

Thesis for degree of M.D.

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Mechanism and Management

of  
The Third Stage of Labour.

(With Special reference to papers by Champney,  
Hart, Barbour etc.)

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not the least important part of the process of parturition and one which in many instances is attended by serious if not fatal consequences to the mother is the delivery of the placenta. and, although in the majority of cases little or no interference on the part of the accoucheur is necessary, still cases frequently occur in which aid is required, because of morbid or abnormal conditions of either placenta or uterus. To enable the accoucheur to know how and when to render assistance an intelligent apprehension of the mechanism by which nature accomplishes the third stage of labour is essential. Although our knowledge of this subject is still incomplete much advance has been made of late towards its elucidation, more particularly in this country by Champney, Barlow, Hart, &c. Still, from the difficulty of actual observation of the process within

The uterus, our conclusions must necessarily be based largely upon theories.

Regarding the behaviour of the uterus after Porro's operation, I think little more need be said, than that any conclusions derived from a study of such uteri must be misleading, as we cannot expect that a dead or dying organ, is likely to behave as a living one, which is still under the control of the nervous system. No doubt many interesting facts have been derived from Porro uteri, but I do not think they help us much in our present inquiry.

In considering the mechanism of the third stage of labour, it will be well to do so under the following heads:

1. The separation and expulsion of the placenta
2. The separation and expulsion of the membranes.

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## T. The Separation and expulsion of the placenta.

### (a) The time of separation.

Considerable difference of opinion still exists amongst authorities as to this point; and this cannot be wondered at, the process taking place within the uterus in most cases before observations can be made. With the full and general contraction of the uterus, consequent upon the birth of the child, the placenta, I believe, in most cases is separated from its uterine attachment, almost, if not completely throughout its whole extent. That separation does not take place—at least to any great degree before this, we can easily believe, otherwise, the risk to the child would be very great in many cases; and, farther, the head may be born for some time without danger <sup>from</sup> asphyxia, arguing the non-detachment of the placenta until the child is completely born.

It sometimes happens, however, that the child not only breathes, but cries, shortly after the birth of the head and before the body is born, facts which lead us to conclude that separation may already have taken place to some extent. Such cases, however are not common. In connection with this Champney says (Obst. Trans. vol. 29. p. 119) "It is also well known that the head alone may be born, and remain for some time without breathing (though the child is able to breathe) and without immediate danger to life. This implies the non-detachment of the placenta. After the birth of the head the face often remains for some time of the natural colour, and does not become gradually livid (as from impeded return of blood from the head) but I have frequently observed that it becomes livid rapidly and after a marked interval; breathing then begins. This is often marked by a definite

uterine pain, and seems to be due to commencing detachment of the placenta." I cannot agree with Champney, that breathing begins after the face becomes livid. Such lividity often continues to increase until the child is born, (without respiration being established) and for some time after the birth. And as in such cases artificial respiration is sometimes necessary, I am inclined to hold that the lividity is partly due to impeded return of blood from the head, and to commencement of detachment.

Lemser, quoted by Champney, (ibid) introduced the hand into the uterus in 168 cases, immediately after the birth of the child, and found that in 120 cases the lower edge of the placenta was lying in the "os uteri" immediately after the birth of the child and in 158 cases within nine seconds after its

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delivery. In no case could any attachment of the placenta be ascertained after the birth of the child.

Cohn (quoted by Barbour in a paper on the third stage of labour; Edin. Med. Journ. Aug. 1888) says: "I succeeded in a whole series of normal cases, when the period of expulsion proceeded gradually, in establishing adhesion in toto." "The same observation I could make on finishing gradually several breech presentations and a great number of extractions after term. Every time I found the placenta attached through its whole extent in its characteristic folded form."

Dr Barbour says that part of the placenta may project through the os uteri although the bulk is still adherent and appears to cast doubt upon the truth of Lenz's observations. But if Lenz introduced the whole hand into the uterus I think his observations cannot be regarded as other than



trustworthy.

In the face of such contradictory statements by competent observers one can only satisfy himself by personal observations of the truth or falsity of either conclusion. In a considerable number of cases (occurring in a total of 1600 cases) in which I have introduced the hand into the uterus - not with the express object of ascertaining whether detachment had taken place, but to excite uterine contraction to stay haemorrhage - I have found the placenta lying free and quite detached in nearly every instance: so that my observations, although limited compared with those of Simpson or Colm, agree with those of the former.

In a paper on "The Regional anatomy of labour, third stage" (Edin. Med. Journ. July, 1857) Dr. Barbour regards diminution of area of placental site, beyond  $4 \times 4\frac{1}{2}$  inches, plus the action of the uterus

as a whole on the placental mass as the formal cause of separation, the pain of the third stage as the efficient cause" (Four inches by four and a half is the area to which the placental site has been found contracted in the *Porro* uterus, without separation taking place.) As these conditions are fulfilled at the termination of the second stage of labour, I maintain that we have every reason to believe that the placenta is, in most cases detached then.

Doorn, (quoted by Champney in paper on Mechanism of the third stage of labour: *Obst. Trans* vol 29, p. 265) says, "Simultaneously with the last pain which expelled the child the placenta is usually detached."

Champney (*ibid.*) says, "The normal detachment of the placenta, if Lemaire's observations are correct, is therefore

complete at the end of the second stage of labour.

The truth of these statements I have verified myself as I have already said.

(6). Causes and Method of Separation.

Although authorities are generally agreed as to the uterine contraction and retraction being the chief factors concerned in the detachment of the placenta, various other theories have been advanced in connection with this process.

Baudelocque, Dimean, Schuetze & Wothorn regard the uterus as the chief agent in producing separation. Ahlfeld, Schroeder and Barlow, again, believe that aspiration, from separation of the centre of the placenta, causes the formation of a haematoma, which being compressed during contraction is forced centrifugally and so separates the cotyledon to its edge, and finally the mem-

-branes. Ahlfeld considers the formation  
 of a haematoma reasonable from the  
 increased amount of blood at the  
 placental site. He also holds that diminu-  
 -tion of intra uterine pressure consequent  
 on the birth of the child and escape of  
 the liquor amnii favors separation.  
 He says (obst. trans. p. 128) "I find another  
 reason why the detachment of the placenta  
 only takes place after the birth of the  
 child, in the sudden diminution of  
 countri-pressure. As long as the bulk  
 of the child and the liquor amnii  
 are still in the uterus, the general  
 intra-uterine pressure is so consider-  
 -able that the placenta is pressed a-  
 -gainst the intra-uterine wall.

As soon as the uterus is emptied, the  
 countri-pressure ceases and the pla-  
 -centa bulges into the uterine cavity."

(1) The views of Ahlfeld, Baudelocque, Schultze  
 etc are quoted by Champney in obst. trans Vol. 29.

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Linsow (*ibid* p. 129) believes that separation is brought about by a process of detrusion, due to ascending and descending uterine contraction. Barbour also favours this view.

Although uterine contraction and retraction are admitted to be the principal agents in producing separation, opinion is divided as to the action of a sub-placental blood turnover. The belief in the formation of a haematoma sufficient to aid detachment, latters for opined the separation of the placenta first at its centre or at some point other than the edge. But as evidence is still wanting as to the adhesion being firmer at the edge than at the centre, the value of the haematoma as an active agent is open to question. A certain amount of haemorrhage is a natural accompaniment of labour, although Duncan holds that a normal labour is bloodless. Bloodless labour

do occur; but that some loss of blood must as a rule follow the rupture of the vessels, we can easily understand, the amount depending upon the degree and permanence of contraction and retraction.

Schroeder (quoted by Champagny, *obst. haem. vol. 29 p. 133*) says, "The cubic of the placenta is first detached; this leads to effusion of blood between the uterine wall and placenta, and the detachment of the placenta and membranes proceeds in such a manner, that, if the placenta is implanted near the fundus, it appears entirely inverted, with the foetal surface first at the vulva, and in typical cases the whole effusion lies in the inverted sac of membranes. If the edge of the placenta is situated lower the membranes may give way earlier; the blood then escapes while the upper edge of the placenta still adheres,

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and the placenta is expelled in the manner described and depicted by Duncan." I am with all this I agree so far. But if in a typical case, the whole effusion lies in the inverted sac, we should have, in a typical case, a bloodless labour until after the expulsion of the placenta, which I hold is not the condition of affairs in a natural labour. The placenta does not (in typical cases) appear inverted with the fetal surface presenting at the vulva and the effusion contained in the sac of the membranes. It appears by its edge, folded as Duncan describes, with the membranes trailing behind, and containing no blood, but frequently twisted into a cord by rotation of the placenta during its descent. "When the edge is situated lower the membranes may give way earlier; the blood then escapes." says Schroeder; and as this is

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The usual course of events we can easily see that the formation of a blood tumour, of a size sufficient to make the placenta separate is impossible in what I consider to be a normal and typical case of labour. Separation of the edge of the placenta means escape of the blood which has been effused, so that a haematoma cannot form. I grant that when separation begins at the centre, blood may collect between the placenta and uterine wall, but I look upon it as a necessary result of rupture of the utero-placental vessels, and only as a *passive* agent; if it can be called an agent at all.

Alyea describes the formation of a haematoma as follows (Obst. Trans. vol 29 p. 127) "in consequence of the firm-er adhesion of the placenta at its edge than in the centre, the result of contraction and retraction is to



separate the central parts and to "suck in blood", as the uterus diminishes the centre of the placenta becomes more and more pressed into the uterine cavity, the central effusion of blood increases, and being exposed during the contractions to a pressure which drives it centrifugally, contributes to the detachment of the edge of the placenta and finally of the membranes.

Dr. Friedland Babour denies the existence of a uterine cavity into which the placenta can bulge. He says, in his paper on the "Anatomy of the Post-partum Uterus"; "After the foetus has been expelled, we are liable to think of the uterus as an empty cavity, and this gives rise to erroneous deductions; thus Ashfield speaks of the placenta as bulging into the uterine cavity,.... The anterior uterine wall rests on the placenta, just as the

posterior one does; if the placenta were made to bulge, it would press the posterior wall back as much as it pressed the anterior one forwards." From this he rightly concludes that a haematoma cannot form during a pain.

Cohn, who regards the formation of a haematoma as a "vera causa" of separation, also denies the existence of a uterine cavity, for he says "the centre of the placenta did not rise itself during a pain..... in a general contraction of the uterus no uterine cavity can form; both uterine walls are kept from contact with each other by the placenta only, and thus the placenta is held pressed between the uterine walls with a force proportioned to the pain (quoted by Barbour in *Ed. Med. Journ. Aug. 28. p. 99*)

Non during contraction it is quite true that the placenta is pressed between the uterine walls, and that no cavity can exist into which the placenta might be

pressed during the formation of a haematoma from blood being sucked in; and, further, that a haematoma cannot form during a pain is quite reasonable, because, not only is there no uterine cavity into which the placenta might bulge, but during contraction the mouths of the vessels are closed and blood cannot escape.

During a pain, blood may be discharged from the uterus, but it is the blood which has been effused during relaxation. The placenta is not pressed upon between the pains, and then the effusion of blood and bulging may take place - provided separation begins at the centre or at some part other than the edge. Cohn, however, does not believe that the production of a blood tumour is due to bulging into the uterine cavity during a pain; but holds that it is due to the smothering of the placenta by its own weight into the uterus. Considering that the woman is usually con-

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- fixed in recumbent position, I cannot see how the weight of the placenta can have any effect. And even when the patient is delivered kneeling, the uterus falls so far forwards that the weight of the cake would act in a line through the abdominal walls and not towards the outlet of the uterus. Especially would this be the case if the placenta were attached to the anterior wall.

preventing then the formation of a sub-placental blood tumour, when separation begins away from the edge, I cannot agree with Ahlfeld and those who think with him that it is due to aspiration. It cannot form during a pain because then there is no uterine cavity into which the placenta can be pressed, but also because the contraction closes the mouths of the vessels. Blood can only be effused during the interval between the pains, and then it may in some cases form. My conclusions

- then regarding the haematoma are:
1. That it may form when detachment begins at some point other than the edge of the placenta.
  2. That it is not due to asperation.
  3. That it occurs not as a cause of separation but as the result.
  4. That it forms during relaxation and not during contraction.
  5. That it plays no important part in separating the placenta.

Diminution of Intra-uterine pressure as a cause a detachment.

There is no direct evidence I think that this acts a vera causa. In many cases the liquor amnii escapes early in the labour, and separation does not occur, although in many cases the pressure is so much diminished that the woman may be quite conscious of a feeling of relief. Champney however regards it as a

cause for he says (obst. trans. vol 29. p. 136)  
 "In favour of it may be alleged the cases of placental detachment and flooding which sometimes follow too rapid evacuation of the uterus, especially in powerless labours in feeble multiparae with dilated passages, when the uterus is unusually large at the time. Mere evacuation of the waters, while the foetus is still in utero" (as in neglected shoulder cases) is not usually competent to effect the detachment, witness the cases in which children are born alive under such circumstances. This seems to point to detachment not taking place from rapid evacuation alone unless the internal surface is capable of rapid diminution simultaneously."

In connection with this evidence of Champneys in favour of rapid diminution of intra-uterine pressure being a cause of separation, the following

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notes are interesting  
Mrs J, who expected to be confined  
shortly for the fourth time, requested  
me to see her on Jan 7<sup>th</sup> 1889 because  
of "shortness of breath". Upon visiting the  
the patient, I found her sitting, propped  
up in bed and unable to lie down  
because of dyspnoea and a choking  
sensation. These symptoms I found  
to be due to enormous distension of  
the uterus, which, by its pressure on  
the thorax rendered her unable to  
assume the recumbent posture. She also  
complained much of a bearing down  
feeling, which rendered walking  
difficult. This state of matters had  
existed, she informed me, for some  
weeks previous to my visit. Suspecting  
her to be carrying twins, I endeavoured  
by auscultation and palpation to find  
if such were the case, but failed,  
however, to find evidence of the pres-  
-ence of even a single child. Inform-

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-ing her of my inability to relieve her, I encouraged her to bear up as well as she could, in the certainty of getting relief after her delivery.

On Jan 28. I was again sent for, the patient being in labour. I saw her at 9.30 a.m. when she stated that she had felt slight pains all night at intervals of from twenty minutes to half an hour. Examining per vaginam I found a pear-shaped bag of waters protruding from the os, which was dilated to about the size of a crown piece. No presentation could be felt. I left, promising to call again about mid-day, and left instructions to send immediately if she became worse.

My next visit was at 12.30 p.m. when I found that no advance had been made. Believing the excessive distension to be the cause of the uterine inertia, I concluded to introduce my hand into



The uterus, rupture the membranes, and find how the child lay, as I suspected its position to be abnormal. Upon rupturing the membranes, an enormous rush of liquor Amnii took place, the noise remaining that <sup>it</sup> was like the "rushing of a burn" To my surprise I could only feel what seemed like a second bag of waters and which seemed to rupture as soon almost as I touched it.

The patient complaining that she felt tired and exhausted, I withdrew my hand to give her a rest. The pains now became frequent and expulsive, and on making an examination, I found a soft bleeding mass protruding from the vulva, which turned out to be a blood tumour. It was rapidly expelled, the child's face presenting. One or two pains delivered the child. The tumour extended from above the

eyebrows to the nape of the neck, and laterally from ear to ear. Although the patient declared she had carried the child the full term, it was very small, being about the size of a child at the fifth month. The uterus contracted well and the placenta was expelled in fifteen minutes, without any haemorrhage more than is usual. Her previous confinements, during which I attended, were all natural. Now here is a typical case, in which, according to Champney, we might expect rapid separation and haemorrhage, and yet neither occurred. The diminution of intra-uterine pressure, with diminution of internal uterine cavity was very rapid indeed, not more than ten minutes elapsing between the rupturing of the membranes, and the birth of the child.

The diminution of intra-uterine pressure, consequent upon evacuation

of the uterine contents will certainly allow the uterus to contract sufficiently to detach the cake: but the separation cannot be regarded as being due to the diminution of pressure, any more than the expulsion of the child is due to diminution of pressure following escape of the liquor Amnii. If it can be said to act at all it must only do so indirectly. Rapid diminution of pressure will be more likely, as Barbour says, to cause inversion of the uterus.

Detachment I cannot consider as a method of separation. The edge of the placenta may sometimes be found protruding from the os uteri, and the greater part of the cake be still adherent. Detachment can only take place if the placenta be completely separated, and then it must be regarded more as a method of expulsion.

Dr. Barry Hart has lately proposed the theory that separation is due

to relaxation of the uterine wall and not contraction. He says (Third stage of labour; Ed. Med. Journ. Oct 1888) "A disproportion in area between the placental site and placenta brings about tension on the trabeculae of the trabecular layer, i.e., tears them. This disproportion happens during the third stage in the relaxation following a pain. During the relaxation the placental site increases slightly, but the placenta, now bloodless or nearly so, does not respond; hence disproportion of area." He bases his theory upon the method of separation in placenta praevia. In a paper "note on the mechanism of the separation of the placenta during the third stage of labour" (Ed. Med. Journ. July 1887) he says. "If the placenta is separated from the lower uterine segment by the expansion of that area, and the diminution in area of the portion of the placenta over it, why should

not the placenta separate during the third stage in a similar manner! Why should we have one process above the contraction ring and another below it?" To this it may be answered: that while the lower uterine segment must expand to admit of the expulsion of the child, thereby causing detachment of the placenta, the alarming hemorrhage occurring during the separation in placenta praevia proves this method of separation is abnormal.

Again he says (ibid) "Diminution\* of the placental area does not separate the placenta as a matter of fact, and the anatomical relations do not permit of it, for the following reasons:—As the uterus retracts, the placenta thickens and follows up the retraction, as it were, diminishing its area, "pari passu" with the placental site. The placenta would separate at once if it did not diminish its area as the

proportion to the placental site -  
 The statement Dr Hart makes, that di-  
 -minution of area of the placental site  
 does not cause separation; is deduced  
 from observations of *Porro uteri*, and  
 as before stated, such observations  
 cannot warrant us in arriving at  
 any such conclusion: because we  
 can easily believe that a point in  
 contraction (beyond that of the *Porro uteri*,  
 of the placental area must be reach-  
 -ed when the separation of the cake  
 is a necessity -

If separation were due to expansion  
 following a pain, we might as reason-  
 -ably expect it to occur during the  
 first or second stage. Dr Hart meets  
 this objection as follows. "The placenta does  
 not separate during the first and sec-  
 -ond stages of labour, because all changes  
 in the placental site (diminution during  
 a pain, and expansion when the pain  
 goes off) are accurately responded to by

the placenta owing to the activity of  
 the fetal and maternal blood supplies.  
 Every accoucher knows however from  
 experience that the fetus may be dead  
 for sometimes before birth and the pla-  
 centa remain attached. Dr. Hart says a-  
 gain; "The maternal circulation in the  
 intervillous spaces is quite sufficient  
 to make the placenta respond to all  
 changes in its site." Well, then; if the  
 maternal circulation in the intervillous  
 spaces prevents separation in the first  
 and second stages, why not in the third?  
 In his summary of the causes of separa-  
 tion Dr. Hart says; "During the third  
 stage of labour the fetal circulation is  
 cut off and the villi are closely pressed  
 together, showing obliteration of intervillous  
 spaces. The increase in placental size  
 following a third stage pain is not  
 followed up by the placental area as the  
 placenta is now practically a bloodless  
 structure." When death of the child

occurs early in labour, the foetal circulation is cut off, the intervertebral spaces pressed together and still the placenta remains attached. These facts are fatal obstacles to the acceptance of Dr. Hault's theory, and a case reported by Dr J. A. Helme in Edin. Med. Journ. for Jan. 1859, gives strong support to the belief that separation is due to contraction and retraction, which Dr. Hault denies. Briefly it is as follows:—

"Mrs. J. aged 35, multipara, was delivered of a living child at 5.15 p.m. and of a second, stubborn, 3 1/2 hours after. The fundus was grasped by the hand but retraction was slight. By steady kneeling and friction an occasional contraction was called forth, to be again succeeded by rapid relaxation, so that the fundus pushed between the umbilicus and xiphoid cartilage. This continued for half an hour with slight haemorrhage. The haemorrhage



increasing, eight minims of ergotine were given, and a hot vaginal douche. Weak contraction followed, but the haemorrhage was reduced. The hand was now passed into the uterus, and both placentae found attached. The uterus was now grasped externally between the hands and gently compressed. This caused a strong contraction, the uterus becoming firmer and smaller, until a placenta was expelled. This was the placenta belonging to the dead child. The uterus again becoming flabby and bleeding more active, the hand was introduced and the placenta of the first child found detached at its lower border. Inertia and bleeding continuing the placenta was detached artificially with perfect ease, no adhesion being found. Commenting on Harkn's theory, Dr Helme says:—

1. Here is a uterus at the conclusion

of the second stage containing two placentae, both attached to the uterine wall.

2. Placenta no. 1. is that belonging to the first child, born  $3\frac{1}{2}$  hours before the second. The first child breathed and cried loudly before its cord was ligatured, so that all conditions were fulfilled to make the placenta what Harte's calls practically a bloodless structure. On relaxation theory therefore this placenta is favourably situated for separation.

3. Placenta no. 2. is that of the second born child. This child did not breathe before the cord was tied, so that the placenta was not aspirated, hence its foetal half was not a bloodless structure and on Harte's theory this placenta was unfavourably placed for separation.

4. While contraction and relaxation were slight, relaxation was extreme.

above the umbilicus after the expulsion of the second child.

I have given full extracts from Dr. Helmer's paper as it seems to me to argue strongly against Dr. Hart's theory. In Dr. Helmer's case neither placenta was detached during relaxation, and the bloodless placenta was not expelled first. If we accept the contraction and retraction theory we can easily understand that a placenta containing some blood, and therefore less likely to follow diminution of di area to the same extent as a bloodless one, will most likely be first detached. And my experience has shown me that delivery of the afterbirth is not more difficult nor longer delayed in cases where the child is still-born, than in those where the child is born alive. It is somewhat remarkable, that Dr. Hart, considering his explanation of

The method of separation, should advise the administration of ergotine and also advise the hand to be "continued" on the uterus, do nothing during a good contraction, and allow the uterus its normal relaxation after the pain. If Dr Hart believes that relaxation is the cause of separation why give ergotine and continue the hand on the uterus? Both of these proceedings are likely to induce contraction and prevent relaxation. Surely according to his theory the greater the amount of relaxation the better. I am firmly of opinion that the contraction and retraction due to the ergotine friction of the hand, do more than arrest the haemorrhage for which purpose Dr Hart advises them. It is not unusual to find in cases where the pains are strong, that a powerful contraction delivers the child and expels the placenta into

the vagina. This has happened in my own experience again and again. No relaxation could have occurred here, at least after the birth of the child, and before completion of the third stage; nor is it unusual to find the placenta remain firmly contracted behind the pubis after the birth of the child, and until the placenta is expelled, no appreciable relaxation taking place. When the uterus remains flabby and relaxed I invariably expect and find delay in delivery of the afterbirth; when it contracts firmly remains so, the placenta is soon expelled.

Authorities are still divided in their opinions regarding the point at which detachment commences, whether at the centre or the circumference, and the difficulty of making actual observations being considered, we cannot

feel surprised at this.

The chief views held are

1. That it depends upon the situation of the placenta. (Baudelogue)
2. That it begins at the cubic (akefeld and Solange.)
3. That it depends upon the firmness of the attachment of the different parts and on the various degrees of contractility and retractility of the placental side. (Riemann)

The point at which separation begins is, I believe independent of the situation of the placenta in the uterus and depends more upon the method of separation or rather I should say the cause. If separation be due to the formation of a haematoma, then it must begin at some point other than the edge, else a blood tumour could not form as I have already said. If however it be due to contraction and retraction of the placental

side, the part least firmly attached will be separated first, or the part at which contraction and retraction act most regularly and powerfully. This part may be either at the edge or the centre. In fact, perfect adhesion to be uniform throughout, and the contractions and retraction regular. I see no reason why detachment may not begin at several points simultaneously; and even in some cases, I imagine, detachment may take place throughout the entire area at one time.

Polanyi says "Some authors assert that the separation of the castle from the womb begins at the circumference, but this is rare, and when it happens there is haemorrhage" Judging from the frequency with which haemorrhage occurs, I should say that separation beginning at the edge is far from being a rare occurrence; in fact, I should consider it the rule. Again

he says "The cubic of the placenta, detached by the natural forces alone most frequently presents at the orifice"  
Now I cannot agree with this statement. Central presentation does occur (when the natural forces have not been interfered with and no traction made upon the cord) but it is exceptional and constitutes an impediment to the delivery of the placenta. I am inclined to agree with Ribemont, who says "The variable degree of adhesion of the different points of the uterine surface of the placenta, the regularity of the contraction and retraction of the uterus after delivery, the more or less intimate attachment of the membranes to the uterus, are also factors that cannot be disregarded."  
(Quoted by Champney. Obst. Journ. vol 29, p. 131)  
I cannot however accept his experiments with a thick sheet of India Rubber and a cake of clay as of any value in



in aiding the settlement of this question.  
The analogy between a shell of india-  
rubber and the uterus, or between a  
piece of clay and the placenta is too  
remote <sup>or</sup> logical conclusion being de-  
duced from experiments with the ~~same~~  
Champney experiments with paste board  
discs and rubber bag are open to the  
same objections.

My conclusions then are.

- 1<sup>st</sup> Separation may begin either at  
center of placenta or at the circum-  
-ference.
- 2<sup>nd</sup> That it depends upon the uniformity  
of the placental adhesion
- 3<sup>rd</sup> That it also depends on the reg-  
-ularity and degree of contractions and  
retraction of the placental site.

In summarizing up Champney says  
"The great question will be seen to be,  
whether or no the separation of the  
placenta is entirely independent  
of any rupture of the utero-placental

to permit

vessels.

The description of the presentation of the placenta given by Solange and Baude-  
-loque; viz., that it presents by the  
foetal surface, and is expelled, as  
Lushman puts it, "like an inverted  
umbrella", is not in accordance with  
the view now generally held, and  
my own experience has convinced  
me that it is the exception. We must  
consider as normal that presentation  
which permits of the easiest expulsion,  
of the placenta, and that is certainly  
not presentation of the foetal surface.  
Lemser introduced the hand in 168 cases  
immediately after the birth of the child  
and in 120 cases found the lower  
edge of the placenta lying in the os  
uteri immediately after the birth of  
the child and in 158 cases within some  
minutes after the delivery.

Dr Duncan confirms this observation  
and says "in this way (i.e. by marking

the presenting part.) It is easily dis-  
covered that the part of the placenta  
presenting at the os uteri and subse-  
quently at the os vaginae, is not the  
foetal or amniotic surface but the  
edge of the placenta or a part 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 really the edge that presents, only  
thickened a little by being folded on  
itself.... This folding is manifestly  
caused by the pulling up of the edge  
by the still adherent membranes."

Champney examined the presenting  
part in 70 cases and found that the  
foetal surface presented in 64, the ma-  
ternal in 2 and the amnion in 4.  
The presenting stem was near the  
lower edge of the placenta in 65 cases.

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He also found that in the majority of cases a part within two inches of the edge presented.

Now for all practical purposes a point within two inches of the edge may be considered the edge. Inversion to the extent of two inches, can hardly be spoken of as such, as the thin edge of the cake is most likely to be folded upon itself should it meet with any resistance or be tucked up by the membranes if still adherent. So that Drmean's explanation of the presentation of the fetal surface as being due to hitching up of the edge from adhesion of the membranes is quite logical and satisfactory.

Champion, says again (Obst. Trans. vol. 29, p. 162)  
"This mode of presentation (i.e. fetal) cannot be accounted for by resistance to the detachment of the membranes, hitching up the lower edge of the placenta, as Dr. Drmean infers, for the upper edge would

find the same obstacle (resistance to the detachment of the membranes) to its descent." But adhesion of the upper edge would only cause retention, where - as adhesion at the lower edge would cause retention and hitching up. Further, suppose the membrane were only detached for two inches from the edge of the placenta, descent to that extent would take place before hitching up occurred; and if the membranes were quite detached no hitching or folding need occur. From this we can see that the presentation of the placenta to some extent, will depend upon the adhesion or non-adhesion of the membranes close to the placenta, and also upon the firmness of the adhesion. The closer and firmer the adhesion of the membranes, the greater the inversion and vice versa.

Champruy also says (ibid. p. 168) As regards the mechanical advantage of

express presentation of the placenta  
of which any one can convince him-  
self by passing one through the various  
rings of a petrot stand (Obt. Mem. Vol 25  
1853 p 160), it must be remembered  
that the cervix has just been dilated  
to a diameter of some four inches,  
a size which will allow a placenta  
to pass in any way it chooses.

This is all very well in theory, but it is  
quite another matter in practice. It  
must be remembered that before the  
expulsion of the placenta there is a  
tendency on the part of the os uteri  
to contract and so diminish the di-  
stance during the passage of the  
child. so that the case does not  
pass so easily when it presents by its  
foetal surface, but frequently in such  
cases requires to be assisted throughly.  
Champney endeavours to prove by  
measuring the distance between the  
top of the placenta and the os uteri

the membranes, that the presenting point varies according to the height of the placental attachment: but Dr Barbour (Ed. med. Journ. Aug 88 p. 107) shows that placentae which have presented by the edge and below it, have been attached to the uterus at all points, and also that placentae situated midway up the uterus, presented by almost any point from the edge to two and a half inches up. In summing up he says, "The presenting point is almost invariably near the lower edge of the placenta"

Dr Luskman, in speaking of Dr Strucan's explanation of the passage of the placenta viz. that the foetus are according to the length of the passage, not transverse to it as immersion or presentation of the foetal impy" says. "We are fully persuaded that the observation of say a dozen cases, in which no interference with the cord is permitted,

will convince anyone of the truth of these assertions.

The expulsion of the placenta is effected by the uterine contractions, aided to some extent by the contractions of the vagina.

### Separation and expulsion of the Membranes.

Although the membranes are generally said to be detached by the placenta tearing them off the uterine wall during its expulsion, there are no doubt other agents at work.

In the early stages of labour the ovum is separated from the lower uterine segment by contraction and retraction of the uterine walls; the extent of the separation depending upon the amount of contraction and retraction before rupture takes place. At the same time the tense bag of waters may be felt presenting at the os uteri. Gradually,



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The bag protrudes, and this some time before complete detachment, indicating expulsion to a certain extent, of the bag of waters as a whole. Now this expulsion cannot take place without some separation; and if we remember that the membranes are kept tense by the liquor Amni, and so prevented from wrinkling to any great degree we can understand how detachment more or less complete may occur.

Barbour believes that the membranes are detached to a certain extent by the contraction of the uterine wall resulting from the escape of the liquor amni and foetus and by the squeezing of the folds of membranes upon each other. The pliability of the membranes however may permit of their being thrown into folds, after escape of the liquor amni & foetus without being thereby detached.

Ashfield and those who believe in the formation of a haematoma as essential, hold that it also aids in causing separation of the membranes. But the part of the membranes situated between the lower edge of the placenta and the os uteri will be first detached, and the blood thus escaping would fail to detach the rest of the membranes. It is not uncommon, in cases where the bag continues to descend and forms a tumour at the os vaginae, that after rupture and the birth of the child, the membranes may be expelled in advance of the placenta. and although Champney says that in such cases, the chorion is apt to be detached from the os uteri and be retained in the uterus, I have not been able to satisfy myself that such is the case. Again, it is not proof that because the membranes follow the placenta, they are being detached.

L.S.

by it. The placenta being the bulkier mass, will be more easily grasped by the uterus and so be first expelled the membranes being dragged behind. In 31 cases in which I have introduced the hand to remove retained placentae, I have found, in nearly every instance the membranes almost completely detached.

My contention then is:- that the membranes are detached to a considerable extent during the early stages of labour (as evidence by the "show"); that wrinkling during the second stage and the expulsion of the placenta in the third complete the process.

## Management of the Third Stage of Labour

Believing, then, uterine contraction and retraction to be the active agents in the detachment and expulsion of the placenta, our aim must be directed towards the maintenance of uterine action until the termination of the third stage. The cord having been ligatured and divided, and the child handed to the nurse, the patient should be placed upon her back as the uterus is then more readily grasped and its condition ascertained, especially if the abdomen be pendulous or fat is excessive.

Should the uterus feel firm and contracted little more is necessary than the keeping of the hand on the abdomen to hold whether the organ continues to contract, as in the majority of cases the placenta

will be expelled into the vagina by the unaided efforts of the uterus, in from ten to twenty minutes after the birth of the child

The employment of the Dublin or Credé's method as routine practice is open to objection: first, because, as I have said, in most cases no interference or assistance is necessary; and, secondly, because forcible compression of the uterus is not free from danger.

During my early experience I was in the habit of employing Credé's method in all cases, and no doubt found it hastened very considerably the delivery of the placenta. The following occurrence, however, convinced me that its routine use was dangerous.

I attended Mrs L. on May 4<sup>th</sup> 1878. during her fourth confinement, and being my first attendance upon her, I knew nothing of her previous

history. The labour was natural and easy; and, after the child was removed I placed my hand on the uterus and employed compression as recommended by Credi. The uterus shortly contracted and the patient remarked that the after-birth was away. To my astonishment, however, the uterus at the same time, entirely disappeared from beneath my hand, and upon examining to ascertain whether the placenta was expelled, I found it lying in the bed, and a tumour protruding from the vulva, which turned out to be the uterus, partly inverted and prolapsed. I returned it after some difficulty, but the haemorrhage was somewhat profuse. No violence was used, but the patient subsequently informed me that the uterus had been prolapsed for some years in the intervals between her pregnancies. Since then I have attended her

during their confinements, and on each occasion have left the expulsion of the placenta entirely to the uterus which it accomplished satisfactorily with little loss of blood and no tendency to prolapse or inversion.

Considering the frequency with which prolapse occurs, the necessity for taking care in using Cude's method is obvious. Should the uterus, after the birth of the child, feel flabby and relaxed, friction, applied by rubbing the fundus in a circular fashion, will generally suffice to induce uterine action. In some cases however the adoption of Cude's method may be necessary viz: when the inertia is extreme and there is a tendency to haemorrhage. In such cases it may sometimes be necessary to introduce the hand into the uterus to induce contraction.

Putting upon the cord, while the

placenta is still on the uterus, cannot be too strongly condemned, although we find Pajot (Annales de Gynecologie No. 1886) advising its practice. When the placenta has entered the vagina and the insertion of the cord can be felt, gentle traction upon the cord at the same time hooking down the presenting part, or preferably the edge, may be safely practised, beginning to make traction first downwards and backwards and then downwards and forwards. If a screw-like motion be given to the placenta during its descent its expulsion will be assisted.

The membranes must be twisted into a cord to prevent if possible their tearing and so part being retained. Should this however take place, the fore and middle fingers should be introduced into the vagina, the membranes grasped and gentle traction



employed when little difficulty will be found in removing them.

When the placenta is retained from spasmodic and irregular contraction the introduction of the hand may be necessary if haemorrhage threatens. The presence or absence in such cases must be our guide. So long as the bleeding is slight, time should be given, as the spasm generally passes off in a few minutes; the occurrence of active or profuse haemorrhage is our signal for action.

In stripping off an adherent placenta care must be taken to leave none behind, if possible, lest haemorrhage result, as the following case proves.

On March 29, 1879, I delivered Mrs. M. A. with forceps of a living child. The uterus contracted, but as the bleeding was profuse and the placenta remained within the uterus, I passed in my hand to ascertain

the state of matters. The placenta, I found partially detached (the cause no doubt of the haemorrhage). I detached the part which adhered removed the cake when the flooding ceased. all went well until Apr 3. when she had a severe flooding, which continued until a small piece of the placenta which <sup>had</sup> been left behind was removed. The patient eventually made a good recovery.

In conclusion: our treatment of the third stage of labour should be simply expectant, until the placenta enters the vagina, when its final expulsion may be assisted as I have already said.

The employment of a particular "method", regardless of the necessities of the case, savours of Muddledome midwifery, and should be avoided. Nature will, in most cases do all that is required, unaided, and the accoucheur should only interfere when she fails.