

**THE MECHANISM OF THE EXPULSION  
OF THE PLACENTA.**

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IN this short paper, I use the comprehensive word  
"mechanism" in the limited sense and misapplied

manner in which it has hitherto been generally employed in obstetric literature; that is, as implying mere relative position at different stages of progress.

The present subject has not, I believe, attracted sufficient attention, else I am sure the little addition to its history that I propose to make would, long ere this time, have been contributed. No one will dare to say it is unimportant; for there is no truth in nature, which, however insignificant it may appear, has not even now, or may not have in future, bearings upon practical rules which may be of value to the obstetrician.

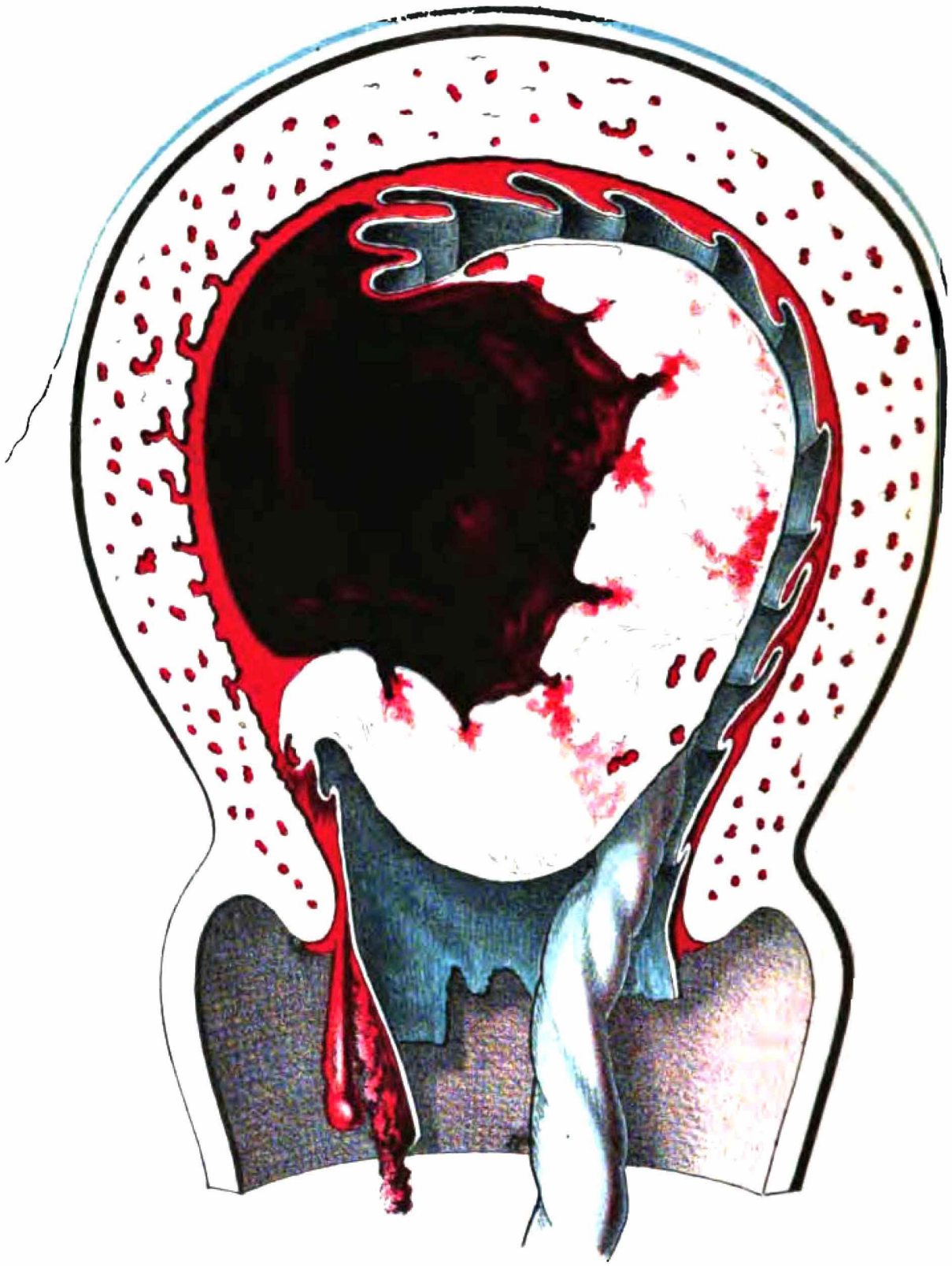
A study of our copious obstetric literature satisfies me that the point I propose to describe in the mechanism of labour is generally misunderstood. To illustrate the erroneousness of widely-entertained and generally-written views, I might refer to many authors, and to woodcuts and plates. Among the former, I select only the excellent and respectable Ramsbotham, who says,\* "The placenta passes through the vagina inverted, so that its foetal surface becomes external." Among the latter, I select the most recent, and the most elaborate and largest—one of the wall-plates † of Professor Schultze of Jena, from which the plates 1 and 2 are copied on a reduced scale as to size.

Every one knows that the membranes are expelled inverted or flapped over upon themselves; and the same view is held regarding the placenta. It is to this last part's condition during expulsion that I am now directing attention.

The wall-plate of Schultze is an admirable representation of the expulsion of the placenta as it occurs in the first two modes described by Baudelocque; and I may add that this author's descriptions have been repeatedly copied. Baudelocque, drawing chiefly on his imagination

\* *Obstetric Medicine and Surgery*, 5th edition, p. 126.

† *Wandtafeln zur Schwangerschafts- und Geburtskunde*.—An excellent and useful work.



**SEPARATION & EXPULSION OF PLACENTA,**  
after Schultze.



EXPULSION

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for his supposed facts, says :\*—"Sometimes this separation begins at the centre of the placenta, and sometimes at some point of the circumference, which produces different phenomena. In the former case, the middle of the placenta being pushed forward, it forms a bag behind which fills with blood, and it presents that side to the touch which is covered with the membranes and vessels. The placenta forms nearly a similar bag, and presents in the same manner, when it begins to separate from the uterus at that part of its edge which is furthest from the orifice. But things go on very differently when the separation begins at its lower part, especially if it be in the neighbourhood of the orifice. In this latter case the placenta rolls itself up in the form of a cylinder, and according to the length of the uterus, so as to present its anfractuous surface to the touch; and its exit is always preceded by a little fluid blood." Schultzet goes a little farther than Baudelocque, and actually describes the accumulated hæmorrhage from the uterine sinuses as co-operating to push down the already almost completely detached placenta and complete its separation,—a view so utterly unsupported by observation or argument, and so unlikely, that I shall not say anything more regarding it. (*See Plates 1 and 2*).

Now, the erroneous belief that the placenta generally

\* System of Midwifery, Heath's translation, vol. ii. p. 4.

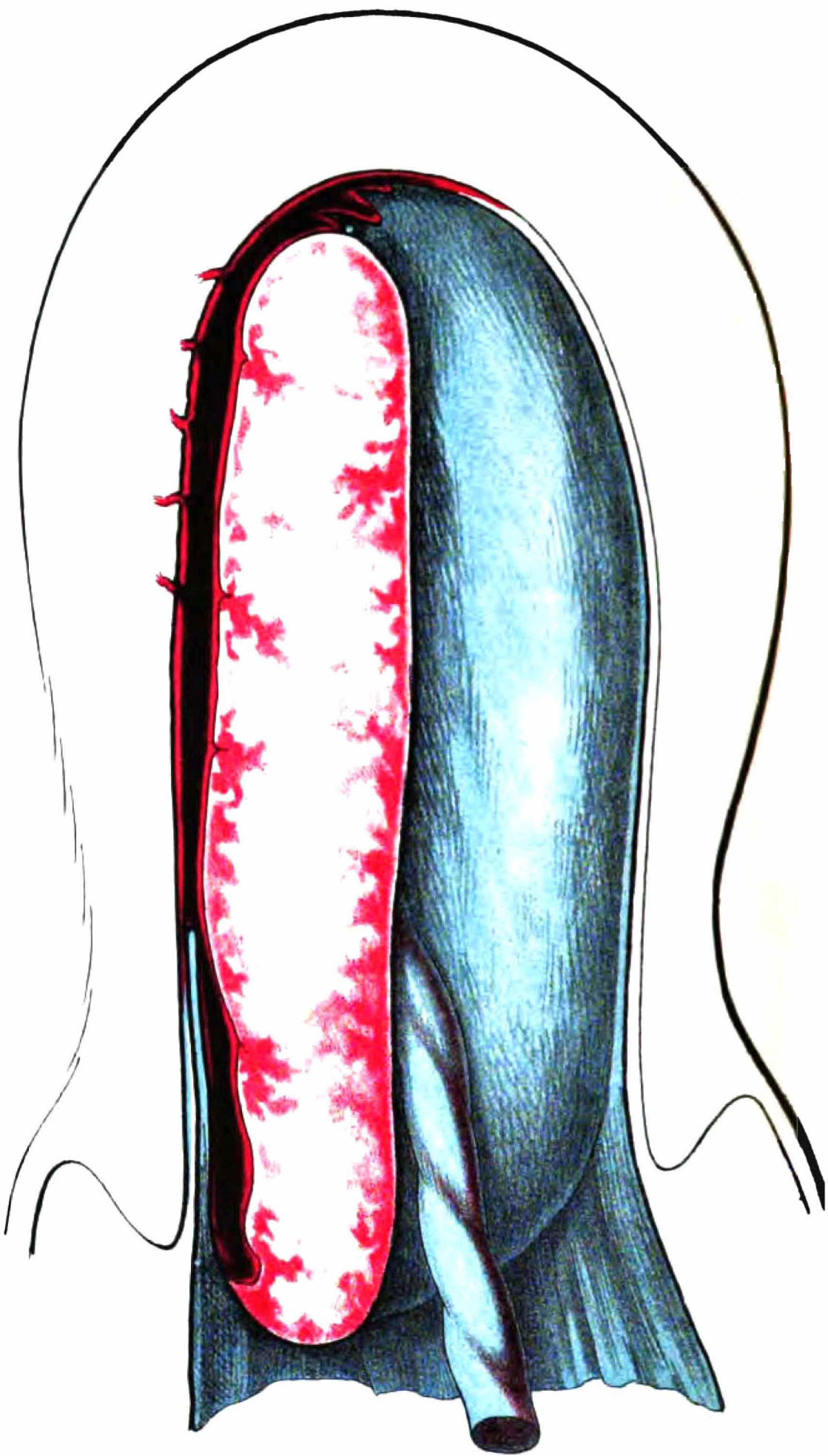
† Wandtafeln. Tafel xvi. fig. 3, Demonstration der Wehen. Schultze's words are :—"Schon die Wehen, welche das Kind vollends austrieben, verkleinerten die Gebärmutter so bedeutend, dass der Mutterkuchen zum grossen Theil von ihrer Wand abgetrennt wurde. Die Nachwehen und der Bluterguss, der aus den zerrissenen Blutadern der Gebärmutterwand reichlich erfolgt, drängen den Mutterkuchen vollständig von der Gebärmutterwand ab und in die jetzt lehre Eihöhle hinein." A similar mechanism is described by Spaeth. Speaking of the pains, he says :—"Unter ihrer Einwirkung wird der Uterus allmählig kleiner, seine Innenfläche zieht sich über die entsprechende Fläche der Placenta zusammen und vollendet die Lostrennung der letzteren, welche schon in der vorigen Geburtsperiods begonnen und das abfliessende Nachwasser blutig gefärbt hat, gewöhnlich derart, dass die Placenta zuerst in ihrer Mitte gelöst mit der Fötalfäche durch den Muttermund heraus gewölbt und endlich vollends in die Scheide herunter getrieben wird."—*Compendium der Geburtskunde*, s. 85.

descends presenting its foetal surface, seems to me to have arisen from observers not keeping in mind the very great frequency with which the natural mechanism of delivery of this cake is interfered with. I may say, that it is unfortunately the rule to interfere with the part of the natural mechanism of delivery. Such interference, generally carried out as it is by pulling the cord, produces an unnatural mechanism—inversion of the placenta, as Ramsbotham calls it; and this unnatural mechanism, this inversion of the placenta, comes to be described as the natural conduct of the delivery. The placenta, says Rigby,\* “descends into the vagina inverted, *i.e.*, with its foetal or amniotic surface turned outwards. Whether or not,” he adds, “this is produced by pulling on the cord, is perhaps a question.”

To find out the natural mechanism of the expulsion of this cake, it is only necessary to watch the process as nature conducts it; that is, in cases in which the practitioner does not try to modify it in any way. This any one can easily do, by wounding or otherwise marking the part presenting at the mouth of the womb, and then after its birth examining the placenta to find where the wound is; or the observer may pinch the part first presenting at the vaginal orifice, and retain hold of it till the whole is born, and then find what is the part so pinched.

In this way it is easily discovered that the part of the placenta presenting at the os uteri, and subsequently at the os vaginæ, is not the foetal or amniotic surface, but the edge of the placenta, or a point very near the edge. When it is not exactly the edge, the placenta is not inverted or folded upon itself, there is only a little of the lower marginal part of the cake transversely folded up, as I have depicted in the third plate; it is still really the edge that presents, only thickened a little by being folded on itself; and I think this folding occurs chiefly in placentæ which are thin at the part folded. This folding is manifestly caused by the pulling up of the edge by the

\* *System of Midwifery*, p. 103.



**SEPARATION & PARTIAL EXPULSION OF PLACENTA.**

Matthews Duncan.

still adhering membranes; the resistance of the force required for their separation being greater than the rigidity of the marginal part of the placenta so folded.

My own numerous observations satisfy me that the inversion of the placenta, or its folding upon itself transversely to the passage, or the presentation of its foetal surface, as authors describe, and as Schultze and others depict, is a very rare occurrence,—so rare as to debar describers from calling it *a* natural, and still more from calling it *the* natural mechanism. The placenta is folded upon itself during the process, as I have attempted to depict in my drawing; but the folds are according to the length of the passage, not transverse to it, as inversion or presentation of the foetal surface imply. (*See* Plate 3.)

These remarks are remarkably corroborated by the memoir of Dr Lemser on the Physiological Separation of the Placenta. This gentleman's observations appear to me to be inconsistent with the views of Baudelocque and Schultze as to the separation of the placenta, and they are, undoubtedly, the best observations on the point which we possess. But it is more interesting, with a view to the present discussion, to remark that Lemser always describes the border or edge of the placenta appearing in the os uteri as the ordinary result of separation and propulsion of the cake.

The advantages of the natural mechanism, as I have described it, are obvious. It is true that, after the passage of the bulky child, there is no such necessity for a mechanism of the delivery of the comparatively small placenta as there is for the passage of the child's head. There is ample room and verge enough for the placenta passing in any way. But the natural mechanism claims respect as the *natural* mechanism, and, moreover, it presents obvious advantages over any other mechanism. Just as the child's head passes through the pelvis so as to dilate the passages as little as may be, or in the manner demanding least expenditure of force, so also does the placenta. It comes edgeways. If it came inverted, or



transversely doubled up, or folded into a cup shape, we should have a body passing that required at least twice as much space as is required if it passes edgeways, and only longitudinally folded. But this is not the only advantage of the natural mechanism.

If the placenta is expelled as Baudelocque describes, and as Schultze depicts, then a loss deserving the name of a hæmorrhage is almost as necessary as it is certainly a generally described accompaniment of the process of the expulsion of the placenta. For the placenta has a certain amount of rigidity, and its folding on itself and the forcing of it into a cup-like shape cannot be effected without a hollow space being offered for the reception of blood, or indeed without a certain force being exerted to produce the folding and a vacuum, which force will also tend to draw blood into the said hollow from the open uterine sinuses which were in apposition to the part folded. Baudelocque's descriptions and Schultze's drawings, while they do not give what is natural, yet do indicate a mechanism of which they justly make considerable hæmorrhage a necessary or nearly necessary part. It would be easy to show great, if not insuperable, difficulties in the way of accepting Baudelocque's description of this mechanism. It is enough for me to assert that it does not exist as a fact, save as a rare exception to the ordinary process. I say no more, because I have no intention of entering here on the subject of hæmorrhage during the detachment and expulsion of the placenta.

According to Baudelocque and Schultze, the folding is always on the uterine surface. But this is far from being the case. According to Lemser,\* it is more frequent than folding upon the foetal surface. In my drawing, I have represented the placenta, with a view to pictorial facilities, as folded upon its foetal surface.

If the placenta comes edgeways, its uterine surface glides along the surface of the uterus; its foldings, parallel to the length of the maternal passages, are well squeezed

\* Die physiologische Lösung des Mutterkuchens. Giessen, 1865. S. 17.

together, and little space is offered for the reception of blood flowing from uterine sinuses. The uterine wall keeps close to the folded placenta. The uterus contracts, forces the placenta downwards, and at last its body is nearly globular and empty. There is no hæmorrhage worthy of the name. Hæmorrhage, when it does occur, is not demonstrated to take place according to the description of Baudelocque or the plate of Schultze; and I believe these gentlemen do not give the correct account of it. Authors too frequently, I may say almost invariably, describe too great an amount of hæmorrhage as part of this natural process. I admit that a frequency of some hæmorrhage is a strong argument in favour of this proceeding. But I believe that interference, which, though common, is frequently injudicious, is occasionally the cause of this hæmorrhage, which is, therefore, in such circumstances, unjustly laid to the account of the natural mechanism. It is far from uncommon to observe labours in which there is no hæmorrhage, in which not an ounce of blood is lost during delivery, there being only enough to smear the uterine surface of the placenta with a very thin layer. This absence of hæmorrhage I regard as the natural state, and in this I suppose all obstetricians will join me, at least if I introduce the element of desirableness as an indication of naturalness. Such absence of hæmorrhage depends on the adoption of what I describe as the natural mechanism. The presence of hæmorrhage is a part of the erroneously described natural mechanism, and to me this presence is one proof of the erroneousness of the description.

But although the mechanism of Baudelocque and the picture of Schultze do not give the natural process, they indicate a state of matters which is frequently observed after the separation of the placenta. Schultze's second drawing is an admirable representation of what takes place frequently, perhaps generally, when any considerable force is used to deliver the placenta by traction of the cord. Then indeed, truly, the placenta is inverted, and its edge puckered up purse-like. The insertion of

the cord comes first, as is so frequently represented in woodcuts. The placenta is transversely bent on itself, and puckered up; hæmorrhage flows to fill up the partial vacuum which is thus produced. The inverted mass forms a firm plug, closely filling the vagina. Traction on this plug is exactly like traction on the piston of a pump. If hæmorrhage does not naturally take place to fill up the void which tends to be formed beyond the placenta, then it is powerfully attracted and induced by the piston-like action of the placenta pulled by the cord. The interior of the uterus, already scarified by the separation of the placenta, requires but this pulling at the cord to be effectively cupped.

From all this there follows the very valuable corollary, that in practice the third stage of labour should be left to nature, and that, when interference is required, the natural mechanism of the birth of the placenta should be as closely imitated as circumstances admit.

I shall conclude with a quotation from Cazeaux,\* which shows that this practical view has not been altogether neglected:—" 'When the placenta is partially engaged in the orifice (of the womb) by a portion of its periphery, this plan,' says M. Guillemot, 'ought to be somewhat modified; for in this presentation, the root of the umbilical cord, instead of corresponding to the cervix, is higher up in the uterine cavity; and hence, if the operator resorts to traction, the centre of the placenta will have a tendency to enter the orifice, and thus add its bulk to the disk already engaged there. Such a disposition sometimes constitutes an obstacle to the further delivery of this mass; but it is surmounted by making some moderate tractions, not on the cord itself, but rather on the parts previously engaged, by applying two fingers on its surfaces.' We have," adds Cazeaux, "had numerous opportunities of testing the practical utility of M. Guillemot's advice."

\* Theoretical and Practical Treatise on Midwifery, Bullock's translation p. 385.

*Dr Thomson* said that he had noticed in a confinement case he had the other day, that the placenta came away in the manner described by Dr Duncan, and there was almost no hæmorrhage. It was quite plain, he thought, that suction was produced by pulling at the cord, and hence hæmorrhage. It is sometimes necessary, however, to use traction to get the placenta away.

*Professor Simpson* thought that one result of Dr Duncan's paper would be to fix the fact in the minds of practitioners, that there is always danger in pulling by the cord.

*Dr Cochrane* said he had never found much difficulty in removing the placenta, but was of opinion that hæmorrhage might be caused by traction on the cord.

*Dr Ritchie* said that hitherto he had always regarded Schultze's diagram as the correct representation of the mode of separation of the placenta.

*Dr Jefferiss* said, that in an experience of forty years he had always avoided traction on the cord when the placenta was still in the uterus; but when he found that it had been expelled into the vagina, he though there was no harm in pulling the cord.

*Dr Bruce* was of opinion that the point had not been sufficiently studied. He was in the habit of usually waiting till the placenta was quite ready to come away, and then removed it. There was almost always hæmorrhage to a certain extent, whether the afterbirth came away naturally or not. Of course, in some cases it is absolutely necessary to take it away.

*Dr Sidey* believed that, besides the manner of expulsion described by Dr Duncan, there was another, in which the placenta presented at its centre. He had seen a number of cases of labour where there was not as much bleeding as would colour the fingers.

*Dr Gordon* held that the period between the expulsion of the child and the removal of the placenta ought to be shortened as much as possible.