child's head may be said to be *in* a plane when these protuberances are opposed

to any part of the circumference of such plane. It has not entered a plane when the parietal protuberances are still above its level, however much of the head may project through the plane. All this is exemplified to the touch as well as to the eye during the last act of delivery. The occiput may project for some time at the vulva before this orifice is sufficiently distended to admit the whole cervico-bregmatic circumference; but as soon as the dilatation is adequate the parietal protuberances pass the lateral margins of the orifice, and delivery is virtually accomplished.

For our illustration, as presenting the most simple view of the mechanism of labour, we still take, not an oblique position of the head, which has some complications, but a direct one, namely, the "occipito-pubic position" of the "vertex presentation," the third of Baudeloque, but which, as we think, has been unnecessarily thrown out of view by M. Nægèlè.

By the time the os uteri is nearly or quite dilated, in a primiparous patient, the bag of waters usually ruptures, and the whole force of the contractions of the uterus are immediately directed upon the body of the child, which is therefore compressed into a comparatively small space, the limbs towards the abdomen, while the imperfect flexion of the head becomes gradually increased. If the resistance of the os uteri be considerable, this flexion becomes more complete, so that the occipital protuberance will be observed towards the pubis, the lambdoidal sutures converging on either side towards the sagittal suture. In a longer or shorter time the anterior margin of the os uteri slips over the protuberance of the occiput and retracts over the parietal protuberances to the face or neck of the child. The head is now left engaged *in* the superior strait, with the base of the occiput towards the top of the pubis, the parietal protuberances opposed to the sides of the brim, while the anterior fontanel will, with more or less precision, be opposite the promontory of the sacrum. Here there will probably be some delay, as the head is attempting to enter through the short or conjugate diameter of the brim, but in proportion to such delay will be necessary the increase of flexion, for the whole bearing-down force of the mother is, as Dr. Duncan well represents it, directed chiefly upon the short arm of the lever of the head, through the medium of the spine of the child. The os occipitis, therefore, descends, while the os frontis is resisted by impinging against the promontory of the sacrum. Hence flexion is perfected; the posterior part of the sagittal suture, or vertex, will be found at the centre of the pelvis, the base of the occiput to the pubis, and the anterior fontanel, or anterior extremity of the sagittal suture, at the sacrum. Hence the cervico-bregmatic diameter of the head is parallel to the sacro-pubic diameter of the superior strait, while the bi-parietal, or transverse diameter of the head, is parallel to the bis-iliac or transverse of the brim, and the occipito-mental is coincident with the axis of the superior strait. Hence the plane of the occipito-bregmatic circumference is parallel to the plain of the superior strait. This is synclitism.

I can hardly suppose that the statement thus given will meet with any objection, inasmuch as if the head be not in a state of flexion, as I maintain, the protuberance of the occiput will be at the pubis, and the anterior portion of the os frontis, or forehead, will be at the promontory of the sacrum, in which case the head will be arrested, because the occipito-frontal diameter will be parallel with the short or conjugate diameter of the brim. Then the sagittal suture would run nearly in a direct line from the anterior to the posterior part of the pelvis, and the two fontanels would be at the same level. When, however, flexion has occurred, the posterior fontanel will be found lower down and nearer the centre of the strait, and the anterior higher up, and nearer the promontory, while the sagittal suture will be found to run not only backward, but obliquely upward.

The process of labour continuing, the child's head descends precisely in the same direction till the sinciput reaches the floor of the pelvis, and the occiput has glided along the posterior or inner surface of the body of the pubis. The whole head descending thus far through a cylinder, as M. Schroeder would express it, the occipito-mental diameter coincident with that of the axis of the brim, and the cervico-bregmatic plane parallel to each plane of such cylinder, till it reaches the level of the third sacral vertebra behind, and the top of the arch of the pubis in front. By the time this is accomplished the os frontis has descended below the promontory of the sacrum, and the occiput appears under the arch of the pubis, when, as Dr. Dewees would express it, the chin begins to leave the breast, or, more accurately, the process of extension commences. Now the further descent of the head is resisted by the sinciput striking against the floor of the pelvis, and anteriorly, by the neck of the child pressing against the pubis. The driving force continues to operate and chiefly upon the occiput through the medium of the spine. This portion of the head then descends towards the perineum as far as practicable, but the resistance here being also great, the head passes off diagonally between these opposing forces, and describes a circular motion on the base of the occiput under the arch of the pubis, where it is comparatively at rest. Hence the process of extension is continually increasing until the occiput has somewhat dilated the vulva and the parietal protuberances will be perceived on either side at the tubers of the ischia, while through the rectum the anterior fontanel can be detected at the perineum or coccyx. The head, now partially extended, presents at the inferior strait, with the same diameters and the same planes which were recognized at the brim, and the occipito-mental diameter, which was coincident with the axis of the brim, is now in unison with that of the inferior strait; the chin pointing towards the concavity of the sacrum, while the vertex, as represented by the posterior fontanel, is at the centre, not of the vulva, but of the inferior strait. The plane, therefore, of the occipito-bregmatic circumference is parallel to the plane of the inferior strait.

Now, as the head moved in this regular manner through the upper or cylindrical portion of the pelvis, presenting its equatorial plane, as Dr. Barnes might term it, parallel to the planes of the cylinder, till the sinciput reached the floor of the pelvis, so, during the gradual process of extension, through the curved portion of the canal, the same cervico-bregmatic plane became parallel to each successive oblique plane of the curved portion of the canal, to the inferior strait. The parietal protuberances will always be found at the sides of the pelvis, and as the occiput gradually advances under the arch of the pubis, the posterior fontanel is found towards the centre of each plane till it reaches the outlet of the pelvis.

The bearing-down efforts of the mother now force the child more and more against the perineum, the process of extension continues, till eventually the occiput gets in front of the pubis, the parietal protuberances on either side of the vulva, and the posterior fontanel is observed clearing the perineum at the centre of the dilated orifice of the vagina, so that again we have the cervico-bregmatic plane engaged, but now parallel to the plane of the orifice of the vagina. Hence the head passes through the canal of the vagina in this circular manner, presenting its equatorial plane parallel to the various oblique planes of the vagina.

If this representation be correct, the fetal head, "at term," notwithstanding its apparent irregularity of form, traverses the obstetric canal with as much readiness and precision, continually presenting the same diameters to the walls of the canal, and the same diameter of the head, to the axis of the obstetric canal, as if it were a perfect sphere of about three and a half inches in diameter.

This seems to me a correct representation of the syncletic movement of the child's head—in other words, the parallelism of the plane of the great occipital extremity—in relation to those of the pelvis and vagina.

If we now consider the First position of the vertex, the left occipito-anterior, the process is rather more complicated, from two causes. The first is that the head is no longer direct, but oblique, at the superior strait, and subsequently in the cavity of the pelvis; and the second, resulting necessarily from the first peculiarity, is the necessity of a rotatory movement of the head, that the occiput may pass under the pubis.

If the propositions already assumed be granted, these difficulties immediately vanish. For if the head passes through the os uteri in a state of flexion, presenting its cervico-bregmatic circumference to the circle of the os uteri and that of the superior strait, it may practically be regarded as a sphere or ball to be driven through the planes of the canal. Hence it would be a matter of no moment whether it did or did not rotate upon its axis, for diameters of the same length would always be coincident with those of the obstetric passages. Parallelism of planes, therefore, would ensue.

To be, however, more precise. In this first position, as in the former,

the resistance of the os uteri, or the margin of the superior strait, against the anterior parts of the head of the child, while the uterine forces are driving down the occiput through the medium of the spine, necessitates flexion of the head to a greater or less degree. Hence, after the os uteri has retreated, the head will be found oblique, not only because it extends diagonally from the left ramus of the pubis to the right sacro-iliac symphysis, but also because the occiput is lower in the pelvis than the forehead and the face. Hence the posterior fontanel will be found not on the same level with, but lower than the anterior fontanel; and the sagittal suture, therefore, not running directly across the pelvis, but obliquely upward as well as backward.

The parietal protuberances of course present obliquely to the right and left sides of the pelvis, while the base of the occiput will be towards the left anterior part of the pelvis, and the anterior fontanel towards the right sacro-iliac symphysis. Hence we have the cervico-bregmatic diameter parallel to one of the oblique, and the bi-parietal to the other oblique diameter of the brim, while the posterior extremity of the sagittal suture will be found towards the centre of the pelvis, and the chin, being directly opposed to it, will be the most elevated part of the head.

I can hardly expect that all this will be conceded by Dr. Duncan, as he, in common with almost all British authorities, speaks of the "vertical" diameter as being coincident with the axis of the uterus and of the brim, and of the two fontanels as being nearly upon a level, all of which would involve the idea that the occipito-frontal diameter is parallel with the oblique diameter of the brim, and, of course, that there is a synclitism of the plane of the brim with that of the occipito-frontal circumference, and not with that of the cervico-bregmatic circumference, as I believe. The truth, of course, of this question can only be ascertained by careful observation. That the head will be found in the position Dr. D. describes, in many cases of labour, there can be no doubt, owing to the greater length of the oblique diameter of the pelvis, the relaxation of the os uteri, or the diminutive size of the head. In exact proportion, however, to the resistances of the os uteri or of the bones of the pelvis, will be the greater flexion of the head, and, of course, the accuracy with which its cervico-bregmatic circumference becomes parallel with the plane of the superior strait, and hence the occipito-mental diameter coincident with the axis of the brim.

The head descending into the cavity of the pelvis to its floor, presents virtually the same diameters, and soon the process of extension commences. This is often slow, inasmuch as another process, that of rotation, must precede and accompany it. It is not necessary to inquire at this time how this rotation is effected, as all acknowledge its necessity as well as its existence. As already intimated, I believe it is dependent upon the inclined planes of the pelvis, and their prolongation by the soft tissues to the

middle line of the perineum. The question arises—and here, I am sorry to say, Dr. D. and I again differ—On what diameter does the head rotate? Not on the vertical, as he declares, as this would indicate that the head was situated directly across the pelvis, that is, the occipital protuberance towards the left foramen ovale and the forehead opposite the sacro-ischiatic oramen, and the anterior fontanel opposed to the coccyx. I think it will be found that the posterior fontanel is nearer the centre of the floor of the pelvis, and the anterior fontanel, and not the forehead, opposed to the sacro-ischiatic foramen. Hence the occipito-mental diameter constitutes the axis upon which the head rotates. If this be true, it seems to me to necessitate the parallelism of the cervico-bregmatic plane with the planes of the lower part of the pelvis during the process of rotation. This rotation is never complete until the head is fairly engaged in the inferior strait. By this time the process of extension, which had been retarded by the impingement of the occiput upon the side of the pelvis, advances with more rapidity until the parietal protuberances are observed at the tubers of the ischia, and the base of the occiput at the sub-pubic ligament. The small or equatorial plane of the head now presents parallel to that of the inferior strait, as was noticed when speaking of the third position of the vertex. If, therefore, we adhere to Dr. Duncan's definition of presentation as "that point of the surface of the child's head through which the *axis* of the developed pelvic canal passes," I think it will be found that the posterior extremity of the sagittal suture, or the angle formed by the two parietal bones, will be found towards the centre of the canal of the pelvis. Of course it gradually advances as the occiput approaches the arch of the pubis, and then more rapidly in proportion to the degree of extension that ensues, the presenting part being always central to that particular plane through which the head is passing.

This rejects altogether the usual mode of judging as to what part presents. We cannot determine this question by the position of the caput succedaneum, for reasons Dr. D. has well detailed. Neither can the question be settled by examining what part of the child's head is felt at the orifice of the vagina, because, in the first place, the orifice of the vagina is never parallel with any plane of the pelvis, and should be regarded as situated at the *anterior* part of the cavity; and in the second place, the part of the head felt towards the orifice of the vagina is continually changing during the process of rotation, so that in many cases the anterior part of the parietal bone, its posterior part, and then the side of the occiput may be felt in succession at the opening of the vagina before the occipital protuberance fairly emerges. If, however, the finger be directed to the true vertex, this part will be found nearly stationary, during the process of rotation, except that it advances slowly along the perineum. If, therefore, the occipito-mental diameter be thus constantly coincident with the obstetric axis, and the whole posterior portion of the head be represented by the

figure of a ball, each of its diameters measuring three and a half inches, it follows, I think, that there is a necessary parallelism of this equatorial plane with the planes of the pelvis. This view is not invalidated by the fact, recorded by Nægelè, that in many instances the right parietal protuberance escapes first at the inferior strait, as this would only show that the head is small enough to be delivered before rotation is complete, but is not really inconsistent with the synclitism for which we contend. I must, however, believe that careful observation will show that such an escape of the parietal protuberance occurs in easy labours only; that when the customary resistances are present, as in first labour, the head being of normal size, each parietal protuberance finds its exit upon the same level at the tubers of the ischia, while the sagittal suture and anterior fontanel will be found in the middle line of the perineum.

Dr. Duncan's declarations that "continued synclitism is conceivable *during* and after rotation," and, moreover, "that there arises from the mechanism a direct tendency to the production of the synclitic condition there can be no doubt," gives me much pleasure. But in another place he observes, "The tendency to the synclitic movement is prevented by two causes. First, the driving force operates chiefly on the occipital portion of the head, through the spine; and, second, the greater resistance of the pelvis posteriorly, as compared with that anteriorly towards the symphysis. These prevent the synclitic movement."

How these two circumstances prevent the tendency to a synclitic movement, I am at a loss to comprehend; for, on the contrary, they seem to me to necessitate synclitism of the head by increasing the flexion of the child's head when it is high up, and its extension when low down in the pelvis or in the vagina.

Respecting the quotation given by Dr. Duncan from Dohrn, as to the "shearing" of the child's head, I do not, perhaps, comprehend his full meaning, but I must agree with Dr. Duncan in believing that the vertical shear to which he alludes does not occur at the superior strait in cases of natural labours, but I have observed it in cases where the conjugate diameter was contracted. In respect to the second or lateral shear, it includes, if I understand it, those circumstances which determine the rotation of the head in the inferior part of the pelvis, and may, as he observes, give rise to the lateral shearing of the head, as described by Dohrn. I should not, however, regard this as of any practical importance. My own belief is that the head of the child, during descent, in all the occipito-anterior positions, impinges much more firmly against the anterior portions of the cavity, and that the rotation of the head is dependent, in these cases, upon one or other, as the case may be, of the anterior inclined planes of the pelvis, as formed by the bones of the pubis and ischium, and as they are prolonged by the levatores ani muscles, &c. But these are points not now under review.

I thus have been endeavouring to maintain the syncletic movement of the child's head in cases of natural labour, as true, both theoretically and practically. I cannot insist upon its mathematical accuracy, for the ever-varying size of the child's head, and the degree of resistance it meets with from the os uteri and from the bones of the pelvis, which must influence continually its degree of flexion or extension, defy any attempts at mathematical accuracy. I would only repeat that the head passes more readily when it presents its cervico-bregmatic plane, and that the greater the resistance the more perfect will be the flexion, and the more exact will be the parallelism or synclictism of the equatorial plane of the head with the various planes of the pelvis and vagina.

If this fact be substantiated, its practical importance can hardly be estimated. This assertion needs no demonstration to any experienced accoucheur. If the great occipital extremity of the head descends, in a natural labour, in such a manner that the occipito-mental diameter always coincides with the axis of the obstetric canal, whether straight or curved, and that the cervico-bregmatic plane of the head, with its diameters of equal length, is parallel to the successive planes of the pelvis through which it passes, it results: That it is the great business of the accoucheur during the whole process of descent, to insure this parallelism by facilitating, during the first portion of the descent, the process of flexion of the head, and during the last, by facilitating its extension.

Hence, also, in all obstetric operations the same principle must regulate the hand of the practitioner. The blades of the forceps, for example, should always be applied as nearly as practicable in the direction of the occipito-mental diameter, and traction effort be made in the axis of the obstetric canal, inasmuch as then the longest diameter of the head will be coincident with the obstetric axis, and the cervico-bregmatic circumference will be parallel with the planes of the pelvis and vagina. This, as all experience demonstrates, is not only the most natural, but also the easiest mode for the transit of the head.