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POSITION OF THE FŒTUS IN UTERO.

Read before the Obstetrical Society of Boston Feb. 12th, 1870, by B. E. COTTING, M.D.

THE presentation of the child's head at the uterine outlet at the time of birth, with the occiput towards the mother's pubes, is so common that from the earliest times it has been denominated the Normal Presentation. This appellation is so reasonable that, could its propriety be doubted, the constancy of the presentation, the shape of the child's head, and, furthermore, the form of the female pelvis as seen *post mortem* from above downwards, before the muscles and other soft parts are removed, must together, if not singly, compel at once the assent of even the most hesitating.

It has also been admitted, for the most part, that the head rests over the uterine orifice during the latter portion of pregnancy, as well as immediately preceding delivery.

Thus much is generally conceded; but, strange as it would appear, were we not accustomed to it, most writers, ancient and modern, would fain have us believe that in its earlier life the fœtus has a different position; that is to say, in the same general direction as that of the mother, with its spine to its mother's spine, with its head upwards and facing forwards, or, as one has it, "placed as if looking through a little window in front." The assumption that it has this position, or would take it from the start but for reasons which they adduce, is to be found, avowed or implied, with almost all writers, from Hippocrates down to the last journalizers; and they have greatly puzzled themselves and their readers with learned attempts to account for the supposed reversal that must occur to bring it into the admitted normal position in which it is found at the later period.

We learn from the books that in Hippocratic times the fœtus was thought to be retained in the upright position by ligaments,

which broke, at or about the seventh month, to allow the child by its own force to rotate, and betake itself to the normal presentation for delivery—the twists in the cord being instanced as proofs of exertions to effect this object. Children born before the eighth month feet-first were, according to this supposition, so born because of insufficient strength to accomplish the rotation.

Another leading hypothesis, said to have originated with Aristotle, and which has been advocated repeatedly from time to time since his day, was that of gravitation so called. By it the rotation was supposed to be brought about, sooner or later, by the greater proportionate weight of the head, or of the head and parts above the umbilicus—the fœtus being suspended, pendulum like, by the cord.

Subsequently, according to authorities, came the doctrine that the rotation was due to the agency of the uterus; then, again, to a combination of fœtal and uterine action; and, again also, to volition on the part of the fœtus, seeking the head presentation as the easiest to be born in.

Such were the opinions and hypotheses of past ages, variously modified by different writers; and such under various phases are those which have been entertained in modern times down to the present day; some of the reasons assigned for the head's seeking the uterine outlet then and now being equally absurd, for instance, then for want of food, now for want of space and air!* In nearly all, then and now, unless the whole argumentation is without a purpose, the great effort has been to show how from a position thus taken for granted, or supposed to be occupied from the start, and one which theoretically it ought to continue in, the fœtus gets turned head downward at the appointed time for delivery. This effort is as apparent in the fanciful speculations of Simpson, now sustained in some quarters by a temporary popularity, as in

* "M. Drelincourt dit c'est l'abondance du meconium qui devient âcre, et qui excite dans le fœtus des tranchées et des accès de colique * * * rompant par ces efforts les tuniques qui l'enveloppent," &c.

VIARDEL, Paris, 1748.

[WHOLE No. 2201]

the grosser theories of Arantius or Levret, whose doctrine of the *culbute*, or somerset, had a much wider influence in its day, and still finds adherents amongst the vulgar, and possibly even in the profession. Indeed, it was the accidental disclosure of some such views where least of all expected that led to this present paper.

With regard to all these doctrines, it is sufficient to say that they are all gratuitous hypotheses, resting upon the merest suppositions, as is evident from the fact that no sooner is one of them enunciated by its author than its absurdity is exposed by rival theorists.

Thus, for example, Dubois shows up the fallacy of the doctrine of weight or gravitation; but, adopting the exploded theory of instinctive and voluntary determinations, is himself in turn showed up by Duncan and many others. Thus Duncan, taking the centre of gravity to be in the superior portion of the trunk (to vary a little the old notion) is refuted by nearly the same old arguments which upset the original of Aristotle. Thus Cazeaux, according to whom Dubois is more skilful in destroying than in building up, and according to whom "Dela-motte, Smellie, and more especially Baudeloque, completely subverted" the *culbute*; thus Cazeaux, like the rest, "hazards" his favorite hypothesis by which the foetus is caught in the various changes of form in itself and in the uterus, and "forcibly retained"; acquiring "mechanically a position which will bring its largest parts in correspondence with the most spacious portions of the organ." Thus, also, Simpson's theory that uterine shape and pressure produce, through the excito-motor system, reflex-motions in the foetus, till by them it gets into an easy, that is to say, the normal, position for presentation, is crushed out by Duncan, who shows that in Simpson's assumptions "there is a very great error in reasoning and probably also in physiology," and until further proof be given, "all the author's conclusions remain without any basis whatever." And, finally, Scanzoni refutes everybody else, and himself also, in a score or more of learned reasons to be found in the various medical journals of the day.

But enough for hypotheses which may be left, now as of old, to prey upon and consume each other. They are all mere assumptions to account for what seldom or never happens; and bring to mind an incident which may not inappropriately serve to illustrate the kind of reasoning common to them all.

"That's a wonderful cat," said a domestic one day—"he looks up into the tree where the bird is, and, whatever it is that he does, the bird falls at his feet!"

"Did you ever see a bird fall in that way?"

"Indeed, sir, I've seen the bird in his mouth!"

Thus reason such theorists. The normal presentation is of the head; that is certain, and in the mouth. But to get the head over and above the uterine outlet requires a magic power, a *culbute*, or "whatever it is that it does" in that way. Such speculations hardly bear for any time the test of common-sense, are injurious to science, and ought to be avoided. Indeed, of late some writers, not satisfied with any one of them singly, seem inclined to lump a number together, and to declare, like Hodge, that the position, "with the head pendant, is determined not by one cause only, but by the conjoint influence of several;" or, if less credulous, to acknowledge, like Bedford, who in his last edition two years ago repeats the following admission:—"I should say in lieu of any one of these influences being *per se* sufficient to explain the position of the foetus in the womb, the fact is due to a combination of circumstances not yet, perhaps, properly comprehended."

In a rational view, the position of the foetus in utero, from its embryonic start to its expulsion, is simply a proposition in Natural History, and should be treated as such. Hence, in a word, it is to be settled, if settled at all, by the facts in the case, demonstrated by anatomical examinations and other careful observations.

As it is generally conceded that after the seventh month of gestation the head is pendant or over the os uteri, the question resolves itself into one of fact as regards the position antecedent to that time. To the period before the seventh month, therefore, the following remarks will be chiefly confined.

Although anatomists, as well as others, have been too much occupied with prevailing theories, some have from time to time recorded, too meagerly it is true, the results of their observations on the point in question. Among those most frequently named are Vesalius, Paré, Fabricius, Smellie, Hunter, Baudeloque, Velpeau, &c. Vesalius, or rather his pupils, find the head pendant most frequently; Paré is less positive; Fabricius admits this position; Smellie gives plates from nature which confirm

it; Hunter also gives plates, in a majority of which the head is over the os. Baudeloque says that "the opening of the body, at whatever term of pregnancy, has shown many times (*mille fois*) that the head almost always occupies the inferior part of the uterus;" and Velpeau gives five cases of his own dissections, from the fourth to fifth months of gestation, in four of which the head was towards the os uteri.

In the limited time we have had for this paper we have found (as in White one at sixth month) other cases scattered singly here and there, actually examined by their reporters—all confirming the general fact so distinctly stated by Baudeloque. Smellie, it is true, alludes to "some authors, who allege that in opening women who have died in the fifth, sixth, and seventh month, they have found the child's head towards the fundus uteri," but he does not name them; and even if they are right, this is not more than is sometimes found at full term in abnormal cases. But Smellie himself, reviewing the whole matter, comes to the conclusion that "it seems to be the most reasonable opinion that the head is downward all the time of gestation."

We may therefore conclude, with due allowance for such exceptions as accompany every law in nature, that, so far as actual dissections have shown, the fœtus from conception to delivery continues in one position, and that the head as a rule is towards the uterine outlet and maintained there throughout pregnancy.

Baudeloque states also that the head most frequently presents in premature deliveries; Smellie asserts that "when women miscarry in the fourth, fifth, sixth, and seventh months, the head for the most part presents itself, and is first delivered; Velpeau says that head presentations are nearly as frequent in abortions as at full time, being in his own experience twenty-one in twenty-five cases; and so, many others. These statements have been confirmed also by prominent practitioners whom I have personally consulted on the subject. Our late lamented associate, who had so large a practice (eight thousand cases in forty years in private practice only), told me that, in his experience, head presentations were about as frequent in premature deliveries as in those at full term. I myself have been at the bedside and noticed a fœtus of less than two inches in length pass the vulva with the head presenting—a trifle, but valuable so far as it goes. It was a case of self-induced abortion. I have observed the same presentation at more ad-

vanced periods in similar circumstances. I have also examined ova, whose direction of exit had been carefully noted, and found the embryo in the same general position as at full term. And so have many others.* The assertion of Simpson that "prematurity of labor is a cause of the malpresentation of the fœtus," and of Duncan that the "death of the fœtus in utero is a frequent cause of malpresentation," are assumptions disproved by the very arguments brought to their support. It would be much more rational to attribute such presentations and such deaths to original malposition, in itself abnormal, which must always give rise to inconveniences, and sometimes to disturbances sufficient to interrupt life and cause abortion. An effect like this we have recently noticed, in a case of a fœtus of about five months which was completely doubled upon itself, the middle of the back presenting. This position caused great disturbance in the uterus, discomfort to the mother, death of the fœtus, and premature delivery.

According to Velpeau and others who have practised ballottement at very early periods, the head is almost always found presenting as soon as any part can be made out by this procedure.

On auscultation also, the intensity of the fœtal pulsations is to be noticed, from the first, in the lower half of the mother's abdomen, a little to one side of the median line, this portion being occupied by the spine and thicker parts of the back of the fœtus.

Thus, without going further, although the further we go the stronger the evidence, *post-mortem* examinations disclose the head at or towards the uterine outlet at all stages of development; the ovum, so far as yet possible to make out, shows the same general position of the embryo; premature deliveries give normal presentations most frequently, if not as frequently as complete gestation; ballottement discovers the head pendant; and auscultation the occupation of the median anterior portion of the uterus by the spine and back of the fœtus. Thus we have these, and other similar demonstrations, not suppositions, all determining the general fact that from conception to full term the fœtus lies, or tends to lie, in its mother in a position completely the reverse

* Duncan quotes Hohlf as follows:—"We have examined a series of unopened ova, and have always observed that the embryo reposing in the liquor amnii lies with the head lowest. We have in a considerable number of autopsies of pregnant women, not advanced to the seventh month, never once seen the breech lying lowest, if the corpse had not been disturbed."

of that of the parent; and also, so far as has been noticed and recorded, that, from the beginning, as certainly at later periods, its face is turned opposite to its mother's face, feet opposite to feet, back opposite to back, abdomen opposite to abdomen, &c. &c.—with a tendency, perhaps, to be cast off prematurely if exceptionally in any other position.

Moreover, we find the same to be true of animals having a horizontal carriage of body, where of course the weight of the head, or shoulders, cannot have the effect ascribed to it in the human race, and where also the culbute, instinct, reflex-action, &c., would have rather "up-hill work." "At all periods of gestation in animals," says Aristotle according to Velpeau, "the young have the head presentation." In animals "the embryo," says Todd's Cyclopædia, "has a somewhat similar position in the uterus as it has in the human subject." "The head is mostly turned towards the os uteri." These statements from the earliest and the latest records accord with the observations of anatomists and other practical observers, past and living, so far as we can ascertain. They relate to facts having a broader significance and a wider purport than that embraced in the narrow hypotheses of the theorists, ancient or modern.

As to the multiparous, the foetus nearest the outlet presents normally—as we ourselves have seen—while the rest are arranged so as to follow in the same way.

And still further, the same rule holds good with the oviparous. As we have it from the highest living authorities, the egg, from its earliest development to its expulsion, always keeps the one end—the head end as we may call it, the larger end when so shaped—in the same direction, and this, too, whether fecundated or not; while the contained chick is always maintained in the one and same position, with relation to the axes of the egg, even before it has taken sufficient form to be cognizable by the naked eye. The mere mention of gravitation, voluntary or instinctive motion, and especially of reflex action, in such connection, is sufficient to show the absurdity of these fancies, and of argumentation dependent upon them. What, forsooth, has gravity to do with the presentation of spherical bodies, as many eggs are even at term; how can voluntary motion exist before there is a foetus; what chance is there for reflex action in an unimpregnated ovum covered with a calcareous shell?

Thus we see, on a comprehensive view, however cursory, of the realities and mat-

ter-of-fact workings of nature, that the speculations of theorists, however ingenious and captivating, have no solid foundations to rest upon. The theories of "instinctive or voluntary motion," and of "reflex action," are misty fancies, explaining nothing, while befogging and bewildering the practical searcher into the secrets of nature; and "gravity," if it ever have anything to do with vital development, can be only occasional and temporary—even as gravity itself, for aught we know to the contrary, may possibly be but an exceptional influence in the grand evolutions of systems making up the totality of the universe.

We all may admire the wonderful adaptations of these arrangements, and acknowledge the wisdom thus displayed in the present conditions of animal existence, but we cannot explain why the present plan was adopted in preference to others, any more than we can explain the origin of life, say why the earth turns west east, or show cause why a tree spreads its branches like an oak or droops them like a willow.

It has been said in reference to a kindred matter, that "it appears wonderful that so many physiological absurdities should have been so easily adopted by the profession"; but an unwillingness to accept a common fact or law unless accompanied by a marvellous interpretation, seems to be a universal infirmity, common alike to the learned and the low. *Credo quia absurdum est* belongs to no one class exclusively as a frequent foundation of belief. A bird in the mouth by ordinary seizure is nothing unless ascribed to a previous charming by the captor. A marvellous interposition of gravitation, a culbute, instinct, or reflex-action—assumed to account for a reversal, never yet proved, of a hypothetic position; a reversal if not impossible, in the very highest degree improbable—seems more acceptable than a simple statement of observed facts, reasonable in itself and involving no interruption or irregularity. Moreover, exceptional cases are apt to receive more attention than is due to them; and too frequently they are made the basis of theory and argumentation—even to the overlaying of the rule itself. Nevertheless we are confident that we have been expounding, though very imperfectly, a LAW OF NATURE, which, as such, will be found the more firmly established the more it is examined and studied; and which, some time or other, will be fully acknowledged as a *Part of the Plan of Creation*.