

The physiology and treatment of placenta praevia.

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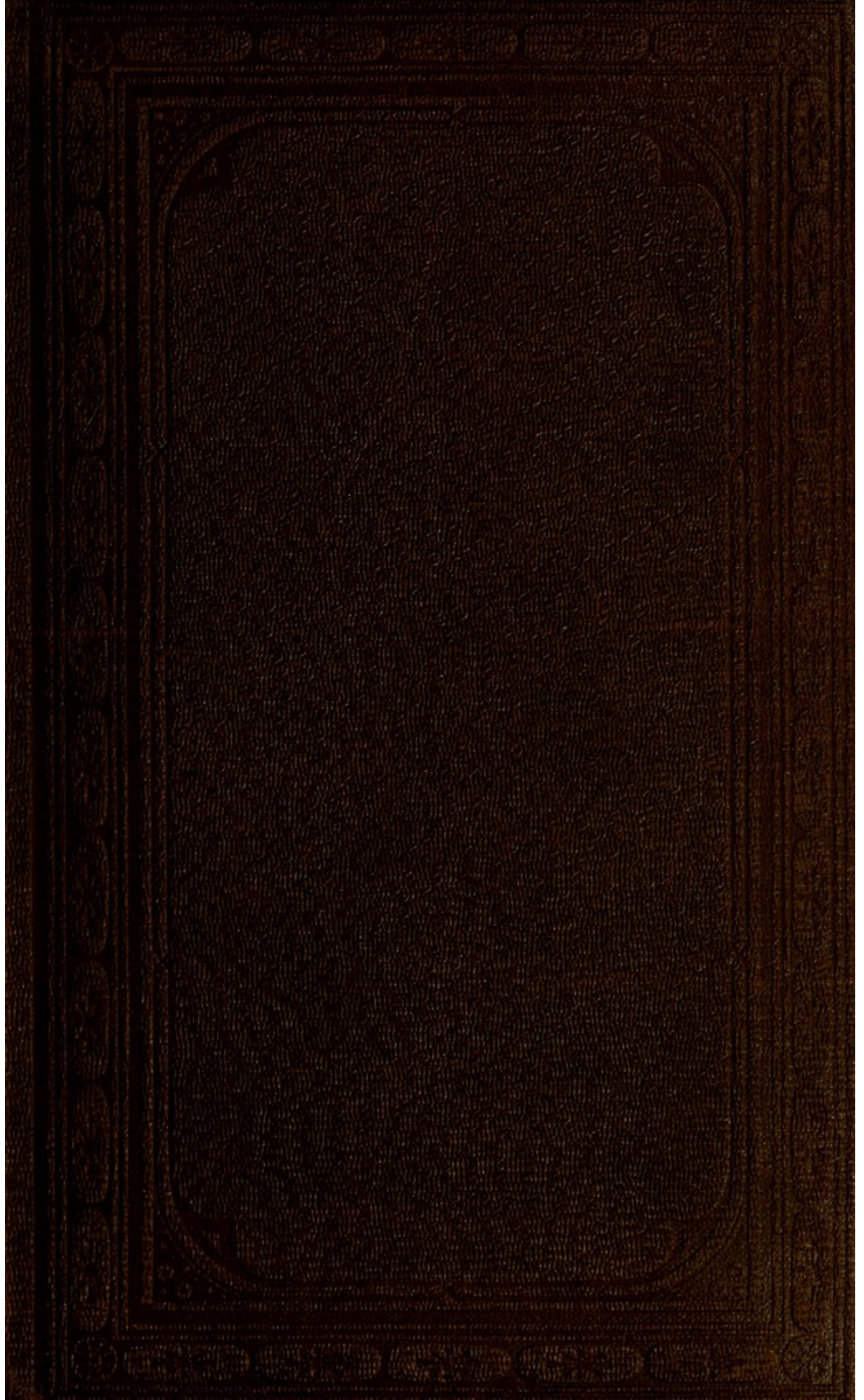
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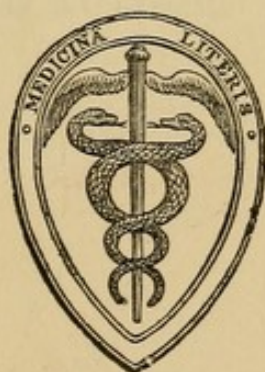
BEING THE

LETT SOMIAN LECTURES ON MIDWIFERY

FOR 1857.

By ROBERT BARNES, M.D. LOND., F.S.S.

LICENTIATE OF THE ROYAL COLLEGE OF PHYSICIANS;
PHYSICIAN TO THE ROYAL MATERNITY CHARITY;
FORMERLY LECTURER ON MIDWIFERY AT THE HUNTERIAN SCHOOL OF MEDICINE
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ETC. ETC.



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THE

PHYSIOLOGY AND TREATMENT

PLACENTA PRÆVIA

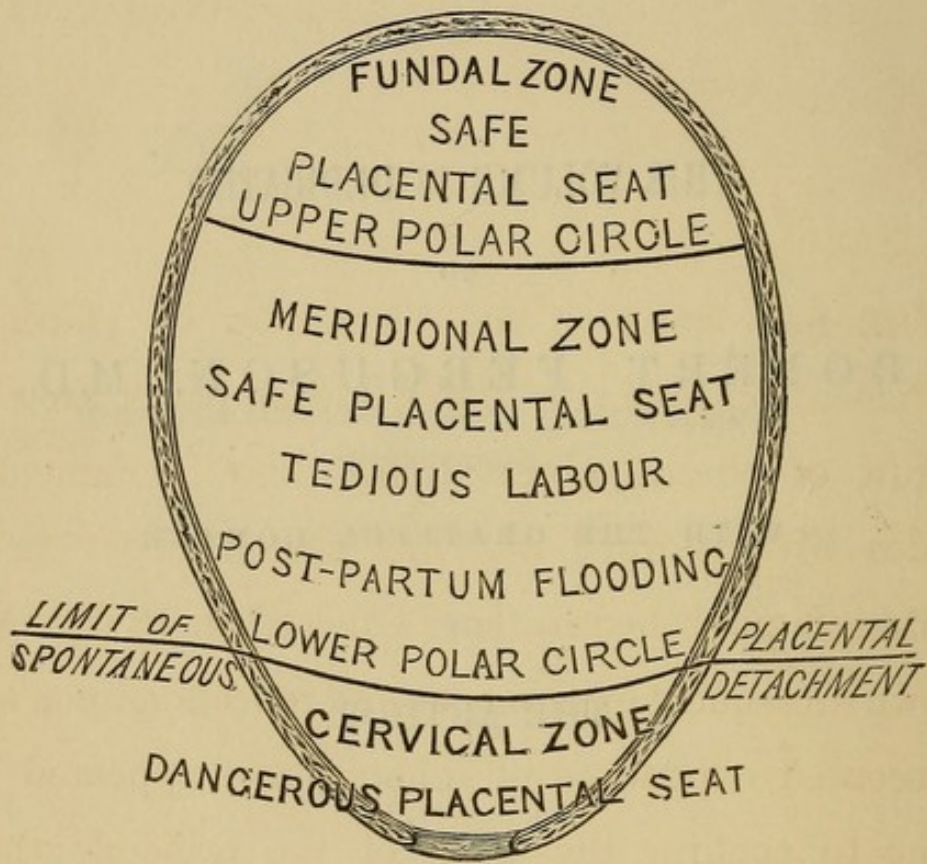
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THIS VOLUME IS DEDICATED
TO
ROBERT FERGUSON, M.D.,
WITH THE GRATEFUL HOMAGE
OF
THE AUTHOR.



P R E F A C E.

THE new views on the Physiology of Placenta Prævia, expounded in the following pages, are the fruit of clinical observation. The fundamental idea of this work was first sketched out in a Memoir published in the "Lancet," in 1847. My own subsequent experience; and reflection upon the recorded experience of others, have appeared to me to confirm the truth of the principle then advanced. This principle, if true, involves a new Physiology of Placenta Prævia, which must displace the current doctrines. This new Physiology does not necessarily involve an entire revolution in the rules of treatment; but as in other cases Theory must, logically, precede a

rational scheme of treatment, so in this case, the new Physiology supplies, as I believe, a guiding knowledge to illuminate the path of the scientific practitioner; enabling him to appreciate rightly the fitness, as to circumstance and time, of the application of each recognised remedial agent. But this is not all: the new theory draws after it a new method of treatment, not, indeed, subversive of, but complementary to, the recognised methods. The operation of the Total Cervical Detachment of the Placenta simultaneously with the induction of Uterine Contraction, will hereafter be resorted to in those fearful cases of emergency in which floodings threatening to be speedily fatal are proceeding at a stage of labour when to force the hand into the uterus is an impossible or a desperate undertaking.

When will this operation, and the theory upon which it is based, be admitted to take rank in Obstetric Medicine? I do not presume either to hope or to desire that any authority of mine should weigh. Dogmatism has obstructed free inquiry too long. I invite a new and candid clinical ex-

amination of the phenomena, physiological and pathological, of placenta prævia. My appeal is from authority to observation.

The following Lectures are printed without alteration, as they were delivered before the London Medical Society in May last, and as they were published in the last volume of the "Lancet." The views enunciated have at least this testimony to their merit, that they have been deemed worthy of adoption—albeit without full intelligence of their scope, or acknowledgment of my priority—by several distinguished German obstetricians. I have, therefore, not felt myself at liberty to alter a text which may be referred to as evidence in a controversial discussion. Nor have I thought it necessary to burden a purely scientific and practical treatise with controversial criticisms. The decision as to whom belongs the merit of priority, will be settled by a simple reference to chronology. *Litera scripta manet.*

I have, however, further unfolded and illustrated the principles set forth in the Lectures in copious Appendices of Cases, and Commentaries. In this

part of the work I have designedly availed myself freely of the experience of others: thinking the testimony of independent, perhaps adverse witnesses, may be more convincing than my own. I have especially to thank Dr. R. U. West, a most successful and original cultivator of obstetric science, for having placed in my hands the whole of the cases of placenta prævia which he has met with in an active and observant career.

ROBERT BARNES, M.D.

13, *Devonshire Square, Bishopsgate.*

1st *January*, 1858.

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LECTURE I.

HISTORICAL AND CRITICAL SURVEY OF THE PHYSIOLOGY, PATHOLOGY, AND TREATMENT OF PLACENTA PRÆVIA.

MR. PRESIDENT,—In undertaking the honourable office which the suffrages of the Council of the Medical Society of London have assigned to me, two sources of anxiety oppressed me. In the first place I could not but feel deeply the responsibility imposed upon me of not discrediting a Chair, instituted for the purpose of doing honour to the memory of Dr. Lettsom, an illustrious founder of this learned Society. I had in the next place to consider well whether there was any great question in Obstetrics which I had so studied, that I might hope to bring it before the Society in a form worthy to engage the attention of a body of learned men, skilled in the practice of medicine, and well fitted to criticise both the subject selected, and the manner of treating it.

There is one great question which has ever

arrested the attention of the obstetric anatomist and practitioner since obstetricy has existed as a science. The Physiology and Pathology of Placenta Prævia will never fail to arouse the interest and stimulate the researches of the thoughtful physician. It is this subject which I propose to treat. I do so with the hope of adducing some facts and reflections of value in practice, and not perhaps altogether unworthy to be remembered in association with this Chair.

It is singular, indeed, that more than once in the history of obstetrics we may observe a period when every pathological and therapeutical problem in placenta prævia was considered to be solved. But it has also been found, and our own daily observation still offers too many sad illustrations of the fact, that, if the received theoretical propositions, and the consequent therapeutical corollaries be admitted to be sound, the peculiar perils of placental presentation are not always successfully encountered under the present methods of treatment. I believe in this particular case, although I am far from thinking this rule generally applies in medicine, that ill success in treatment is presumptive evidence of error in the principles upon which that treatment is based. It is, no doubt, some feeling of this kind which has always kept alive in some minds a distrust as to the perfection of the preva-

lent doctrines, and kindled the desire to reopen their fundamental questions. We are at this moment at an epoch when, in the opinions of many, the theory of placenta prævia is perfectly understood, and the rules of practice are clearly defined and settled. For some, Levret and Rigby; for others, Radford and Simpson have spoken the last word upon this great obstetric question. But I would ask even those who have arrived at the firmest convictions upon the theory of placental presentations; as to the source of the attendant hæmorrhage; and the means of staying it,—Are they equally satisfied with the *results of their treatment*? Do they believe there is no resting-place for a hope of further improvement? That many are so satisfied, that many cherish this belief, I can hardly think.

I would venture here to submit the following proposition as a law of Medical Inquiry: Never to admit that we have arrived at a full understanding of the theory of any disease, so long as that disease baffles our skill in treatment.

That placenta prævia falls under this law there can be no doubt. As it is at least competent for me to devise laws for my own guidance, I feel amply justified in entering upon the free investigation of this subject; and knowing well that where I may fail in elucidating, I shall certainly

succeed in raising a spirit of inquiry or of criticism in other minds, which cannot but bear a goodly fruitage, I enter upon my task relieved from the apprehension I might otherwise entertain lest I should treat this great subject unworthily.

I propose, in the first place, to pass under historical and critical review some of the cardinal points in the physiology and pathology of placenta prævia, as a necessary introduction to the novel, and, as I venture to believe, more accurate views, which it is my especial design to bring before you.

The opinions of some of the older obstetric authors are well summed up and fairly represented by Dr. Lee. Having compared his summary and quotations with the originals, I find little to correct or to add. Amand, Lamotte, Guillemeau, Petit, Portal, Giffard, Puzos, Smellie, Rœderer, and Levret, all knew, and described from actual observation, that the placenta in certain cases adhered to the lower segment of the uterus; they all knew and fully comprehended the perilous nature of this complication; they knew that the hæmorrhage was inevitable; all perfectly distinguished between the case of hæmorrhage from detachment of the placenta where this organ had been originally adherent to the lower part of the uterus, and that case where the placenta had been detached from its normal seat. All, except Puzos, insisted upon

the importance, the urgent necessity for delivering the woman. Nothing can be more definite or unequivocal than the injunctions or the recorded practice of Mauriceau, Portal, Smellie, Rœderer, and Levret in this emergency. Puzos insisted upon the advantage of rupturing the membranes with a view to arrest the hæmorrhage; he relied more upon the resources of Nature than the other physicians cited. Daventer stands almost alone in the belief that in these cases of flooding with the placenta at the os uteri, the placenta was always wholly detached, and that it had slipped down from the fundus. Further, any one who reads the cases reported by these authors cannot fail to gather from the collateral circumstances and observations related, that the danger of placental presentation, its general features, and the urgency for delivery, were equally recognised not alone by these authors themselves; but also by so many other physicians, who either assisted at some of these labours, or whose opinions were announced in connexion with them, that this knowledge and this practice formed part of the current received medical science of the times.

This current knowledge was, however, first thoroughly digested and systematized by Levret. Did Levret introduce any new fact, propound any new theory, or recommend any new mode of prac-

not so

tice? This question must be answered in the negative. Shortly after the publication of Levret's work, the late Dr. Rigby, of Norwich, published the first edition of his celebrated "Essay on Uterine Hæmorrhage." Up to this time it appears that Dr. Rigby had not seen the work of Levret; and from the terms in which he refers to the views of Mauriceau, Portal, Giffard, Smellie, and others, he does not seem to have been aware of the extent to which his own doctrines had been anticipated.

From the preface to his sixth edition, we learn that he first became aware of the occasional implantation of the placenta upon the neck of the womb, from his own experience; and from his manner of referring to the descriptions of the authors named, he appears to have laboured under the misconception that they had not plainly stated the fact, that the placenta was occasionally so attached. "He had neither *read nor heard of the placenta being ever fixed to the os uteri.*" He admits further, in the same place, that when he had read Levret's book, "he felt less entitled to the claim of absolute originality on the subject; and now rested perfectly satisfied to divide with Levret the credit arising from the mere circumstance of communicating a new physiological fact."

But since Levret had not "communicated a new physiological fact," but had rather epitomised the

current knowledge of his time, confirming it by his own experience, what originality can we assign to one who in the end claims to share with Levret a merit which Levret does not possess? I say this without any desire to detract from the worth of the writings of these famous authors. The works of both are rich to profusion in the records of facts of imperishable value, and in reflections that will ever prove in the highest degree instructive and suggestive.

It is unnecessary to say more in proof of the assertion that the occasional deviation from the fundal seat of attachment of the placenta was well known to the older anatomists and obstetricians, than to cite the distinct statements of Heister, de Graaf, Fallopius, and Müller. In addition to the unequivocal descriptions of particular cases, Portal has these remarkable words: "Il faut remarquer que l'arrière-faix se trouve souvent adhérent; c'est-à-dire collé, attaché, ou contigu au corps de la matrice, tantôt à une partie, tantôt à l'autre, *selon qu'il plait à la nature de se jouer.*"

This passage is quoted by Levret. Co-extensive with this general knowledge of the anatomical fact, that the placenta was occasionally implanted on the cervix and orifice of the uterus, we find a general appreciation of the pathological fact, that when this unfortunate circumstance occurred, there

was a necessary—call it “unavoidable”—and dangerous hæmorrhage. Nor did those who recognised the anatomical and pathological elements of this complication stop short of the now current therapeutical law.

From the time of Paré and his pupil Guillemeau, the necessity of delivering, as early as possible, has been enforced by Mauriceau, La Motte, Portal, Chapman, Giffard, Smellie, Rœderer, Levret, and their successors, as the course that was above all things necessary. These are essentially the doctrines of Rigby. No one now disputes the fundamental anatomical fact. The unavoidable character of the flooding is almost as universally conceded. Down to a recent period the practice has, with certain modifications, adapted to varying cases, been equally uniform.

At a certain period of his practice, Mauriceau appears to have discovered that in some cases of flooding where there was only partial presentation of the placenta, or where the membranes presented, rupture of the membranes and evacuation of the liquor amnii might be sufficient. Subsequently Puzos defined with more precision the cases in which rupture of the membranes might be practised. But still the *accouchement forcé* remained the general rule in all cases of hæmorrhage from detachment of the placenta.

The late Dr. Rigby, having clearly recognised the difference between the hæmorrhage that arose from the occasional, or, as he calls it, "accidental" detachment of the placenta from its normal position, and that which took place as the inevitable consequence of the progress of gestation or of labour when the placenta grew to the os and cervix, soon came to the conclusion that this difference in the mode of production called for different modes of treatment. In the earlier editions of his work he says, "that unavoidable and accidental hæmorrhages require very nearly opposite modes of treatment; that in the first, manual extraction of the fœtus by the feet, or forced delivery, is absolutely necessary to save the life of the mother, and that in the second species such practice is never required." But it is rare indeed that Nature submits to be thus bound by the absolute Never or Always. In his third edition Dr. Rigby was compelled to modify this dictum: he admitted that "assistance might be required in accidental hæmorrhages."

The most important questions in the pathology and therapeutics turn so closely upon the assumed "inevitable" nature of the flooding, that I must cite more largely in reference to this question. It is not necessary to recur at greater length to the emphatic expressions of Rigby or his predecessors.

My object is rather to show how far the conviction as to the absolutely necessary character of the flooding still prevails.

Thus Gardien :* “ On admet généralement que plus le travail de l'accouchement avance plus l'hémorrhagie devient abondante, parceque le décollement du placenta qui y donne lieu, est plus considérable ; que ce qui tend à augmenter les contractions de la matrice *augmente nécessairement* l'hémorrhagie ; que les moyens de la suspendre sont précisément ceux qui auraient pour effet d'éteindre les contractions, car l'hémorrhagie ne diminue et ne cesse que dans l'intervalle des douleurs.”

“ La perte produite par le décollement du placenta dans tout autre point de la surface interne de la matrice augmente lorsque les vraies douleurs de l'enfantement sont suspendues, et cesse quand les douleurs sont énergiques.”†

Duparcque, Désormeaux, Dubois, Depaul, enounce similar doctrines. So again Dr. Collins,‡ who may be said to represent the great Irish school of midwifery, says, “ We may conclude that where the placenta is fixed *over or near* the os uteri, nothing but delivery will put a stop to the loss of blood.”

The statement of Ingleby§ is strikingly em-

* Gardien, t. ii. p. 404.

† Op. cit. p. 406.

‡ “ Practical Midwifery.” § “ Uterine Hæmorrhage,” 1832, p. 143.

phatic:—"And thus the placenta will undergo a continuous separation corresponding to the successive expansion of the neck, *until nearly the whole of its surface* is dissevered from its uterine connexion. From this it is evident that when the placenta is affixed either to the cervix or os uteri, *whether wholly or partially*, the vessels will become exposed on each successive detachment, and the ultimate safety of the patient will depend upon delivery by turning the child, excepting perhaps in two peculiar states, in which rupture of membranes is the only treatment offered to us in one case, and the safest, and therefore the most eligible in the other."

"Pain, efficacious as it is in the accidental form of hæmorrhage, unless adequate to the expulsion of the child, is *neither to be expected nor to be desired*, to any material extent, in the unavoidable form, as it only renders the effusion more abundant. For though a certain degree of relaxation is necessary, it must be remembered that in exact ratio as the cervix uteri is successively developed, and the os internum progressively dilated, will an additional mass of placenta be detached from its connecting medium, and hæmorrhage necessarily be renewed."*

* Cp. cit. p. 146.

By all these authors it is assumed as a law that the hæmorrhage is in direct ratio to the activity of the labour ; it is assumed that the cervix *cannot expand* without causing hæmorrhage. This assumption, partly true, involves a fundamental error or oversight, to which I shall presently advert.

I must complete this sketch of the past and prevalent views by stating the modifications that have been introduced. Dr. Robert Lee* thus sums up the modifications in practice to be pursued according to the varying circumstances of the cases : “ When flooding takes place to an alarming extent in the seventh or eighth month, you ought first to ascertain whether or not the placenta be situated at the os uteri. It is impossible, from the manner in which the discharge of blood takes place, to be certain of the fact ; for there are some cases of hæmorrhage from detachment of the placenta from the upper part of the uterus where the flooding occurs spontaneously, and to as great an extent as in cases where the placenta presents. As the treatment and the successful or fatal result of the case will, in a great measure, depend on the correctness of the diagnosis, the examination should be conducted with so much care and circumspection as to leave no room for doubt on the subject.”

* “Lectures on the Theory and Practice of Midwifery,” 1844.

Thus the motive for a difference in treatment is emphatically expressed. But in laying down the particular indications of practice and the measures to be adopted he is somewhat less absolute than Rigby or Collins: "The operation of turning, which is required in all cases of complete presentation, is not necessary in the greater number of cases in which the edge of the placenta passing into the membranes can be distinctly felt through the os uteri. Sometimes there is profuse and dangerous hæmorrhage when the placenta does not adhere all round to the neck of the uterus, but only partially. If the os uteri is not much dilated or dilatable, the best practice in these cases is to rupture the membranes, to excite the uterus to contract vigorously, by the binder, ergot, and all other means, and to leave the case to Nature: by adopting this treatment the operation of turning may be avoided with advantage in the greater number of cases of partial placental presentation. But if the hæmorrhage is profuse, has returned at different intervals, and a great quantity has been lost, and the constitution is really affected, it is the safest practice at once, if the orifice of the uterus is in a condition to allow the hand to pass without difficulty, to deliver by turning the child."

Just the reverse

often than when p. h. is complete

Good

We thus see that a period arrived in obstetric history when a distinction in practice became

established, founded upon this distinction between detachment from the os and cervix, and from any other part of the womb.

But gradually a further distinction obtained. It was observed that the hæmorrhage attending cases in which the placenta had been adherent to one side of the os only, or partial placental presentation, *more* was generally less dangerous than that which attended the central adhesion of the placenta over the os.

It is now generally taught, that in partial placental presentation it is enough to rupture the membranes; and that afterwards the case may be left to Nature altogether. These cases, in short, have been classed, as far as treatment is concerned, in the same category as the cases of hæmorrhage from detachment of the placenta from parts of the uterus remote from the cervix. Wigand and Nägele especially insisted upon this, that the plug might be trusted to far more than was generally done, and that by the aid of this means, and the evacuation of the liquor amnii, many cases might be treated without turning.

The principle and rule of treatment of flooding before delivery that were generally taught until Professor Simpson revived and urged the doctrine of Kinder Wood, and Radford, may be expressed as follows:—

1. When the placenta is not found at the os uteri, or when it is found at one side only of the os uteri, trust greatly to Nature: use the plug, ergot, or, lastly, rupture the membranes.

2. When the placenta is found extending completely over the centre of the os, there is no safety but in delivery. The only doubt in this case is as *true* to the time and manner of effecting the delivery.

The practice advocated by Radford and Simpson was associated with a doctrine concerning the source of the blood different from that which had hitherto been received. The practice does not, indeed, as has been assumed, rest upon the physiological assumption as upon a logical foundation. The theory as to the placental source of the blood might be true or false; and yet the practice of totally detaching the placenta would not be indicated or excluded. There is no necessary sequence. In the same way, authors whose practice was uniform, have differed entirely as to the anatomical question, whether there exist a direct vascular communication between the uterus and placenta. Authors have explained the phenomena they have met as to the origin, continuance, and control of hæmorrhage, on either hypothesis, and with equal confidence.

The hypothesis of the placental origin of the hæmorrhage is by no means new. Thus we find

Levret saying, "Je suis d'accord avec tous les auteurs et les praticiens que le placenta en fournit aussi une partie." But more recently this hypothesis has been very distinctly stated by Mr. Rawlins, a surgeon of considerable repute at the close of the last century, at Oxford, who, in a very excellent "Dissertation on the Obstetric Forceps," published in London in 1793, says: "In flooding cases at the end of gestation, at the very onset, or during labour, it is generally advised not to wait for the natural efforts of the pains, but immediately on breaking the membranes, &c., to deliver by the feet, whatever may be the presentation; but I have conducted very safely many cases of this kind, where the head presented, entirely by trusting to the natural labour-pains: and to this I have been induced, first, to avoid certain accidents that may occur in turning a child but secondly, and chiefly from considering the state of the circulation between the mother and child; from which it appears that the discharge of *blood* in such hæmorrhages *proceeds more from the vessels of the detached portion of the placenta* than from the *denuded vessels of the uterus*; for though, when the placenta lies on part of, or over the os uteri, as that orifice dilates, it separates a certain portion of the cervix uteri from a certain portion of the placenta; nevertheless, the blood

cannot pass so freely from the vessels of the cervix uteri as from the placenta, although, granting, as the os uteri dilates that the vessels of the cervix are not contracted, yet it must be allowed that they are then so far attenuated as to be rendered in their diameter much smaller than they were before no great degree of flooding can proceed from them, but, on the contrary, from the vessels of the separated portion of the placenta, the blood may proceed freely, but yet not so much nor so readily from the *venal* part of it as from the *arterial* and consists of that *blood* which would have been returned from the child to the mother, if there had not been a separation of a certain portion of the placenta from the uterus."

It is proper to bear in mind that Mr. Rawlins believed in the direct vascular communication between mother and child. This belief does not, however, detract from his claim to having anticipated others.

It is also to be observed that Mr. Rawlins does not draw from his theory the conclusion that the entire placenta ought to be separated.

The next author who expressed this opinion was the late Professor Hamilton. But the professor did not any more than Mr. Rawlins proceed to the conclusion that it was proper to wholly detach the placenta.

Dr. Simpson quotes the following passage from Mr. Chapman, of Ampthill. It contains, perhaps, the first suggestion of the practice of entirely separating the placenta: "From the expulsion of the placenta to the birth of the child was full four hours. How far does this suggest a different practice to that in general followed? I mean, that of delivering the child in those cases of alarming hæmorrhage where the placenta is situated on the side of the os uteri."* It would appear that Mr. Chapman based this question, not upon any belief that the blood came from the placenta, but simply from the observation of a case in which the hæmorrhage stopped after spontaneous expulsion of the placenta.

The opinions of Mr. Kinder Wood have been published posthumously, and I know not whether completely. The following quotations are deserving of the most thoughtful attention.

"In some cases I have been called to attend where the ordinary method of delivery has been adopted; the patients died, and this led me to modify the practice, which I adopted in some of the above cases by detaching the placenta, rupturing the membranes, and then delivering the child; but after due consideration, I was again induced

* "Annals of Medicine," 1800.

to vary my plan ; and in those cases where we can have no hope of saving the patient if we proceed to delivery, however well the operation be conducted, I have no hesitation in recommending that the placenta be separated completely, and the membranes ruptured, that the hand be withdrawn immediately upon this being effected, leaving the child and placenta behind. By this practice, the patient will be placed precisely in the situation which occurs in the most favourable cases of delivery by the natural efforts. I conceive no fact in midwifery rests upon a more solid foundation than that this hæmorrhage will cease upon separating the placenta, and by this practice the patient is placed in as favourable a situation as is possible for recovery. Time will be gained to support her by proper means, and which can be used with greater freedom, as the hæmorrhage is infallibly suppressed by this operation.”*

From this passage, it would not appear that Mr. K. Wood was led to adopt the practice of totally separating the placenta in consequence of any theoretical ideas as to the source of the blood. His reasoning was from the presumed analogy between the case of the woman after detachment and expulsion of the placenta as well as of the fœtus,

* Dr. Radford, “Provincial Medical and Surgical Journal,” 1844.

and that of the woman in whom the placenta was detached, but still retaining both placenta and foetus in utero. Admitting the analogy to be perfect, his reasoning obviously fails in assuming that the hæmorrhage in the latter case is "infallibly suppressed." Why is the suppression of the hæmorrhage more infallible in this case than in that where foetus and placenta are delivered? Is there no such thing as post-partum hæmorrhage? I shall have, however, to recur to this doctrine of Mr. K. Wood.

The following is Dr. Radford's* account of the reasons which led him to adopt the practice:—

"I did not recommend this practice because I considered the rate of mortality high in cases of placenta prævia, but from the following circumstances: 1st, from having witnessed the spontaneous separation and expulsion of the placenta in several cases; 2ndly, from the results of a number of cases published, and others related to me by friends; 3rdly, in having in the year 1819 *detached the adherent portion of the placenta from the os uteri*, from which operation 'the hæmorrhage was immediately suppressed;' 4thly, from the practice of some of the older obstetric writers, Portal, &c.; 5thly, from having seen the malpractice of midwives; 6thly, from my knowledge that the late

* "The Lancet," vol. ii. 1847, p. 433.

Mr. Kinder Wood had several times successfully performed this operation ; his cases, five in number, are already before the profession.”*

Dr. Radford was not, therefore, determined to this practice by any theoretical views as to the source of the blood. He has, however, supported with his authority those who contend for the placental source. The particular conditions which Dr. Radford lays down as calling for the artificial detachment of the placenta will be considered hereafter.

The principal grounds upon which Dr. Simpson advocates the complete detachment of the placenta are these : 1st. That he has collected a number of cases in which it was observed that the hæmorrhage ceased after entire separation, accidental, spontaneous, or intentional, of the placenta. 2nd. That he believes the source whence the blood flows, principally if not entirely, to be the detached surface of the placenta. 3rd. That he believes the maternal mortality under turning to be greater than that under complete separation of the placenta. 4th. That the infantile mortality under turning is so great, that it ought not to outweigh the advantages contended for, of separating the placenta. It will be necessary to examine these propositions further on.

* “Provincial Medical and Surgical Journal,” vol. ix. p. 133, and viii. p. 603.

Now, although I am very far from acknowledging the truth of all the theoretical doctrines, or the accuracy of the statistical data upon which some of the foregoing rules of practice are built, I fully admit that both reason and experience have established that each of these rules finds its legitimate application. Even that method which has been the subject of the keenest animadversions, the complete detachment of the placenta, is, I believe, indicated and useful in particular cases. In expressing this opinion, however, I think it desirable to define it clearly, by stating that I *right* prefer the limitations of this method laid down by Mr. Kinder Wood and Dr. Radford to the extensive range contended for by Dr. Simpson.

Arrived at this point of our inquiry, we find that the principle and line of treatment in hæmorrhage from implantation of the placenta on the cervix uteri, which had been considered definitively settled, have, within the last few years, become the subject of controversy. The whole question has been reopened; and I cannot but think that the active and independent spirit of inquiry, that looks upon no law in obstetrics as so consecrated by time, authority, or experience, that it ought to be secure from assault, a spirit which constitutes the distinguishing merit of Professor Simpson, will result in more extensive knowledge and more enlarged therapeutical resources.

For the last few years the position of the obstetric world in relation to this problem in practice may be sketched as follows:—

1. In cases of partial placental presentation, rupture of the membranes, the use of the plug, and other temporizing expedients, will generally be sufficient.

2. In cases of complete placental presentation, and in those of partial, where the flooding is unusually profuse, we have to choose between two methods: forced delivery, and artificial detachment of the placenta. But concerning this choice there prevail many conflicting opinions.

a. With some, perhaps many, there is no question in any case. These see no safety but in delivery, and condemn the practice of detaching the placenta absolutely.

b. Others, with Kinder Wood, would detach the placenta in those cases of exhaustion where forced delivery cannot be resorted to without peril to the life of the mother; or, with Dr. Radford, in those cases also where the os is partially dilated, where the membranes are ruptured, and where strong contraction exists—a condition, I presume, considered to contra-indicate turning; and also in cases of narrow pelvis.

c. Others extend their faith in this method to the full latitude of the precepts of Dr. Simpson. These would detach the placenta in all the following cases:—

- “1. When the os uteri is rigid and undilatable.
2. In first labours.
3. In premature labours.
4. In labours supervening earlier than the seventh month.
5. When the uterus is too contracted to allow turning.
6. When the pelvis or passages are organically contracted.
7. In cases of exhaustion.
8. When the child is dead.
9. When the child is premature and not viable.”

In the not very probable event of a case occurring that should not fall under one or other of the preceding heads, it would remain to be considered whether evacuation of the liquor amnii or turning should be resorted to.

Here I may close the historical part of our subject. I will now proceed to explain what I conceive to be the *true* anatomy and physiology of placental presentations.

CAUSES OF PRÆVIAL ATTACHMENT OF PLACENTA.

It would indeed be a triumph exceeding, because superseding, all therapeutical improvements, if we could arrive at such a knowledge of the

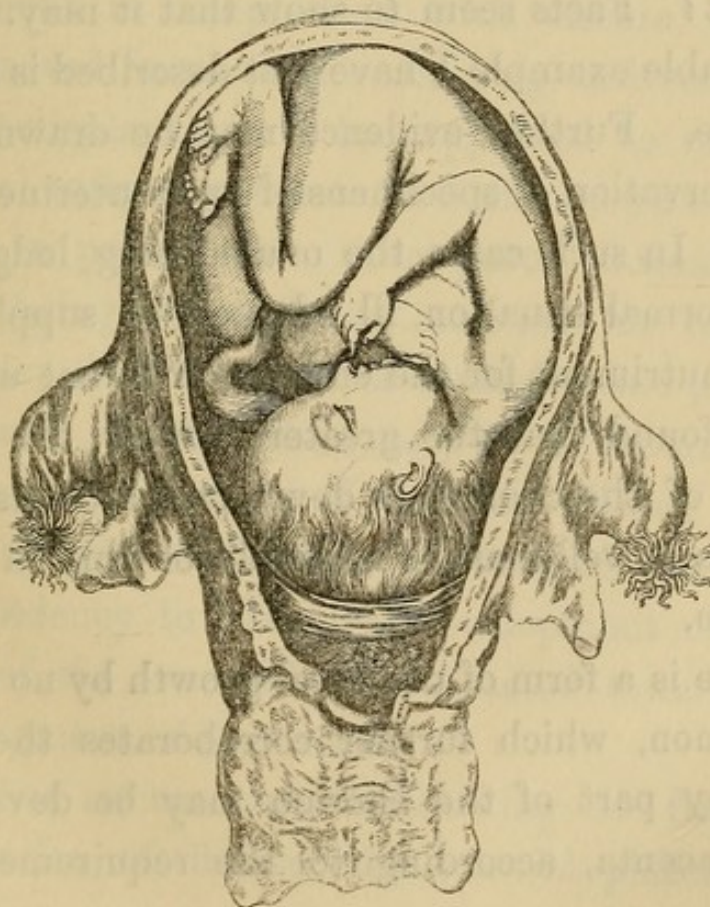
etiology of placenta prævia as would enable us to obviate the occurrence of this abnormality. That prophylaxis will ever supersede therapeutics in this matter can, however, scarcely be anticipated. Still, it is eminently desirable never to lose sight of the fundamental question of etiology in our inquiries.

Why is it that the placenta is occasionally developed on the cervix uteri? It is well to ask first, why it is that the placenta is commonly developed at the fundus and sides of the uterus? Let the consideration of the law precede that of the exceptions. The reasons appear to be obvious enough. As the ovum emerges into the uterus from the orifice of the Fallopian tube, it is usually caught in a fold of the softened, thickened, and corrugated lining mucous membrane of the uterus in the immediate vicinity of the point of entrance. There it fixes itself, and there it grows; and that part of the superficies of the chorion which lies in apposition with the original seat of attachment naturally becomes developed into placenta, whilst the villi of the remaining part of the superficies disappear, or at least do not assume the placentary character. It is a matter of doubt, however, in my mind, whether there be one part of the superficies of the chorion which is primordially more especially destined to be developed into placenta than the rest. What part of the superficies shall be developed appears

to depend upon the accidents of contiguity to the uterine mucous membrane, of disease, and other circumstances: that is, that part of the chorion which is in apposition with the decidua vera will be most disposed to furnish the placenta. But if we examine the pregnant womb and ovum at an early date, even as late sometimes as the fourth month, we perceive that the entire superficies of the chorion is in intimate and extensive vascular relation with the decidua. And even at the end of gestation, it is no uncommon thing to find that the villi of the chorion have not altogether disappeared from any part, but that there still remain numerous vessels all over its surface lying in contact with vessels of the decidua, and which may be regarded as analogous to the developed placenta. There is a beautiful specimen of an injected uterus and placenta of the eighth month in the museum of St. Thomas's Hospital illustrating this fact. There is another fact illustrating this position. In a most remarkable case of placenta prævia which I dissected, the placenta was found, at the end of the ninth month, spread over at least five-sixths of the entire surface of the uterus, leaving but a small space at the very fundus of the uterus which was unclothed by placenta. Why, it may be asked, did the placenta in this case spread itself so extensively? I believe

the following is a rational conjecture:—The placenta was everywhere extremely thin; the ordinary superficial development was insufficient for the nutrition of the foetus; more and more vessels were therefore called for, until they had formed a placenta of the enormous extent we see. Owing to the narrowing of the uterus towards its neck, it is highly probable that sufficient placenta cannot easily be developed in the case of prævial attachment without spreading beyond the usual limits, or acquiring very unusual thickness. Thus Levret has drawn especial attention to the shape

FIG. 1.



of the placenta in prævial attachment ; it is represented from nature in Hunter's well-known plate. (Fig. I.) The organ is much thicker in the middle than at the edges, and when placed on a flat surface it takes the form of a mamelon. I myself have observed that in cases of central attachment the placenta is commonly much larger than it is when seated at the fundus.

That the uterine mucous membrane can at any part furnish the uterine element of placenta is certain. The fact of our having to deal with placenta prævia is a sufficient proof. Why should not the chorion at any part furnish the foetal element? Facts seem to show that it may. The remarkable example I have just described is strong evidence. Further evidence may be drawn from the observation of specimens of extra-uterine pregnancy. In such cases, the ovum being lodged in an abnormal situation, ill adapted to supply sufficient nutriment for the embryo, it is not uncommonly found that the greater part or the entire surface of the chorion is developed into placenta. There is a well-marked example of this in Guy's Museum.

There is a form of placental growth by no means uncommon, which further corroborates the view that any part of the chorion may be developed into placenta, according to the requirements of

the embryo. There are the *placenta spuria* and the *placenta succenturiata*, to prove that true placental outgrowths may take place at a distance from the main placenta. Sometimes a placental mass of the size of a crown piece or larger is found wholly separate from the main placenta. This is not an unfrequent cause of secondary hæmorrhage after delivery. The *placenta succenturiata* remains adherent after the expulsion of the true placenta and the bulk of the membranes.

But there is yet another fact, of extreme importance in relation to this subject. I have been struck with the frequency with which prævial attachment is complicated with disease of the placenta and fœtus. In examining and reflecting upon particular cases it has appeared to me that placental tufts may shoot out from one part of the chorion in preference to other parts, because some points, being diseased, are unfitted for efficient placental development; or because some parts of the chorion, itself healthy, may be in contact with an unhealthy portion of decidua. Thus, if the fundal mucous membrane is diseased, there will be a tendency to placental development on that aspect of the ovum which is directed towards the lower segment of the uterus.

Another circumstance illustrating the frequent complication of disease with prævial placenta, is

adhesion. It is important, however, not to confound the cases of true adhesion, in which there is organic change of structure, or abnormal deposit in the decidual portion of the placenta, with those more frequent cases in which the adhesion is merely the result of absent or ineffectual contraction of the uterus. We shall see by-and-bye that the muscular structure about the lower segment of the uterus is far less perfectly adapted to cast off the placenta than is the muscular structure of the fundus. This is one cause—a frequent one, and often unsuspected—of placental adhesion or retention. During my researches into the diseases of the placenta, many placentas have been brought to me, which having been retained, had been manually separated from the uterus on account of supposed morbid adhesions. It was rare to find in these specimens any trace of disease.

Not according to statistics In a recent excellent paper, the present Dr. Legroux says, that placenta prævia mostly occurs in pluriparæ, and that it is due to the greater than normal enlargement of the uterus, which thus allows the ovum to spread its attachments lower than is possible in the more inferiorly contracted, or pyriform, uterus of primiparæ.

One circumstance has struck almost every observer, and that is, the frequency with which the prævial attachment of the placenta has recurred in

the same patients. Some women are, therefore, especially prone to this complication. Is it rational to conclude that some women are especially prone to an "accidental" attachment of the placenta to the lower segment of the uterus? No. It is not then an "accident;" but an occurrence depending upon definite and ascertainable causes. *one pt. 14 times in succession*

I believe the etiological arguments thus enunciated are well-founded. They do not exhaust the etiological history. There are probably other causes. To complete the list is, I submit, an object eminently deserving of research. We should not rest contented with the quaint evasion of Portal, that these things happen, "selon qu'il plait à la nature de se jouer."

DIAGNOSIS OF PLACENTA PRÆVIA.

Are there any signs by which we may discern the existence of placenta prævia before the occurrence of labour? This question is important, because, if we knew that this complication existed beforehand, we should be forearmed, and the better prepared to encounter the impending difficulty. Levret has examined the question with his usual acumen. He enumerates the following signs of central or lateral placenta:—

1st. The belly of the patient is not pointed, or rounded as a ball, but somewhat flattened.

2ndly. It appears as if it were divided into two parts, as in the case of twin-pregnancy; but that which essentially distinguishes the first case from the second is, that the division is not found exactly in the middle, nor according to the vertical line of the body, but more on one side than the other, and a little obliquely. Moreover, if we question the woman, she will admit that in the first months of pregnancy she felt a swelling, with hardness in one or the other side of her belly.

3rdly. This hardness had gone on increasing, and had never changed sides.

4thly. This side is the most painful spot of the whole belly, and that in which she feels the movement of her child the least.

Exactly These signs are perhaps wanting in precision, but their existence in any given case should at least indicate the expediency of more minute investigation.

Gendrin gives two signs. He says that a pulsation may be felt at the os uteri not synchronous with the mother's pulse; and, secondly, that owing to the interposition of the placenta *ballottement* cannot be performed. Neither of these signs is universally true.

It may be stated that the lower segment of the uterus is generally larger, softer, more fleshy than in ordinary gestation. The presenting part of the

child either cannot be made out at all, or very indistinctly; and occasionally, when the os uteri will admit the finger, the quaggy placental mass may be felt. Sometimes a persistent dragging pain in a particular part has led to a stethoscopic examination, when the cervical attachment of the placenta has been accurately determined. This I have myself experienced.

Dr. Cohen, of Hamburg, has described the means of diagnosing placenta prævia in a paper to which I shall again have occasion to refer. His especial object is to determine which side of the lower segment of the uterus the main bulk of the placenta adheres to. He says the side of the uterus to which the main placenta grows is more swollen. In by far the greater number of cases this side is *painful*. The pain in the right hypogastric region, known to every accoucheur, is a suffering so common in these circumstances that we regard the cases in which it does not appear there, or on the other side, as exceptional. Whenever this pain was strong, Cohen always found considerable fibrinous deposits in the placenta, and often stringy adhesions of the foetal placenta to the uterus. The smaller part of the placenta, he says, is attached either to the *right* or *left* side; so seldom to the fore or after side, that for diagnosis it is enough to examine the right and left sides.

Accordingly vague and uncertain.

Moreau places little confidence in the condition of the os and cervix. He says: "One only phenomenon may cause a suspicion of the cervical insertion of the placenta: this is the epoch at which the hæmorrhages occur. Generally, they take place early in pregnancy, but they never arise before the moment when the neck of the organ begins to unfold itself. Most frequently, it is from the sixth to the seventh month."

The indications in diagnosis may be usefully summed up as follows:—

probably would not be noticed 1. The general signs, such as flattening of the abdomen, division of the abdominal tumour, and especially swelling and pain on one side of the pelvis pointed out by Levret, should lead to minute exploration by the finger and stethoscope.

? 2. Abortions, disease of the placenta, dead children, and placenta prævia in former pregnancies, should also incite to minute physical exploration.

LECTURE II.

EXPOSITION OF THE PHYSIOLOGY OF
PLACENTA PRÆVIA.

THE next question before us is one that embraces most of the points of cardinal interest in the physiology, pathology, and therapeutics of Placenta Prævia.

WHAT IS THE COURSE OF A LABOUR COMPLICATED WITH CERVICAL OR CENTRAL ATTACHMENT OF THE PLACENTA ?

It will be convenient to discuss, in the first place, several questions connected with the attendant hæmorrhage. We have seen from previous quotations that the doctrines most generally inculcated are : that there is an essential difference between the circumstances attending the detachment of the placenta from adhesion to the fundus, and from adhesion to the cervix uteri ; that this difference consists in the separation of the placenta from the fundus without hæmorrhage, and from the cervix

with hæmorrhage ; that, in the latter case, the hæmorrhage is necessary, unavoidable, a condition inseparably dependent upon the nature of the process by which the mouth of the womb is opened. It is contended, in short, that contraction which, in the case of fundal attachment, secures against flooding ; in the case of cervical attachment necessarily causes flooding. This proposition is, I shall show, physiologically erroneous ; and, being so, is the foundation of erroneous pathological and therapeutical doctrines.

If we watch attentively a case of labour in which the placenta presents—I mean, of course, such a case as admits of simple watching, that does not call for obstetric interference—we shall observe that as soon as the longitudinal muscular fibres of the womb have begun to contract so as to pull back the lower segment from the central point represented by the os uteri internum, a certain amount of detachment of the placenta from the part nearest to the os takes place ; owing to the periodical and sudden nature of the uterine contraction, this detachment is also sudden ; the sudden detachment is attended by a sudden escape of florid blood ; the contraction ceasing, the flow of blood also, for the most part, ceases entirely, or subsides greatly ; with the returning contraction, there is a fresh detachment of placenta, and another gush of florid blood ; the contraction at an end, the flow of

Therapeutical

each 36-57

blood again subsides. This order of events recurs in the same succession, perhaps several times. But, at last, if the child be not first extruded, *a stage of labour arrives when the recurrent contractions of the womb do not entail any further flooding*; the pains return in their usual course with their usual strength, and with the usual effect of further dilating the os uteri, and forwarding the labour; *but there is no more hæmorrhage*. The labour is resolved into a natural labour, and may be safely concluded by the natural powers. (Fig. 2.) I call especial attention to this fact: almost always the most profuse floodings are those which occur at the very onset of labour; the subsequent floodings become less and less profuse; that is, the hæmorrhage is commonly in the inverse ratio to the progress of the labour and the expansion of the os uteri. So untrue is the common assertion that the hæmorrhage increases with the advance of labour.

Now this history, true to nature, is diametrically at variance with the still received dogmas, that the hæmorrhage is the necessary result of the expansion of the os uteri, and that there is no safety but in delivery.

Our obstetric annals record many cases not only of partial, but also of central, placental presentation which followed the course I have described. They could scarcely fail to arrest the attention of the

observers ; to provoke the question, *Why did the hæmorrhage stop?* The true explanation has, however, been missed. The minds of the observers of this striking phenomenon have been so pre-

FIG. 2.

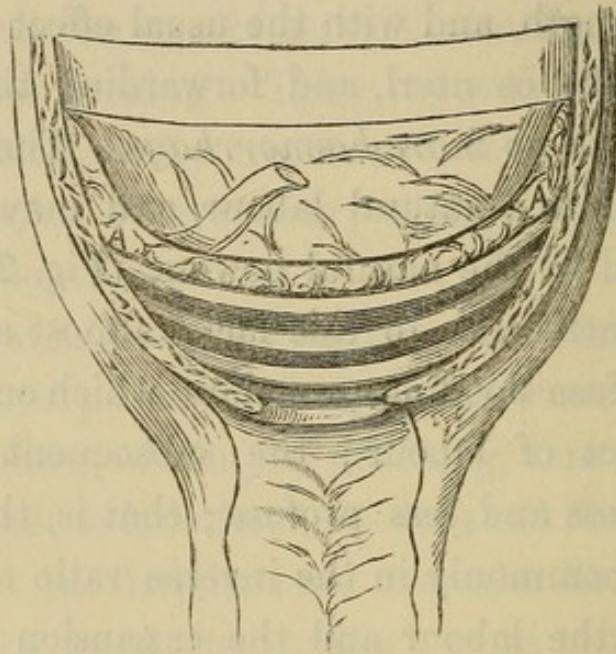


Figure 2 is a diagrammatic view of the progress of detachment of placenta. It is cast off in zones or rings, if the case is one of placenta centralis ; and in segments of rings, if one of cervico-orificial placenta. At A A, the dilatation of the os involves no further detachment of placenta.

occupied with the prevalent *idola fori*, which teach that so long as uterine contraction—that is orificial expansion—goes on, hæmorrhage must go on too, that they have either regarded this phenomenon as exceptional, or accounted for it by inadequate and accidental circumstances. And in spite

of the frequency of this phenomenon, many, if not most, practitioners, have seen in it no physiological or therapeutical lesson whatever.

So long as the practice so resolutely followed in every case of præ-partum hæmorrhage by Mauriceau, Portal, Levret, and the older obstetricians, shall be recognised and acted upon as the one and absolute rule, it must be difficult, if not impossible, to arrive at a true knowledge of the physiological course of a labour with this complication. The process of Nature is rudely interrupted before she has time to assert her power. It has been observed that in some—we will even grant, many—cases that were left to themselves, the unhappy patients died of hæmorrhage. It is thence assumed, that nature is *always* hopelessly at fault. The logic is bad; and, as is often the case, an unreasoning assent to an unqualified dictum has served to perpetuate error.

Their experience narrowed by this exclusive empiricism, some men have rashly denied the possibility of placental labour without hæmorrhage, or of the spontaneous arrest of hæmorrhage. They scout the proposition because it is contrary to their experience! forgetting that they have so restricted their experience as to have debarred themselves from the opportunity of witnessing what Nature was prepared to reveal to them!

To digress for a moment, for the sake of an

illustration. Some practitioners have been early taught by precept and example to believe that fever *must* be treated by the unlimited exhibition of brandy and other stimulants. Impressed with this doctrine, they take care never to witness a case treated in any other way. They pour in brandy, and the patient recovers: he recovers because he was well treated! They pour in brandy, and the patient dies: he dies because he could not swallow enough! Under the influence of such preconception, a rational knowledge of the power of Nature is plainly excluded. How useful would it be could such men have the good fortune to observe a dozen fever patients treated on the principle of non-interference!

So it is with this case of placenta prævia. Nature declares and pronounces emphatically that the hæmorrhage is not in all cases unavoidable and progressive in proportion to the dilatation of the mouth of the womb. She protests against the assumption that in this great emergency she is altogether at fault, and powerless to arrest the flooding. Let not those who have never had the courage to trust her, the patience to observe her, or the skill to interpret her, too confidently deny her power.

The first great improvement in the treatment arose out of a more accurate and discriminating observation of cases. Puzos had seen that there were cases in which the hæmorrhage abated or

She contradicts this
at p 77-

See p. 77-109.

ceased: he discovered that it was not always necessary to force open the womb and extract the child; he found that rupture of the membranes and evacuation of the liquor amnii was often sufficient. His judgment has been amply verified by experience. Another great improvement in the treatment arose in the same manner. It was observed that in many cases the hæmorrhage abated after a time; and it was sought to gain this period with safety by the application of the tampon, or plug. As I have before said, however, the true reason *why* the hæmorrhage stopped, escaped detection. Hence there does not exist a sound logical and philosophical basis for a system of treatment. The modes of treatment as at present inculcated are essentially dogmatic and empirical.

Let me proceed with the development of my argument.

The following passage from Leroux (p. 258) clearly shows that the occasional spontaneous arrest of the hæmorrhage had been observed by him:—When hæmorrhage has continued some time, “*si la nature n’est pas trop affaiblie, les contractions se renouvellent, deviennent plus actives, l’orifice se dilate davantage sans effusion de sang et la tête s’avance.*” But he distinctly attributes this to the clots which form in the vagina; so intent, so preoccupied, is he with this as the cause, that he concludes the clots existed even when they

are not mentioned: as when he says (p. 260), "Portal a rencontré deux fois le même cas, et quoiqu'il ne fasse point mention des caillots, je suis porté à croire cependant qu'ils ont contribué à calmer la perte," &c. "On en trouve aussi des exemples dans Smellie, qui a également oublié de parler des caillots de sang." It did not occur to Leroux as possible that Smellie and Portal might have omitted to speak of clots because there were none.

More than thirty years ago an excellent physician, Dr. Mercier, placed the following question at the head of an article as its fitting title: "Les accouchements où le placenta se trouve apposé sur le col de la matrice, sont-ils constamment accompagnés de l'hémorrhagie?"* A pregnant question! Observation taught him to answer it in the negative. In his attempt to explain the *modus operandi* he was not fortunate. He says: "The uterine neck may thin itself, be obliterated and dilated, although the placenta adhere to it; this body may be detached and the labour end, in circumstances rare, indeed, *without the manifestation of hæmorrhage*, properly so called. But what cause can bring about so surprising an effect?" For his answer he appeals to an erroneous anatomy: he says "the placenta only adheres to the womb by

See p. 77.

* "Journal de Médecine," vol. lv. p. 305.

apposition or contiguity ;” he denies the vascular communication between uterus and placenta ; and hence seeks to explain the absence of hæmorrhage by the absence of ruptured vessels.

Such cases as the following, extracted from Dr. Lee’s “Clinical Midwifery,” are frequent :—

CASE 1.—“On the 10th of November, 1841, I was called by Mr. Roach to a case of sudden and profuse uterine hæmorrhage, near the full period of pregnancy. The quantity of blood discharged in an hour was very great, and was followed by syncope. The flow of blood had ceased when I saw the patient, soon after, *and it did not return*, though the edge of the placenta was felt detached, and slightly protruding through the orifice. The following morning, labour-pains came on, the membranes gave way spontaneously, and the child was born alive, without any artificial assistance. The placenta soon followed without any discharge of blood. She recovered quickly.”

Moreau, although declaring in the strongest terms the unavoidable nature of the hæmorrhage, yet recognised its occasional spontaneous arrest. The following passage deserves attention: “On a prétendu, qu’il ne fallait sous aucun prétexte laisser à la nature le soin de terminer seule l’accouchement. Cette proposition nous parait trop générale et nous citerons tout à l’heure des faits qui le prouvent.”

*There were no pains and of course
no hæmorrhage.*

He thus explains the mode of arrest of the flooding. At variance with most authors, he says the hæmorrhage diminishes during the contractions. "The bag of waters tending to escape is closely applied to the uterine surface, so as to render all communication with the exterior impossible; the membranes thus fulfil the office of a plug. But as soon as the pain ceases, the membranes collapse, the uterine neck relaxes, and the space between the two structures is enlarged, and the barrier thus removed, the blood accumulated above escapes."

Caseaux observes, that "the hæmorrhage generally considered as inevitable in these cases, may, however, not show itself even during the progress of labour, and the *dilatation of the cervix uteri may be effected without there escaping one drop of blood.*"*

Dr. Zeitfuchst† relates the following cases:—

CASE 2.—"A woman was seized with great hæmorrhage. Plugging and temporizing were resorted to until the os was open to the size of a dollar; great exhaustion. Still he feared to operate. The bleeding stopped and did not return all night. In the morning, the patient had somewhat revived, when Dr. Z. determined to operate:

* See Case 15, in Appendix I.

† "Neue Zeitschrift, für Geburtskunde," 1843.

he pushed the placenta a little on one side, and seized the head, which he fixed in the brim ; pains came, and he left the rest to Nature."

The hæmorrhage had stopped : why was he so anxious to operate ? I record this question, because I shall have hereafter to advert to the cases of Dr. Zeitfuchs.

The following is another case from the same writer :—

CASE 3.—“There was great hæmorrhage at first ; the placenta was over the os, but the membranes were felt ; the os was open. He determined on the *accouchement forcé* at once ; was obliged to give up the attempt, as the shoulder came into the os. He then proposed to extract by crotchet, but the *bleeding ceased*, and the child was spontaneously expelled.”

Another case :—

CASE 4.—“Great hæmorrhage at first, and some exhaustion ; plugged ; then *no more blood*, although pains recurred and expanded the os. Dr. Zeitfuchs ruptured the membranes, and left the head to be extracted by the forceps.”

How does Zeitfuchs explain the cessation of the hæmorrhage ? “He believes there is no further danger of flooding if even the placenta is fully detached and in the vagina, if the *child's head or presenting part* is engaged in the mouth of the womb.”

This is the prevalent opinion.* It is that of Credé, who has put forth an unfounded and unintelligent claim to the true theory. To place the child's head or breech in the mouth of the womb, so as to make it serve as an internal plug for the bleeding vessels, is the constant object of solicitude. The remarkable fact has been overlooked that the bleeding has often ceased before the membranes were ruptured, and consequently before the child ^{the pains} ^{continued?} was brought into contact by pressure with the neck of the womb. We must seek further for the answer to our question.

Another explanation has been advanced. Dr. Simpson says: "The most rational idea seems to be, that in such cases the child has been dead some time, and the utero-placental circulation in consequence arrested previously to the supervention of parturition. But in relation to the objects of our essay, it is a much more interesting and important subject for us to inquire into the degree of hæmorrhage *after*, than the degree of hæmorrhage *before*, the complete separation of the placenta." It was Dr. Simpson's object to prove that hæmorrhage

* Dr. Radford also says ("Prov. Med. and Surg. Journ." 1845), "I conclude that, on a complete separation of the placenta, the hæmorrhage is immediately and completely suppressed, provided the uterus is in a condition to so far contract as to force down the head with the placenta upon the uterine openings."

was the consequence of *partial* detachment of the placenta, and that it might be arrested by *wholly* detaching it.

The professor's explanation is absolutely excluded by two facts: first, the hæmorrhage stops before total detachment of the placenta, and whilst the child is still alive; secondly, the hæmorrhage may, and frequently does, occur in cases where the child has long been dead. Cases illustrating all these facts will be recorded in various parts of these lectures, and in the Appendix of Cases.

It is unnecessary to cite further evidence to prove that in many cases the hæmorrhage may be spontaneously arrested, and that hæmorrhage is not the unavoidable result of prævial attachment of the placenta. I am aware that these propositions are very authoritatively denied. I appeal from Authority to Nature.

If now we analyze the various explanations given to account for the spontaneous arrest of the hæmorrhage, we may arrange them as follows:—

1. The explanation of Mercier, being based upon the erroneous idea that there are no vessels between placenta and uterus, may be at once set aside. 2.

2. The explanation of Simpson, that the absence or arrest is caused by the previous cessation of the utero-placental circulation owing to the death of the child, is excluded by the facts I have referred to.

3. The explanation of Leroux, that the arrest is caused by the formation of clots in the vagina, would certainly not apply to the majority of cases. It is well known that even the most perfect plugging will not always be effectual.

4. The opinions of all the remaining authors may be summed up in one category. They all rest upon the assumption that the hæmorrhage is controlled by the direct effect of pressure upon the bleeding orifices. This last explanation may be accepted, but only, I submit, to a certain extent. It does not explain the whole case. The concurrent testimony of many excellent observers, and the adequacy of the cause itself, when fully in operation, to produce the effect, command our assent. But I contend that there are many cases in which the absence or arrest of flooding cannot be accounted for by pressure. We must question Nature further for a full and satisfactory reply.

I invite the candid attention of my hearers to the following case and commentary, because they contain, as I believe, the first distinct exposition, drawn from clinical observation and anatomical reasoning, of the true cause of the absence, or spontaneous arrest, of flooding in placenta prævia.*

* On Flooding before Delivery, arising from Adhesion of the Placenta to the Os and Cervix Uteri. By Robert Barnes, M.B. Lond., &c.—“The Lancet,” March, 1847.

CASE 5.—“ Jane W—— has borne four children at the full term ; has generally lingering labours. During present pregnancy has observed nothing unusual up to beginning of ninth month, when, having been subject to excitement and labour attendant upon changing her residence, she was suddenly seized with profuse flooding, partly fluid, partly in clots ; great pains in the loins, followed by occasional giddiness and vomiting. Called to see her June 1st, 1846, at four P.M. She is rather a robust woman, of full habit ; pulse firm, 80 ; skin and tongue moist ; some thirst, sickness, pains in the loins, and violent pains in the belly ; great anxiety and restlessness ; feels pain, especially when lying on the left side. Examination per vaginam : Os uteri directed back to promontory of sacrum ; the cervix nearly an inch long ; the os barely admits the tip of the finger ; the quaggy sensation communicated by placenta is perceived ; presenting part of child not ascertainable, though from the irregularity and mobility of the parts, it is ascertained that it is not the head. The hæmorrhage is still profuse. Plugged vagina with a sponge dipped in vinegar so as to fill it completely ; enjoined quiet and cool air. Eleven P.M. : Some considerable oozing has escaped through the sponge ; the pains continue ; left the sponge *in situ*, as the patient did not seem much exhausted.

“ June 2nd.—Seven A.M. : Some oozing still going on ; removed plug for examination ; os uteri now size of a crown-piece, and lips thinner, but still rigid ; the placenta is felt detached from posterior lip and back of cervix ; anteriorly, the membranes are felt, and the presenting part of child recognised to be the feet. The mother thinks the child dead, not having felt it for two days. The stethoscope, however, revealed the sounds of the foetal heart. At noon I removed the plug ; *there has been no further flooding* ; os uteri the size of the rim of a wine-glass ; pulse 80, firm ; some restlessness ; occasional sensation of faintness and sickness. Still no urgency. Half-past one P.M. : Os uteri more dilated ; ruptured the membranes during a feeble contraction of the uterus, just anteriorly to the border of the placenta, and seized the feet, which readily descended ; cord was still pulsating ; and as owing to the smallness of the child there was no great pressure upon it, I saw no occasion to hurry the birth. Delivery was effected at forty-five minutes past one. (The child lived for two hours only.) After severing the cord, stimulated the uterus by friction to throw off the placenta. On examining this organ, found the cord inserted close to the margin, which had been adherent to the posterior lip and cervix. The part of the placenta which had been so situated and detached during labour, was indicated by its

more rugged aspect over a space three inches in diameter, the presence of clots filling up orifices of cells, and infiltration of tissue with blood, simulating ecchymosis. The general structure of the placenta was healthy. Some clots followed removal of placenta. The child did not show any signs of anæmia. The mother did well."

The following commentary was appended to this case :—

"But there arrives a period in partial placental presentation when the hæmorrhage ceases altogether, although a great portion of the placenta may still remain attached to the uterus. On referring to Case 2 (Case 5 of the present Lectures), where the placenta was implanted over the posterior part of the cervix only, it will be remarked that the hæmorrhage, which had been profuse, ceased when the os uteri was dilated to the size of the rim of a wine-glass. Why was this? The detached portion of the placenta had become plugged up by coagula, and *the remainder of the placenta, being attached to the body of the uterus, was not liable to become separated during the contractions of that organ.* It was, in fact, reduced to the normal condition, in which the placenta is attached wholly to the fundus uteri. In this condition, no part of the placenta being opposed to a portion of the uterus which is exposed to a greater degree of contraction than the re-

This is an early peltate principle - There were no pains!

mainder, it is not subject to partial detachment, and consequently to hæmorrhage.

“The facts establish a most valuable indication in practice. They serve to show that Nature, if closely watched, may, at least in partial presentation, be trusted to more than is generally admitted. They serve to show that turning and Dr. Simpson’s plan of artificially detaching the placenta (which, it must be admitted, is in itself a severe and even dangerous operation) may be sometimes dispensed with altogether, and in most cases be deferred. They justify a stronger reliance upon the use of the tampon or plug, which is an easy and a harmless operation. Supposing you are called to a case of flooding from partial placental presentation, where, although the hæmorrhage has been abundant, still the patient’s strength is good, the os uteri is scarcely at all dilated, it is rigid. In such a case, in order to effect either turning or total separation of the placenta, the hand must be forced through the os uteri at the risk of laceration and the other dangers attending those formidable operations; but if by plugging the vagina you promote the blocking up of the bleeding orifices by favouring the coagulation of the blood, you may safely reach the period when the os uteri shall be fully dilated, and when that portion of the placenta which had been adherent to the cervix has been

wholly detached, and further hæmorrhage precluded by the sealing up of the detached placental surface. The remainder of the placenta, though still adherent, as it expands and contracts with the expansion and contraction of the uterus, will not bleed. If by following this practice you can safely bring your patient to the termination of the first stage of labour—viz., the complete dilatation of the os uteri—THE CASE IS RESOLVED INTO ONE OF NATURAL LABOUR, and unless any other complications arise may be treated in the usual manner. The case No. 2 affords a complete illustration of these remarks.”

I particularly insist upon the fact, that in this case the hæmorrhage could not be arrested by pressure from within. The flooding stopped whilst the membranes were entire; moreover, the feet—a part incapable of exerting the requisite pressure—presented.

And this case is not an exceptional one, but typical. In my lectures, I have constantly explained and illustrated this principle, and inculcated it as a rule of practice, to gain time, to temporize, as far as the condition of the patient will safely admit, so as to carry her on to that period when the flooding will cease spontaneously by the conversion of the labour into a natural one *quoad placental attachment*. I might cite cases without

number in support of this proposition. Many will be found in the Appendix.

In a lecture, delivered in 1848, and published in 1849, having for its theme, "The Importance of a Rational Faith in Physiology as a Guide to the Safe Conduct of Labour," I further said: "*It is not, then, the separation of the placenta which secures immunity from flooding, but the contraction of the womb.*"*

There is, then, an anatomical, a physiological limit to the extent of placenta liable to detachment during the expansion of the womb. This is why, after a certain stage of the labour, no fresh bleeding surface is exposed. But how is the bleeding stopped from that part of the uterus already bared of placenta? By precisely the same mechanism as that which stops the flooding after normal detachment of the placenta from its normal seat at the fundus. The longitudinal muscular fibres of the lower segment *must contract* to pull open the mouth. Expansion, dilatation of the mouth, is contraction of the cervix. This contraction, by shortening the cervical portion of the womb, casts off the placenta, and exposes the ruptured mouths of the utero-placental vessels. The *first* effect is,

* Introductory Lecture to a Course on Obstetrics, delivered at the Hunterian School of Medicine, by Robert Barnes, M.D. Lond.—"Medical Gazette," 1849.

Jones, but it depends on the situation of the placenta.

bleeding. The *second* is, to stop the bleeding. The contraction goes on either actively, or passively and tonically, in most cases; and this further contraction constricts the orifices of the vessels—closes them: it is hæmostatic. If hæmorrhage be renewed, it does not proceed, except under circumstances of excessive muscular relaxation—the “passive hæmorrhage” of Dr. Chowne—from the surface bared by the preceding active contraction: it proceeds from a fresh zone or arc further from the os, bared of placenta by another contraction. This zone or arc is, in its turn, in like manner sealed; and there is another pause in the flooding. Zone after zone is thus bared by recurring contractions, and successively sealed up until that physiological limit, that line of demarcation between normal and abnormal placental implantation, the boundary-line of placental detachment, which I claim to have discovered, has been reached. *This zone attained, the labour is A NATURAL LABOUR!* (See Fig. 2.)

Let any one whose mind is informed with this physiological truth, read the annals of clinical midwifery. He will meet with case after case in which he will perceive that interference, ruled to be imperatively required, in order to stop a presumed “unavoidable” hæmorrhage, has brought danger where safety had been reached.

Let me refer you back to the first case I have

Fishes can swim from feet.

p. 44

quoted from Zeitfuchs. Where was the necessity for interfering here?

How many times has the hand been forced through the rigid os, and the child dragged away, when all hæmorrhage had stopped? How often has Nature protested in vain against perilous help?

I must not be misunderstood. I am far from asserting that Nature never needs help in these terrible cases. But I assert that she is often ignorantly encumbered with help when she needs it not.

In support of the opinion that it is uterine contraction which is the true hæmostatic agent, I am happy to quote the authority of Dr. Tyler Smith, who says,* “There is, then, every reason for believing that the mode in which hæmorrhage is arrested, in all placental presentations, whether at the os or fundus, is the same—namely, the contraction of the uterine tissue at the seat of separation.”

The present Dr. Legroux also, in the paper from which I have already quoted,† distinctly enunciates the same doctrine. He says: “The hæmor-

* “On Parturition and Obstetrics,” 1849, p. 378.

† “Observations d’Hémorrhagie par Décollement du Placenta inséré sur le col de la Matrice; Considérations sur la Pathogénie et la Thérapeutique de cet Accident.” 1856.

Dr. B. cannot reconcile this with statement on p 36-37
 rhagic act is diastolic; the apparent hæmorrhage is systolic; the hæmostatic act is systolic." He draws a remarkable therapeutical conclusion from this observation. During the diastole, that is, the interval of uterine relaxation, he advises to maintain the pressure of the mass of waters and membranes and child upon the neck. This is to be done by putting the patient *in the vertical position*. He says this plan perfectly succeeded in a very bad case.

Dr. Cohen, of Hamburg, also, in an article,* based to a great extent upon the physiological views enunciated by me, shows that the hæmorrhage ceases when the placenta centralis is reduced to the placenta lateralis.

Our next question,

WHAT IS THE SOURCE OF THE FLOODING?

has been to some extent anticipated by the preceding discussion of the mode of arrest. This question has, moreover, been of late years closely investigated. I shall pass it over as succinctly as its importance will permit.

It is, first of all, debated whether the bleeding proceeds from the bared surface of the uterus, or from the exposed surface of the placenta, or from

* "Monatsschrift für Geburtskunde," April, 1855.

both. If we exclude one of these assumed sources, we of course approach a solution. I think we are enabled to do this. The condition of the placenta found in these cases seems to present an effectual barrier against the profuse gushing flow of blood through its substance. The detached portion of placenta is soon choked up with coagulated blood. Dr. Chowne has further well shown that the structure of the placenta, even when not filled with coagula, is opposed to the rapid transit of blood. The Hunters long ago demonstrated the same thing. The cavernous structure of this organ can only permit a slow and *equable* movement. In addition to this inferential negative evidence, we have a large amount of direct positive evidence that flooding proceeds from the uterine surface. To say nothing of ordinary post-partum hæmorrhage, which is strictly identical in kind, Dr. Merriman relates a case of inversion, in which he *saw* the blood issuing from the uterine surface. Dr. Chowne has collected a mass of similar evidence. We may, then, conclude that the hæmorrhage is uterine. It remains to decide whether it be venous or arterial. It has generally been assumed to be venous. The arterial source has recently been most ably, and, I think, convincingly contended for by Dr. Mackenzie, who appeals to facts of three kinds:—

1. Having opened the uterus of a pregnant

bitch, and detached the placenta, he observed that the blood flowed freely from the uterus, and that it was *arterial*.

2. Having injected defibrinated blood into the hypogastric arteries of a woman, the placenta being previously partially detached, he again observed that the blood flowed exclusively from the uterus, and from the utero-placental *arteries*.

3. He adduces the recorded observations of many practitioners to show that, in women flooding from placenta prævia, the blood was arterial in colour.

This last evidence is necessary to complete Dr. Mackenzie's case, for the evidence drawn from his experiment on the dead woman is not enough to prove that venous blood may not regurgitate and escape from the uterine sinuses in the living woman. Dr. Chowne has shown how freely water will escape from these sinuses by injecting the vena cava backwards.

It is certain that in the majority of cases it has not been very carefully noted whether the blood issuing from the vagina was arterial or venous. But in some it is particularly specified. I am tempted to quote the following case, given by A. C. Baudelocque,* from Baudelocque the elder.

CASE 6.—“A woman, seven and a half months

* “Traité des Hémorrhagies,” ed. 1831, p. 101.

advanced in pregnancy, sat down upon the grass for a few moments to rest after a long walk. Soon after, she felt in the fundus of the womb and in the loins dull pains, which she attributed to fatigue. On the same evening, her abdomen appeared larger, and it increased so much during the night as to excite her surprise. Having but feeble pains, she got up, and took, as usual, a cup of milk coffee. Immediately after this breakfast, she lost some water, tinged with blood, and experienced slight faintings, which obliged her to return to bed. When seen by Baudelocque, at half-past twelve o'clock, she was pale and dying; her pulse could hardly be felt; she fainted every minute. I thought at first, he says, that she had lost torrents of blood, but no clots had passed, and the linen was hardly stained by a sanguineous serosity. The neck of the womb, situated deeply towards the sacrum, was fully developed; the orifice was opened to the size of a piece of twelve sous, and its edge was soft. Slight pains were felt from time to time, expelling every time a little *clear scarlet blood*, the escape of which was followed by fainting. I brought the orifice down to the middle of the pelvis, dilated it gradually, and in less than half an hour it exceeded the size of a large écu. During this time a forceps was being sought for. As soon as it was brought, I opened the bag of membranes, and the head

presenting, I seized it with the instrument, and extracted it. The child gave no sign of life. Before the rupture of the membranes, and when the mouth of the womb had opened to the size of an écu of six livres only, such a large quantity of *blackish clots* had come away, that I estimated it at more than would have filled a hat. Then there escaped a considerable quantity of *fluid scarlet blood*. The faintings became more marked and frequent. . . . The placenta presented itself spontaneously, and was extracted almost as soon as the child. Its external surface, a very small portion excepted, was covered with coagulated blood; it had occupied the fundus of the uterus. From this moment the woman lost but little blood. . . .”

See p. 78.

I offer the following commentary upon this history with confidence. The hæmorrhage was due, as Baudelocque concludes, to detachment, probably almost complete, of the placenta. The placenta had not been adherent to the neck of the uterus. The symptoms indicate an internal hæmorrhage. The appearance of the placenta, when removed, and the history of the case, point to detachment of the placenta as the cause of the hæmorrhage. The source of the hæmorrhage was not the neck of the womb, for the symptoms of profuse internal hæmorrhage, and the escape of bright scarlet blood externally, were observed before any examination or any

attempt to dilate the mouth of the womb, which might be supposed to have caused laceration of its substance, had been made. The bright scarlet blood escaped on the occurrence of the pains, and each loss was followed by fainting. The large quantity of blackish clots that came away in a mass was that blood which had been first lost, which was the result of the internal hæmorrhage. This blood, from being retained in the womb, had had time to coagulate, and had been blackened by contact with the liquor amnii. All the blood which was observed at the moment of escape was arterial in character; and this arterial blood could have no other source than the arteries of the uterus.

Drs. M'Clintock and Hardy, in their admirable work, p. 206, relate a case of hæmorrhage from complete placental presentation, in which it is stated that "there came a sudden gush of about *a pint of florid blood.*"

I have myself distinctly observed the arterial character of the blood escaping under similar circumstances. It is also to be borne in mind that the sudden intermitting gushing character of the discharge is more compatible with an arterial than with a venous source.

Believing, however, as I do that the weight of evidence turns in favour of the views of Dr. Mackenzie, I do not think that the venous origin

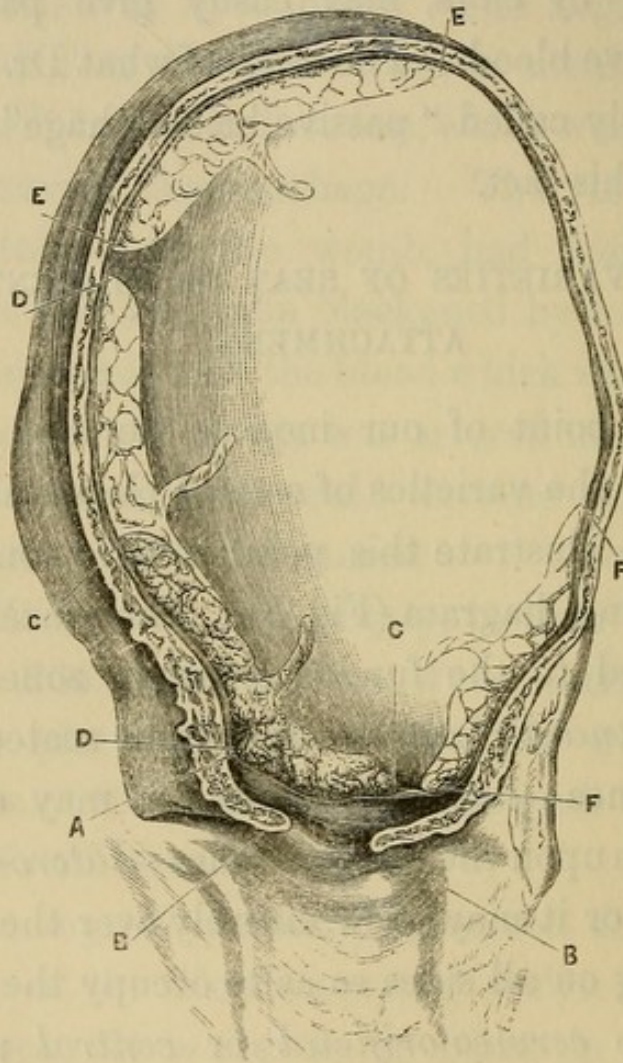
of flooding can be altogether excluded. In a state of uterine muscular atony, such as often attends flooding from placenta prævia, the mouths of the uterine sinuses must remain patulous, and, unless obstructed by clots, may easily give passage to retrogressive blood. The cases of what Dr. Chowne has properly called "passive hæmorrhage" seem to establish this fact.

THE VARIETIES OF SEAT OF PLACENTAL ATTACHMENT.

At this point of our inquiry we may usefully enumerate the varieties of seat of placental attachment. To illustrate this point, I have constructed the following diagram (Fig. 3). The placenta may be attached to the fundus or upper zones of the uterus—*fundal* placenta; it may be seated on the middle zones—*lateral* placenta; it may encroach downwards upon the cervical zones—*latero-cervical* placenta; or it may grow entirely over the inferior pole, rising on all sides so as to occupy the cervical zones—the *cervico-orificial* or *central* placenta. The fundal and lateral placentas are not, unless under very exceptional circumstances, liable to detachment, or to lead to flooding, before the birth of the child. The latero-cervical and the central placentas are, however, so liable. The extent to which this liability goes is greatly affected by the

extent to which the encroachment takes place within the cervical zones. In this case there may be little or no hæmorrhage; but should the

FIG. 3.



- E E, Fundal placenta.
 D D, Lateral placenta.
 F F, } Latero-cervical placenta.
 C B, }
 A B, } Seat of cervico-orificial or central placenta.
 B F, }
 A, } Line of boundary between normal and prævial
 F, } placental attachment, and consequently of
 } spontaneous placental detachment during
 } expansion of cervix.

encroachment proceed further down, the danger of hæmorrhage much increases. There are cases of flooding before the birth of the child, in which no placenta can be felt, and which are yet strictly cases of placenta prævia. How, it may be asked, do we get evidence of this? Nothing is more simple.

The following case shows one kind of proof:—

CASE 7.—On the 13th May, 1852, my assistance was required by one of the midwives of the Western General Dispensary. A poor woman, weakened by poverty and hard work, having had two children at full term and of full size, was in labour at nine A.M. For two days previously she had had hæmorrhage, which was still going on. The head was low in the pelvis and lying in the first position, and there appeared to be sufficient room; it had, according to the midwife, been in the same position for four hours without any advance. The pains had ceased altogether. Pulse feeble; face pale; great exhaustion, anxiety, and depression of mind. Fearing that further hæmorrhage might be fatal, I determined on delivering by forceps. Whilst waiting for the instrument, I directed the midwife to give an enema. I comforted the patient by assurance that she would do well. Almost immediately after, effective pains returned, and the head was expelled in an hour. No further hæmorrhage. Child still-born.

No part of the case being one of placenta prævia

It appeared to me that the uterine contractions were arrested in the first instance under the influence of anxiety and terror. The midwife, before sending for me, had sent for Mr. Cholmeley and Dr. Babington (she was a patient of Queen Charlotte's Hospital), and more than two hours had been thus lost. My arrival and assurances restored her confidence; and under the beneficial influence of that feeling the uterine contractions returned. The decidual surface of the placenta presented numerous specks of osseous deposit; the margin of the placenta presented large fresh coagula of dark colour, in the substance, and very large fresh coagula were attached to the very edge, and had evidently proceeded from a rupture of the circular venous channel which courses round the placenta.

substituted
It is this presence of coagula in the margin of the placenta which proves that it had been detached during labour, and that it had encroached upon the cervical region of the womb. In cases of this kind it is often remarkably well seen how dependent the hæmorrhage is upon inactivity of the womb, and how completely contraction checks it. Some most instructive cases of this class have been described by Dr. Tanner and by Dr. Stephen Monkton of Brenchley. They unfortunately neglect to record the state of the placenta after removal. But Dr. Monkton clearly adopts my

view of the nature of these cases. He says, "They approximate to the unavoidable hæmorrhage of Rigby; the placenta being not prævious, but sufficiently near the os to come within the scope of that expansion which occurs about the cervix and lower segment during the last months."

CASE 8.—On the 21st of June, 1849, a young woman at the full term of her first pregnancy died in convulsions, under suspicion of poison. I assisted at the post-mortem examination by order of the coroner. The placenta was attached to the whole anterior wall of the uterus from the fundus down to the cervix, but not quite reaching to the mouth. The position of the placenta was exactly that which is presumed to have led to the hæmorrhage in the cases just referred to.

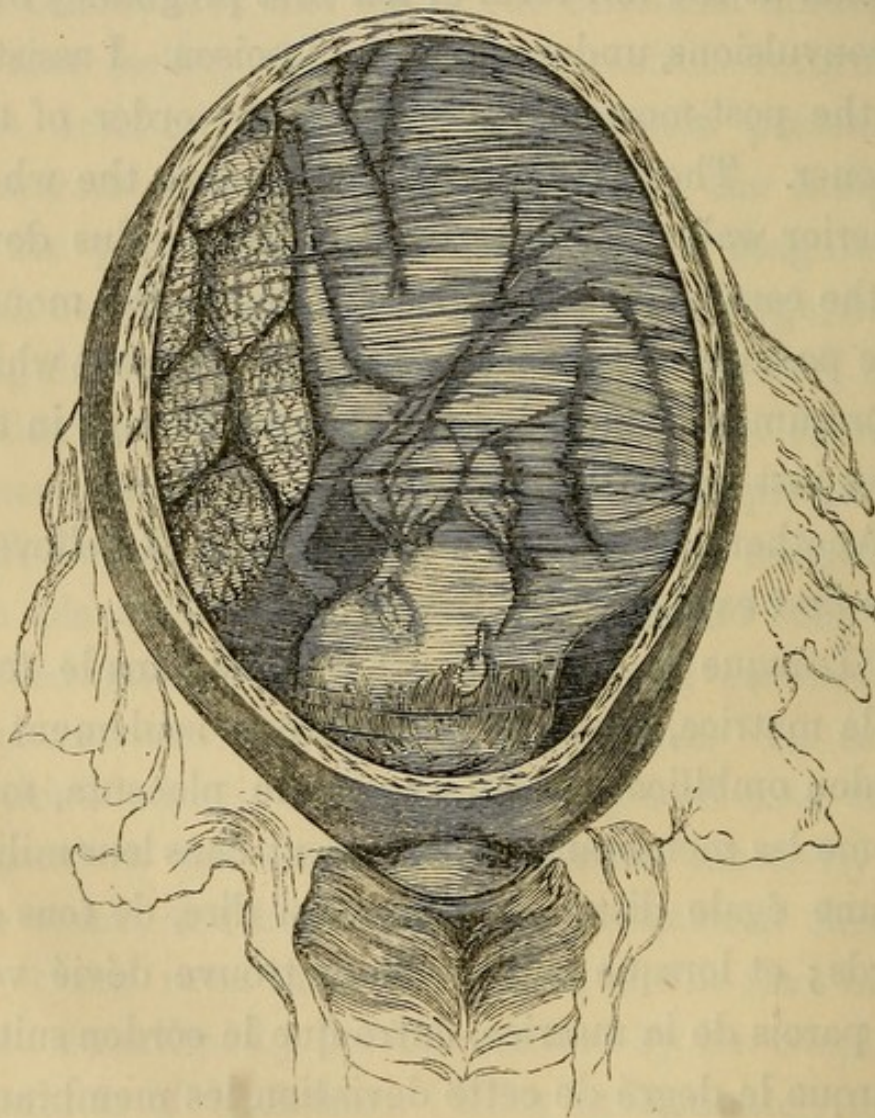
Another proof is very interesting. I believe it was first explained by Levret:—

"Lorsque le placenta est attaché dans le fond de la matrice, centre sur centre, non seulement le cordon ombilical est au centre du placenta, mais même les membranes se déchirent dans leur milieu à une égale distance, pour ainsi dire, de tous ses bords; et lorsque le placenta se trouve dévié vers les parois de la matrice, outre que le cordon suit et marque le degré de cette déviation les membranes se déchirent en même raison—c'est-à-dire, d'autant plus près de l'un des bords du placenta que cette

déviation est grande. Si donc le placenta est attaché assez bas dans un endroit des parois de la matrice pour que le cordon se trouve implanté sur le bord, ce sera sur ce même bord et dans ce même point que les membranes se déchireront.”

I have made the following sketch to illustrate

FIG. 4.



Drawing showing how the seat of rent in the membranes indicates the seat of attachment of the placenta to the uterus.

this position. Recently this subject has been experimentally examined by Dr. Von Ritgen.* He found that the bag of membranes burst at the edge of the placenta in 22 cases ; it burst at one inch from the edge in 8 cases ; between one and two inches in 12 cases ; between two and three inches in 16 cases ; three inches in 5 cases ; be-

* "Monatsschrift für Geburtskunde," October, 1855 ; and my Report on Midwifery, "British and Foreign Medico-Chirurgical Review," April, 1856. Dr. Von Ritgen has, in a subsequent paper, again referred to his researches on this point, as if they were based upon an original idea. It is right, therefore, to call to mind that the whole matter had been most lucidly described by Levret. This method of estimating the seat of attachment of the placenta is also particularly referred to by Maygrier. Mr. Hugh Carmichael, in some ingenious papers in the "Dublin Quarterly Journal," vol. xv., 1839-40, followed out the same idea, and imagined that by a particular mode of examining the rent and the membranes, it might be told not only how far from the fundus the placenta had been attached, but also to what point of the circumference of the uterus. His observations and speculations led him to the conclusion that the placenta was always adherent to the posterior aspect of the uterus. But as this is certainly untrue (vide Case 8 above), and his method is fallacious, it is not necessary to discuss it further. Dr. Doherty has admirably investigated the subject ("Dublin Quarterly Journal," vols. xv. xvii., 1838-40), by comparison with the revelations of the stethoscope. Out of 100 cases in which he examined the uterus before delivery with the stethoscope, and the rent in the membranes after delivery, he found that the placenta was attached to the anterior wall in 25 cases ; to the right side, below the Fallopian tube, in 8 ; in 10 to the left side, below the tube ; in 3 to the fundus ; in 54 to the posterior wall ; and of these, 27 came within two inches of the lowest part of the cyst. The observations subsequently made by Dr. Von Ritgen are less complete and exact than those of Dr. Doherty, but quite confirm them.

tween three and four inches in 4 cases ; at four inches in 6 cases ; between four and five inches in 8 cases ; at five inches in 3 cases ; at six inches in 6 cases ; and at eight inches in 3 cases. It follows that since the distance of the edge of the placenta from the rent is absolutely decisive as to the distance of the edge of the placenta from the os uteri, that the edge of the placenta rested on the os uteri in 22 cases, and was within one inch in 32 cases, and so on. This proves that the placenta has commonly a much lower seat than has hitherto been believed.

This frequent latero-cervical attachment of the placenta has other important bearings in obstetric practice. I must beg permission to digress for a moment to refer to them. It was pointed out by Levret that it was a frequent cause of laborious labour and of post-partum hæmorrhage. The attachment of the placenta to the lower segment of the uterus so modifies its thickness, vascularity, and capacity for contracting equally with the other portions of the uterus situated in the same zone, that the labour is rendered painful and lingering ; and, when the child is born, the faulty position of the uterus, added to previous exhaustion, disposes to a renewal of hæmorrhage.

There is another fact of practical interest. The frequent complication of cross-presentation of the

child with placenta prævia has often been observed. The explanation of Levret satisfactorily ranges the two facts in the relation of cause and effect.

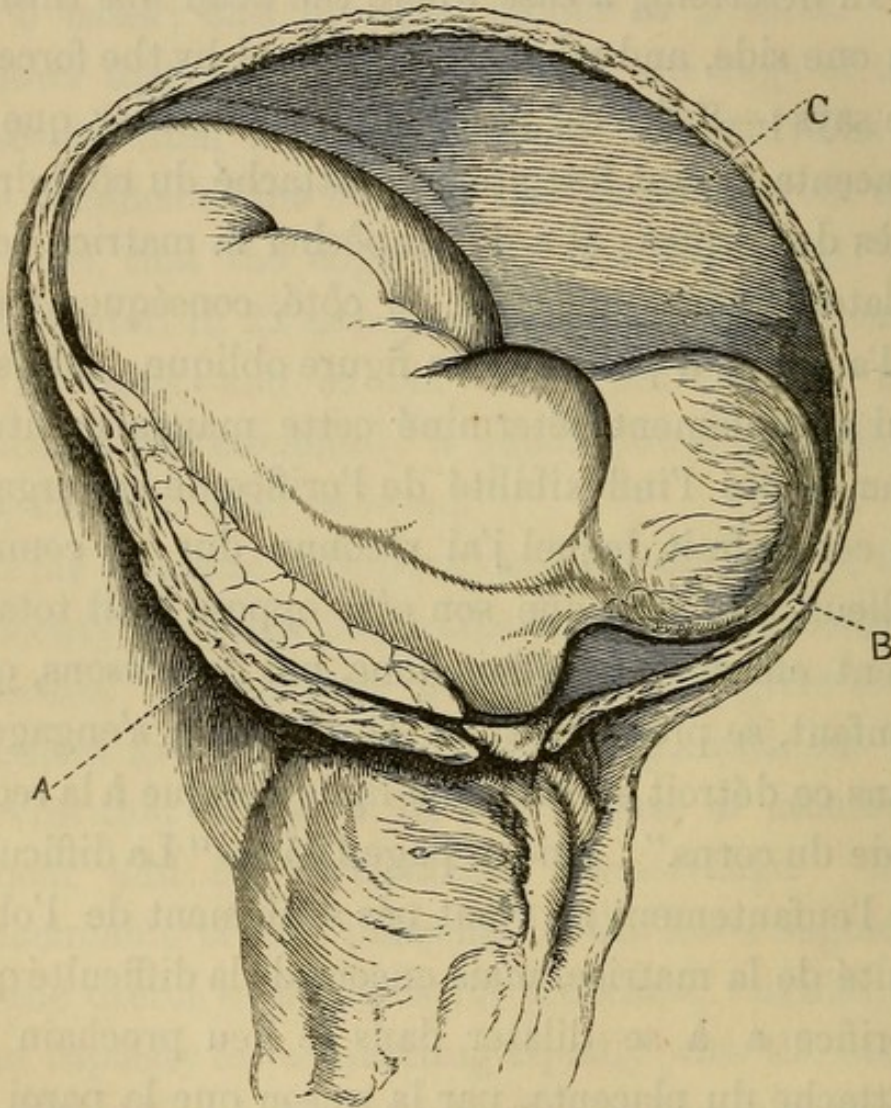
In describing a case where the head was thrown on one side, and which he delivered by the forceps, he says :—“ Il n'est pas difficile de décider que le placenta s'étant fortuitement attaché du côté droit près de l'orifice ; il a dû empêcher la matrice de se dilater suffisamment de ce côté, conséquemment il l'a obligé à prendre une figure oblique. Mais ce qui a totalement déterminé cette mauvaise situation a été l'inflexibilité de l'orifice de cet organe en cet endroit, lequel j'ai reconnu dur et comme calleux, pendant que son côté opposé était totalement effacé. Il fallait donc, par ces raisons, que l'enfant, se présentant par la tête, elle s'engageât dans ce détroit suivant une ligne oblique à la rectitude du corps.” And at page 125 :—“ La difficulté de l'enfantement ne vient pas seulement de l'obliquité de la matrice, mais encore de la difficulté que l'orifice a à se dilater dans le lieu prochain de l'attache du placenta, par la raison que la paroi de ce viscère est plus épaisse dans cet endroit.”

The diagram (Fig. 5) I have constructed, will serve to impress this fact.

I believe these considerations present a rational explanation of a multitude of cases of præ-partum hæmorrhage, lingering labour, cross-births, and

post-partum hæmorrhage, the cause of which has been altogether overlooked.

FIG. 5.



- A, The rigid inclined plane formed by the placenta, and hypertrophied placental seat of uterus, throwing foetal head over to
 B, The thin yielding portion of uterus.
 c, Thin yielding portion of uterus distended by hydrostatic pressure.

Having considered the varieties of seat of the placenta, we are naturally led to examine the rela-

tion of the several parts of the muscular structure of the uterus to the placenta in its different positions. The general disposition of the muscular fibres of the uterus may be taken to be pretty accurately determined. There is a general accordance amongst anatomists concerning the leading points. The dissections of the Hunters confirmed, correcting somewhat, the description of Ruysch, and these in their turn have been confirmed by the dissections of Sir Charles Bell, Professor Owen, and others. Preparations may be seen in most museums which exhibit clearly the disposition of the muscular fibres in the different regions. I must, however, recite to you the description of Sir Charles Bell, not only on account of its graphic beauty, but also because he has laid the anatomical foundation of those physiological views concerning prævial placenta to which I was led by clinical observation.

“It has been proved by the sections of the uterus made in different states of its contraction, that the order of the muscular fibres is calculated so as to close the vessels; that where Nature has provided for the attachment of the placenta, there the broken vessels are guarded by the provision of the surrounding muscular texture; but we know also that during this contraction of the superior part of the womb, the lower part dilates and

relaxes. Now if the contraction of the womb be essential to the safety of the mother, what will be the effect of the attachment of the placenta to a part of the womb which must relax during the labour! Every one knows the peculiar danger of *placenta prævia*, that each labour-pain as it returns increases the violence of the flooding instead of checking it.

“I have been led to conclude that *the placenta cannot be partially separated if it be attached in a regular circle to the fundus of the uterus*: it cannot be partially separated, and cannot be separated bodily until the uterus is permitted to have a great degree of contraction by the delivery of the child; the circular muscles of the fundus being agents in a double capacity, that is, both in expelling the child, and in constringing the uterine vessels; by the time that the child is expelled, the vessels of the fundus are greatly diminished in diameter. Further, the place and strength of these muscles being perfectly regular and uniform, their action must have the effect of equally drawing the surface of the uterus, which is in correspondence with the margin of the placenta; but no one part of it will be separated until the general restriction is nearly completed. This will not be the case when the margin of the placenta extends irregularly, or when the placenta is attached to the

side of the uterus. After the delivery of the child in cases of flooding, *it is not uncommon to find a portion of the placenta low down in the uterus, and separated, while the greater portion remains attached to the fundus.* In examining the inner surface of the uterus by dissection, I have seen the part corresponding with the placenta irregular in its form, and *extending towards the side and neck of the uterus.* In such circumstances of the attachment of the placenta, the retraction on the lower part of the womb being to a greater extent than the fundus, will account for the too early separation of that margin of the placenta which stretches towards the orifice, and also for the hæmorrhage which is a consequence of this partial separation ; but in progress of the labour, and after the discharge of the waters, the more powerful efforts of the uterus draw the muscular fibres more closely around the bloodvessels, and then the flooding ceases."

I am then entitled to rest the anatomical foundation of my views upon the authority of Sir Charles Bell.

LECTURE III.

SUMMARY OF THE PHYSIOLOGY OF PLACENTA
PRÆVIA.

THE chief points in the physiology of placental attachment are expressed in the following diagram :—

FIG. 6.

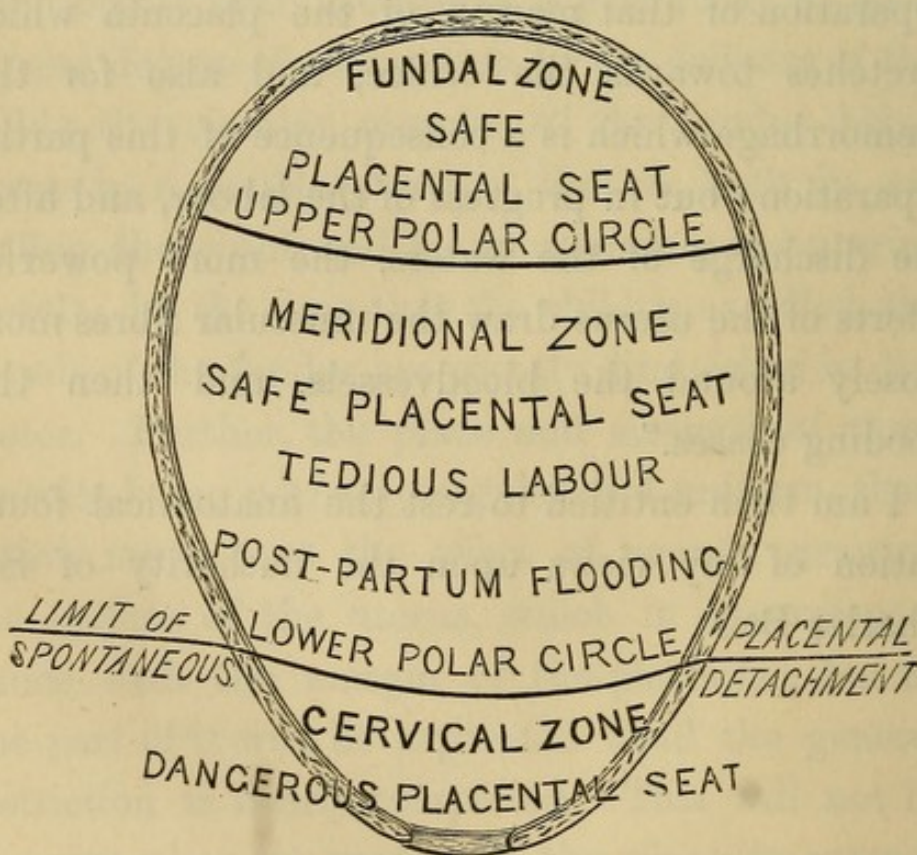


Diagram illustrating the various sites of the placenta, and the relation of these sites to hæmorrhage.

The inner surface of the womb may be divided into three zones or regions by two latitudinal circles. The upper circle may be called the Upper Polar Circle. Above it is the fundus of the uterus. This is the seat of fundal placenta: the most natural position. It is the zone or region of Safe Attachment. The lower circle is the Lower Polar Circle. It divides the cervical zone or region from the meridional zone. The space comprised between the two circles is the region of lateral placenta. When attached in this region, the placenta is not liable to previous detachment. It may, however, cause obliquity of the uterus, transverse position of the child, lingering labour, and dispose to retention of the placenta and post-partum hæmorrhage.

Below this circle is the cervical zone: the region of dangerous placental attachment. All placenta fixed here, whether it consist in a flap encroaching downwards from the meridional zone, or whether it be the entire placenta, is liable to previous detachment. The mouth of the womb must be pulled open to give passage to the head. This enormous contraction or *re-traction* of the longitudinal cervical fibres is incompatible with the preservation of the adhesion of the placenta which is within its scope. In every other part of the womb, there is an easy relation between the contractile limits of the muscular structure and that

See h. 40. - 42. 109.

adverts of accipitens.

of the cohering placenta. Within the cervical region this relation is lost. The contraction of the uterine tissue is in excess.

The Lower Polar Circle is, then, the physiological line of demarcation between prævial and lateral placenta: it is the boundary-line *below* which you have spontaneous placental detachment and hæmorrhage; *above* which, spontaneous placental detachment and hæmorrhage cease. If, through the successive active contractions of the longitudinal muscle, all that part of the placenta which had been originally adherent within the cervical zone, be detached; and if, as is the constant tendency of Nature, these intermitting active contractions, and the continuous tonic contraction going on in the intervals, arrest the hæmorrhage, a stage is reached when the labour is freed from all prævial placental complication; the cervical placenta has become changed into a lateral placenta; the labour is, in all respects, *a natural labour.* *What of relaxation should take place?*

It is important to determine the exact position of this lower Polar circle or boundary-line between hæmorrhage and safety. The means exist of defining this with tolerable accuracy.

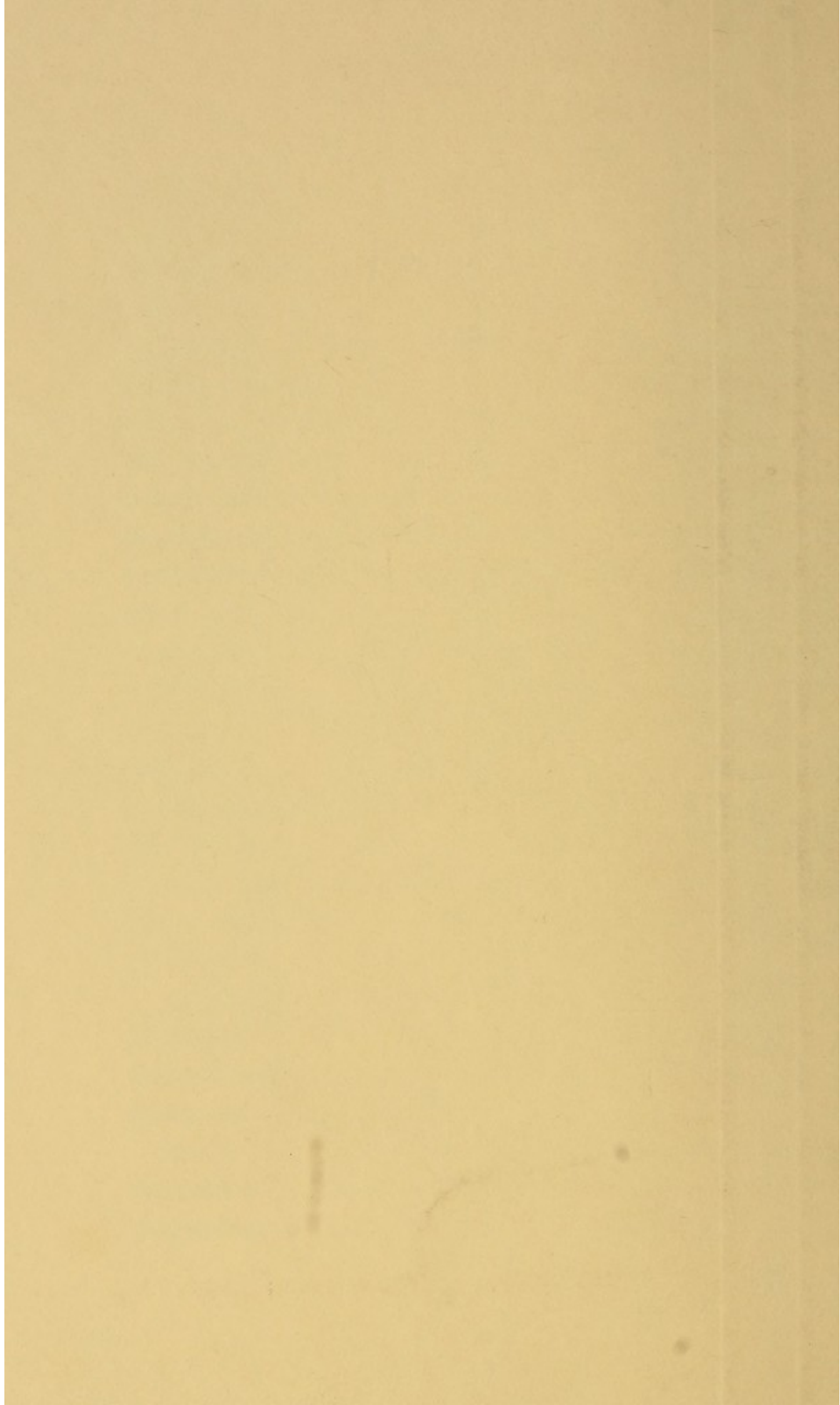
In the first place, if we reflect that the lower segment of the womb must open to an extent corresponding to the circumference of the child's head

This statement is contradictory to what is on p. 61.

Med. Times & Gaz. Sept. 10th 1859. p. 270. Case reported by Fred. A. Morris - London -

M. J. act 39 - 8th pug; 8th month of gest. Mem. came on July 18th 1859. No pains - os uteri not dilated. Rest Gallic Acid & Opium - occasional bleedings for a fortnight - July 31st slight pains - profuse hem. Complete attack - Central. plug & silk half. for 2 hours. On removal hem. returned. Os now soft and dilatable 2 fingers introduced, plac. detached as far as could be reached - hem. kept up. Labor finished by turning Legt given when head was passing. Child stillborn - Mother faint but did weel. Brandy & opium.

Dr. Barnes will therefore never not always apply -



in order to permit its extrusion, we shall, by noting the amount of necessary recession or shortening of the neck of the womb, in order to reach this extent

FIG. 7.

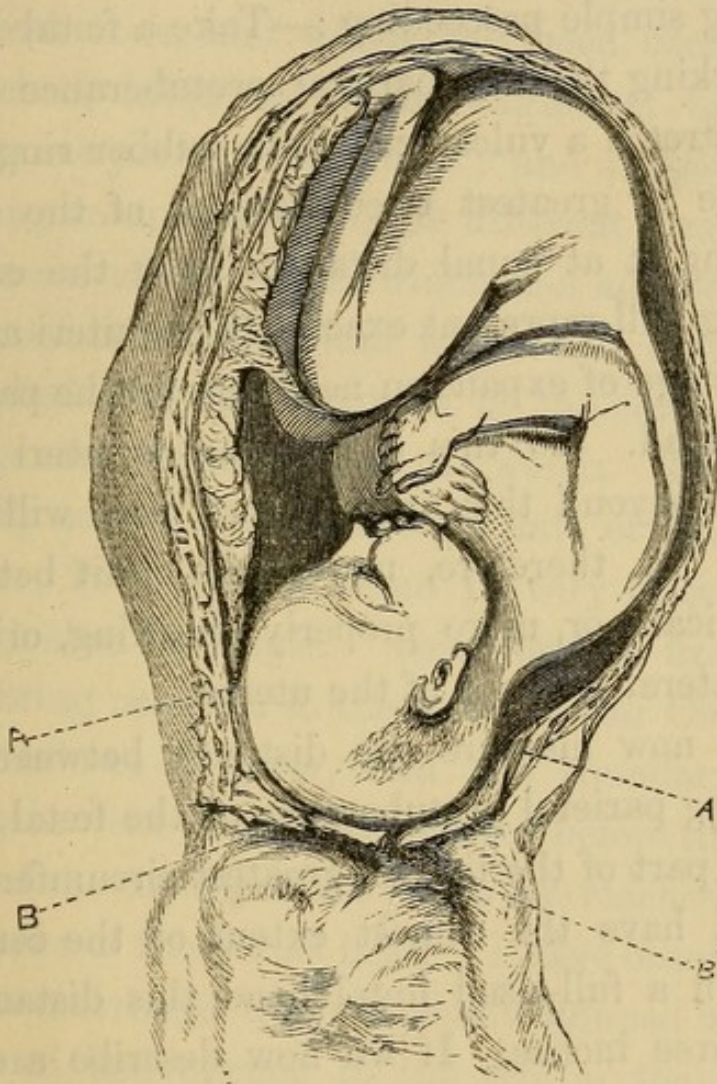


Diagram showing a lateral placenta descending to (A A) the boundary-line between the meridional and cervical zones. In this case the placenta descends to the very point of fullest expansion of the os, and therefore remains just within the limit of safe attachment. The space between A A and B B, is the range of orificial expansion, necessary to permit the passage of the head.

of expansion, obtain a measure of the original depth of the cervical zone, the region of prævial placental attachment. The diagram (Fig. 7) will serve to illustrate this position.

This point may be further demonstrated by the following simple proceeding :—Take a foetal skull, and marking the left parietal protuberance for a centre, stretch a vulcanized india-rubber ring over the circle of greatest circumference of the skull, preserving it at equal distances from the centre. This ring will represent exactly the os uteri at the utmost stage of expansion necessary for the passage of the head. To this extent the os uteri *must* expand ; beyond this, it *need not*, and will not, expand. It, therefore, marks the limit between the cervical—or, more properly speaking, orificial—and lateral portions of the uterus.

If we now measure the distance between the presenting parietal protuberance of the foetal head and any part of the line of greatest circumference, we shall have the utmost extent of the cervical zone. In a full-sized foetal head this distance is about three inches. If we now describe a circle within the womb at three inches distant from the os, we shall have drawn the Lower Polar Circle, or boundary-line, between hæmorrhagic and non-hæmorrhagic placental attachment.

There is another evidence distinct from, but con-

firming, the preceding. If, after its expulsion, we examine a placenta, the edge of which, at the beginning of labour at the full term, had been felt reaching to the edge of the os uteri internum, we find that part which had been adherent within the cervical zone, and which had been consequently detached, infiltrated with coagulated blood; its substance perhaps indurated; and altogether presenting an appearance quite different from that of the mass of the organ which had adhered within the meridional zone, and which had only become detached after the expulsion of the child, through the general contraction of the womb. This part is usually so well defined as to admit of being measured. It is usually found to vary from three to four inches in length. This distance from the os will bring us again to the Lower Polar Circle.

I believe, however, that the boundary-line of safety is often practically reached before the expansion of the mouth of the womb has reached the full diameter of the child's head. I have observed that the hæmorrhage has completely stopped when the os uteri had opened to the size of the rim of a wine-glass, or even to a lesser size. In ordinary labour, when the bag of membranes or the child's head is driven down upon the os by the pressure from behind—that is, when expulsive pains succeed to the preliminary dilating pains, the presenting

*Placenta from os uteri —
See see below, for distance of edge of*

Detached by one of my own cases.

part becomes a mechanical distending or stretching power. The os, partly opened by the active shortening of the longitudinal muscular fibres, is fully opened by the distending cone driven through it, as an indiarubber band is expanded. Thus it is that a part of the opening of the os uteri is gained by a process that does not involve detachment of placenta.

APPLICATIONS OF THE NEW PHYSIOLOGY OF PLACENTAL ATTACHMENT TO THE TREATMENT OF PLACENTA PRÆVIA.

Lower polar circle for metastasis

The rules of treatment at present in force have all been dictated or influenced by theoretical doctrines essentially erroneous. One word in especial has exerted a most tyrannical and mischievous influence: the word "unavoidable hæmorrhage," being assumed to embody the whole theory of placenta prævia, has created and maintained a blind and indiscriminating belief that interference, in the form of forced delivery, is imperatively called for. A striking word too often catches the assent by postponing investigation; and, like the sword of Alexander, cuts the knot it cannot unloose. The cases of placenta prævia, as they are met with in practice, offer considerable varieties of kind, of degree of danger; they cannot be treated on one uniform plan. We are not in all cases of urgent

hæmorrhage to force the hand through the os uteri and extract the child ; we are not in all cases to force the hand into the womb and detach the whole placenta. There are cases in which either of these operations is more dangerous than the flooding itself. Nor have I a panacea to offer in lieu of these operations. Although I believe that a full appreciation of the theory I have enounced is essential to the intelligent conduct of any given case of placenta prævia, I do not pretend that the particular mode of treatment which is the more direct deduction from this theory is universally applicable ; but it supplies a new, an additional remedy, often applicable precisely when the usual modes of treatment are either impracticable or dangerous.

1. I shall adduce evidence to prove that dangerous, and even fatal, flooding may occur at so early a stage of labour that all methods of forced delivery are absolutely excluded.

2. That in another class of cases, in which it has been presumed that circumstances admitted of forced delivery, the operation itself proved dangerous, and even fatal.

The woman may die before delivery is practicable. Fatal hæmorrhage may occur from a very small detachment of placenta, and before the os uteri has undergone any material dilatation. Thus,

Professor Davis says "he had met with many examples of even fatal results of profuse uterine hæmorrhage unaccompanied by any amount of dilatation of the orifice of the womb."* Professor Hamilton says that "in the month of September, 1816, he was called to two cases where the patient seemed to be *in articulo mortis* from the deluge of the discharge, and where nevertheless the os uteri was obstinately rigid."

But, in the presence of even the most terrible flooding, we are warned in the most emphatic manner, even by those authors who advocate forced delivery as the only hope, against forcing the hand through the os before this structure is dilated or dilatable. Dr. Edward Rigby says: "In no case is it proper or safe to force delivery by artificially dilating the os uteri where it is contracted and unyielding; but *when the placenta is presenting, it is peculiarly dangerous*, for even slight laceration of the os uteri will be followed by serious consequences; . . . its vessels are immensely dilated, and large ones are ruptured which cannot be closed by the firmest contraction of the womb." Nægele has also proved that death has been caused by the continued hæmorrhage proceeding from an os uteri so injured.

* "Principles and Practice of Obstetric Medicine," p. 1040.

Dr. Collins records the following history :—

CASE 9.—“ There being no chance of life without speedy delivery, we determined to make the attempt, *though the parts were badly prepared.* The hand was cautiously introduced : great debility succeeded the operation, with a slight discharge of blood at intervals. On examining an hour after, a laceration of the neck of the uterus was discovered, commencing at its junction with the vagina. Dissection verified the result of the vaginal examination.”

Taught, no doubt, by such instances, this excellent author emphatically says : “ I know of no operation more truly dangerous both to mother and child, than the artificial dilatation of the os uteri and turning the child.”

Cases such as I have cited are by no means exceptional. Our clinical records teem with instances of resolute, I might say desperate, turning, with the view of saving the patient, where the operation, not the flooding, was shown to have caused her death. Let me quote one more, out of several, from that rich storehouse, the “ Clinical Midwifery” of Dr. Robert Lee (p. 158):—

CASE 10.—“ On the 22nd February, 1840, I examined the body of Mrs. C——. A great uterine hæmorrhage had taken place spontaneously six weeks before, when she was seven months pregnant.

Safe under circumstances

Another took place on the 19th February, which continued till the evening of the 21st, when her medical attendant, *with some difficulty*, introduced the hand into the uterus, perforated a portion of the placenta, and turned the child. The head was extracted with difficulty. The placenta soon followed, but she soon after began to sink, and died in an hour and a half. There was an extensive laceration in the mucous and muscular coats of the cervix uteri, on the left side, and a smaller and more superficial rent on the right side. The placenta had adhered to the whole circumference of the cervix."

The following case, also from Dr. Lee, exemplifies in the strongest manner the proposition before us:—

CASE 11.—A lady in the eighth-and-a-half month had been attacked with uterine hæmorrhage a month before. Two other attacks, at intervals of several days, followed. "At one o'clock, Jan. 12th, 1839, the hæmorrhage was renewed to an alarming extent, without any pain; about a quart of blood was suddenly lost, and she became extremely faint. At four A.M. the discharge still continued. . . . The placenta was felt adhering all round to the neck of the uterus, which was thick and rigid and very little dilated. The effect produced by the hæmorrhage was so great that *it was evident death*

would soon take place if the delivery were not speedily completed; and the state of the orifice was such that it was certain the hand could not be passed but with the greatest difficulty. At eight P.M., Dr. Merriman saw her with us, and agreed that immediate delivery was necessary. I passed the right hand into the vagina, and insinuated my fingers between the uterus and placenta at the back part, and reached the membranes. But the rigidity of the orifice was so great that, though I employed great force for a considerable time, I could not succeed in getting the hand into the uterus. Dr. Merriman recommended rupturing the membranes, and I was proceeding to do this with the fingers, when I felt one of the feet of the child, which I grasped, and brought down into the vagina, enveloped in the membranes, which then gave way. Nearly half an hour elapsed before the version could be completed, and when it was effected, the neck of the uterus grasped the neck of the child so firmly that I experienced the greatest difficulty in extracting the head. A great discharge of blood instantly followed. The placenta was removed, and every means employed to stop the hæmorrhage; but the breathing became hurried, the extremities cold, and she died in less than an hour after delivery. Dr. Merriman informed me that a patient of his had actually died under similar cir-

*Dr. See object to the whole hand, he said Dr. Merriman advised it!
He thinks it perfectly safe to use two or 3 fingers - That is his own best way!*

cumstances before the head could be extracted.”—
(p. 156.)

If such are the lamentable results of forced delivery under desperate circumstances, what are the results of forced delivery under circumstances presumed to be favourable? The situation is still full of danger.

At p. 118 of Dr. Collins' book we find the following case:—

CASE 12.—“D. C——, at her full time, was brought to hospital with profuse hæmorrhage, the blood literally flowing away from her. Finding the pulse almost imperceptible, the os uteri being partially dilated and in a relaxed state, the hand was passed, and the child delivered by the feet. The hand was introduced immediately afterwards for the removal of the placenta; the uterus acted well, and expelled both. From the moment of her admission, cordials and stimulants were freely given, which, after delivery, were occasionally combined with opiates; notwithstanding which, as also the sedulous application of cold, pressure, &c., a slight discharge of blood continued, and she died in two hours. On dissection, the intestines were found completely blanched; the uterus was contracted to the ordinary size. On making a section of it, a rent was discovered in its mouth, which was evidently the cause of the continued draining. This

injury, no doubt, occurred in the delivery of the child, although it was effected with great care, with no difficulty, and very little exertion."

I have no desire to pass over the fact, that in many cases the os uteri, undilated at the time, yields with tolerable facility before the hand, and admits of turning with safety; or another fact—one of great importance—that occasionally, through a happy coincidence of skill and chance, the feet of the child may be seized by two fingers, and turning performed without the necessity of passing the hand into the uterus at all. Neither of these fortunate occurrences can be counted upon. The voice of experience is loud as to the dangers of turning even where there is no placental presentation. It is decisive in the cases we are now considering.

We have, then, three formidable facts before us:—

1. The woman may die from flooding so early, before the dilatation of the os uteri, that forced delivery is out of the question.

2. If forced delivery be attempted before the os uteri is dilated, a fatal result is eminently threatening.

3. If forced delivery be performed when the os uteri is dilated, it may contract around the neck of the child; and even if it do not, such injury may

probably obstructs them

Good!

3 occurs in 'obstruction'

be done to the womb in the extraction, that death may follow.

A remedy then is urgently required, to replace in certain cases, at least, forced delivery.

Do we find that remedy, that resource, in the artificial total detachment of the placenta?

APPRECIATION OF THE METHOD OF ARTIFICIAL TOTAL DETACHMENT OF THE PLACENTA.

Two things must be proved before we shall be justified in answering this question in the affirmative.

1. That the total detachment of the placenta previously to the birth of the child will arrest the hæmorrhage.

2. That the operation itself is one that can be accomplished (I mean in the class of cases we are now considering) with safety.

A subsidiary question is involved as to the fate of the child in cases where this operation is performed. This question is discussed in the Appendix.

1. I will at once state that many authentic cases are now recorded in which the hæmorrhage ceased after the presumed total detachment of the placenta, either spontaneously or artificially effected. But it must also be stated that cases not a few are known where the hæmorrhage continued under these circumstances.

So do cases of post partum hæmorrhage.

In approaching this question I must at the outset declare my conviction that it is not to be decided by statistics. I believe this opinion is now generally entertained by the profession. The statistics, at least, that have hitherto been put forward have satisfied no one. We must not give up physiological reasoning, or individual clinical experience, to a mass of figures which profess to be the expression of facts similar in nature. From the moment that all the details of a case are eliminated in order to squeeze out one or two particular facts to form part of a statistical phalanx, we lose almost everything that is instructive in the case; and run the most imminent danger of falling into false conclusions. We all know that a single pregnant instance of a fact well observed is often absolutely decisive as to a physiological or pathological law. There are individual facts against which no array of statistics can avail.

I say this without any desire to depreciate the value of the application of the numerical method to medical inquiries, but rather with a view to exact the most scrupulous care in our appeals to this method. I have myself been within the sphere of the influence of that great physician who has so strenuously asserted the power of statistics in solving the difficult problems of medicine. At the Hôpital Beaujon, and in an occasional visit at

Particulars of Johnson's case.
ecce Minimus!

ah!

the sittings of the Société Médicale d'Observation, I have caught a spark of statistical enthusiasm. But a rigid criticism of the fundamental facts which have been bound together into so-called statistical tables, showing the various conditions of placenta prævia, has convinced me that if we would respect the first rules of statistical science, we cannot, without risk of endless fallacies, subject the greater number of these facts to any statistical operations.

Jane The last great statistical work on Placenta Prævia is that of Dr. Trask.* It is a work of great research, industry, and merit ; but I could take any one of his tables, and point out numerous cases which it is quite arbitrary to range in the columns where they help to swell an imposing aggregate, and are assumed to strengthen by accumulation one particular deduction. And if I doubt his facts, if I doubt the propriety of marshalling them in the order in which he has placed them, how can I trust his conclusions ? These objections apply with infinitely greater force to other tabular arrangements of cases of placenta prævia, collected with so much labour and skill, for the purpose of proving the superior advantages of wholly detaching the pla-

* "Statistics of Placenta Prævia." By James D. Trask, M.D. Philadelphia, 1855.

centa. The objections I urged against these tables some years ago have been sufficiently recognised by subsequent writers. Dr. Trask especially has avoided the gross error pointed out by me, of confounding together cases of spontaneous, and cases of artificial, total previous detachment of the placenta. I need but repeat that things different in nature are added together, compared, and made the foundation for practical conclusions. The practice of gathering together from many different writings, cases presenting some general features of likeness, which have been observed from different points of view, through many different media, and therefore probably differing in many essential points, must necessarily be unfitted for scientific comparison. No after-analysis, no after-synthesis, can compensate for the want of original essential details.

Dr. Trask has collected 36 cases in which there was previous spontaneous expulsion of the placenta. In 13 of these we have no information as to whether hæmorrhage followed the total detachment of the placenta or not. In some, moderate hæmorrhage did continue. In the majority, there being active contraction of the womb—the grand hæmostatic agent—there was no hæmorrhage. Dr. Trask has next collected all the cases known to him where the placenta had been separated by the hand.

These amount to 66. In 35 of these it is stated that the hæmorrhage ceased *immediately* and *entirely* after detachment. In the remainder the information is vague, or it is stated that more or less hæmorrhage continued.

Now, to exhibit clearly the essential difference in the two classes of cases, it is only necessary to state that the persistence of hæmorrhage was more frequent after artificial, than after spontaneous, detachment, and that more deaths occurred. The fact is, that in the spontaneous cases the great characteristic was active contraction; and in the artificial cases, relaxation and exhaustion. I will quote one case of continued hæmorrhage after spontaneous separation from Dr. Lee:* although included as a recovery in Dr. Trask's table, he has omitted to record the continuance of the hæmorrhage.

CASE 13.—“On the 8th February, 1830, I was called to a woman residing in Falconberg-court, who had been attacked with profuse uterine hæmorrhage at the end of the seventh month of pregnancy. The placenta was protruding through the orifice of the vagina. I immediately extracted it, and a dead child followed. A great hæmorrhage succeeded, and she remained for a consider-

* “Clinical Midwifery,” p. 146.

able time insensible, without any pulse to be felt at the wrist. She, however, gradually recovered."

Dr. Johnson, of Dublin, is quoted by M'Clintock and Hardy, as having "seen an instance where the hæmorrhage continued with little abatement after the placenta had been expelled spontaneously, so that the hand had to be introduced, and delivery completed by turning." This case is not quoted by Dr. Trask.

These cases establish that there is no specific virtue in total detachment of the placenta in arresting hæmorrhage. The arrest of the hæmorrhage is therefore due to some other cause. Now, an earnest, and, I believe, a candid analysis of the cases of arrest of hæmorrhage ensuing upon detachment of the placenta, has left no doubt upon my mind that in many of these cases the hæmorrhage stopped under the influence of that preservative process which I have described. It stopped, not because the placenta was wholly detached, but because the detachment had reached that physiological limit, that boundary-line which I have pointed out. Thus, in the tables of Professor Simpson, I find many cases in which the hæmorrhage had already ceased *before* the placenta was wholly detached. Again, it is reasonable to assume that there are other cases in which the placenta

Stopped because contraction was a general fact had taken place.

was *not wholly*, but *only partially detached*, when it was observed that the hæmorrhage had ceased. If the tables prove anything, they contain quite as much evidence in favour of partial detachment as in favour of total detachment.

We are, then, amply justified in concluding that the artificial total detachment of the placenta cannot be relied upon to arrest the hæmorrhage.

IS ARTIFICIAL TOTAL DETACHMENT OF THE PLACENTA AN OPERATION SAFE IN ITSELF ?

Upon this point positive evidence is deficient. It is to be feared that a larger proportion of the successful than of the unsuccessful cases have been published. When the woman has died, we have not had recorded sufficiently minute accounts as to the state of the os uteri—whether injured or sound,—and other particulars, to enable us to distinguish how much ought to be attributed to the hæmorrhage, and how much to the operation. We must, then, consider the operation in itself. What is the degree of manual violence necessary to effect the entire separation of the placenta ? In precisely those cases which are the most urgent, where the hæmorrhage is profuse, and the os at the same time undilated and rigid, it is difficult to conceive that the *whole* placenta can be detached without

introducing the whole hand. But whether the whole hand be introduced for the purpose of turning the child, or of detaching the placenta, the effect upon the uterus *quoad* forcible entry must be the same. We have seen what these effects are when discussing the dangers of turning. No doubt the forcible extraction of the child after turning is an additional source of danger. But the violent opening of the womb is the first danger. The total separation of the placenta in cases of rigid, undilated os, is, therefore, excluded on the same grounds as is turning. It is true, cases are cited, in which it is said that "two fingers" or "one finger" were passed into the os, and sufficed to detach the placenta. It appears to me that these cases are not what they are assumed to be. Unless the whole placenta lies in a mass closely over the centre of the os—a case infinitely rare—it is next to impossible that it can be wholly detached by one or two fingers passed through the os. In the great majority of cases, the chief bulk of the placenta rises to a considerable distance up the side of the uterus, where it requires the whole hand to follow it. I refer to the case mentioned in the first of these Lectures for an example where the placenta reached from fundus to os; and to the general law, described in Lecture I., that in cases of cervical or cervico-orificial placenta, the placenta

is *commonly* spread out over a large superficies.* I conclude, for this reason, that some more of the cases chronicled as examples of the arrest of hæmorrhage by totally detaching the placenta were, in reality, examples of *hæmorrhage ceasing on partial detachment*.

Let me read a case in illustration. It is drawn from Dr. Trask, to whom it was communicated by Dr. Bland.

CASE 14.—Dr. Bland was called at half-past ten, P.M., to Mrs. B——, aged thirty; fifth or sixth labour; previous good health. The first intimation of approaching labour was, that feeling a desire to urinate, she availed herself of a closed vessel, and on arising from it, to her no small alarm and astonishment, it was observed half-full of blood. The hæmorrhage continued after she resumed the recumbent posture in such excess as to saturate and pass through the bed, running in a stream upon the floor. “I was immediately sent for, and found her as follows:—Great alarm, countenance blanched, pulse weak and frequent, excessive restlessness, and constant discharge of blood. The os

* I have recently seen, in Dr. M'Clintock's museum at the Dublin Lying-in-Hospital, a most interesting specimen of a uterus with placenta prævia, which strikingly illustrates this position. The placenta extends from the os to the fundus, covering an extensive portion of the area of the uterus, the greater part being quite beyond the reach of “one or two fingers.”

tinæ was soft and dilatable, and open to the size of a dollar. In attempting to introduce my finger to ascertain the presentation, it was obstructed by the placenta on every side, the right excepted; here, with some difficulty, the finger was introduced." Dr. Bland considered that it had originally adhered on all sides. "On a more careful examination for some inches above the orifice, especially on the left side, the placenta was discovered to be unequally separated from the inner surface of the uterus, and the hæmorrhage proceeded from these unequal separations. This was clear to my mind from the fact that whenever I placed my fingers upon the placenta, and gradually and firmly pressed upon the parietes of the uterus from which it was separated, I completely arrested the discharge. For some half hour the hæmorrhage was completely controlled by these means. Effective labour-pains having now almost entirely ceased, and discovering, whenever the hand was withdrawn, the hæmorrhage returned with increased violence, I determined to turn and deliver by the feet." Before acting upon this determination, in accordance with the suggestion of Dr. Simpson, *he introduced the finger, carefully separated the placenta, breaking up the irregular adhesions, and by this means permitting the uterus to contract equally and regularly upon*

its contents ; "the result of which, to my gratification and astonishment, was the entire cessation of the hæmorrhage, and consequent danger. I now pushed the part of the placenta that obstructed the progress of the head to the left side, and held it there with my hand to prevent its descent before the head. I paused a few moments to consider the course to be pursued. In the short time allowed for thought, I determined to prevent, if possible, the descent of the placenta before the head, and to sustain it until effective pains could be excited. To accomplish this, I gave thirty grains of ergot. In fifteen or twenty minutes I discovered considerable uterine action, which increased steadily, resulting, in about half an hour, in the birth of the child, alive and vigorous, at about two, P.M. There was no bleeding afterwards ; the placenta was easily withdrawn ; and mother and child are doing well."

Dr. Bland states that his motive in preventing the descent of the placenta before the child was, "that the supply of arterial blood might not be entirely cut off. Though all direct connexion was of course destroyed (?) by the separation of the placenta, the child appears to have survived an unusual length of time, and was born *vigorous, not asphyxiated* as might have been expected."

A careful analysis of this instructive case cannot

leave a doubt that the placenta was not, as supposed by Dr. Bland and Dr. Trask, *entirely* detached. It is hard to believe that by merely passing a finger into the os, he could reach far enough to separate the whole placenta. It is still more difficult to believe that had the placenta been entirely detached, the child would have lived on for half an hour, and been born "vigorous, not asphyxiated." Dr. Bland had, in fact, while attempting to perform, and believing that he had performed, Dr. Simpson's operation, unconsciously performed that recommended by Dr. Cohen and myself. It was fortunate for the child at least, if not for the mother also, that he accomplished less than he intended.

The cases and arguments I have brought under your attention demonstratively exclude the operation of artificial total detachment of the placenta as a *principle* of treatment of placenta prævia. These cases in reality furnish strong presumptive evidence to corroborate the positive evidence I have adduced, that partial detachment of the placenta—*i. e.*, detachment of the portion implanted within the cervical zone of the uterus, may be enough—certain favourable conditions concurring—to control the hæmorrhage.

Now this partial detachment is an operation that admits of being accomplished by the introduction

*no better than any other source
except contraction de string.*

of one or two fingers; and is therefore feasible under the precise circumstances which preclude turning or total detachment.

We have, then, here a new remedy, one applicable at the very juncture where ordinary means are impossible or dangerous. As contrasted with the operation of totally detaching the placenta, it has the further advantage of not endangering the life of the child.

As contrasted with forced delivery it has also the advantage of being less hazardous to the child.

I shall presently describe an operation based upon an imperfect appreciation of my views, proposed by Dr. Cohen, of Hamburg. It consists in detaching the smaller segment of the placenta, which adheres to one side of the cervix. This operation is certainly calculated to be of eminent service in certain cases; and I have no doubt it has often been performed undesignedly, or without the guidance of an intelligent principle, when endeavouring to rupture the membranes and turn. That has been done tremblingly, as an accident, and without intelligence, as an unavoidable step towards the attainment of a different end, which was of itself the means of safety, the real end that a true physiology dictates.

The operation which I propose is, to carry the

detachment further, so as to separate all that part of the placenta which adheres within the cervical zone or region of dangerous placental seat.

It remains to endeavour to generalize the varieties of cases of placenta prævia; and to define the methods of treatment more particularly applicable to each variety.

1. We have those terrible cases to which we have just adverted, where the os uteri is rigid and undilated, the flooding profuse, the powers of life ebbing fast; where to wait for spontaneous arrest of flooding, or the natural dilatation of the os, is to wait for death. These are pre-eminently the cases for resort to the operation referred to. It must, however, be first stated, that this class admits of being further subdivided. There are cases in which contraction of the uterus is going on; there are cases—more dangerous still—in which contraction is absent. Labour with relaxation is dangerous under almost every condition: it is eminently so when complicated with placenta prævia.

Where contraction is present, we possess one necessary element of safety; we may be satisfied with the artificial separation of the placenta from its attachment to the cervical zone. Where contraction is absent, we must at the same time use every available means of rousing the contractile energy of the womb. Sometimes the stimulus

imparted to the reflex system by the necessary manipulation is itself enough to excite contraction. But not always. We must then give stimulants internally; apply warmth to the surface if the skin is cold and there is great depression; rub the abdominal muscles and the body of the uterus firmly. This is a case where the ergot of rye is especially indicated. If it fail, then we have galvanism, which rarely or never fails—an agent perfectly under control, which we can apply and intermit at pleasure, and whose force we can graduate as we like. Dr. Radford has, I think, fairly established the value of this agent in cases of this kind; and I may refer to a paper which I had the honour of reading before this Society, in which the subject is further elaborated.*

*It will often
mitigate opium.*

Dr. Cohen,† of Hamburg, has described an operation which may be distinguished as the *Partial Cervical Detachment of the Placenta*. It is not founded upon a full appreciation of the true physiology of placenta prævia, but I have no doubt that in many cases the operation will prove suffi-

* On the Management of Labour characterized by defective Uterine Action; and the comparative Value of the Ergot of Rye and Galvanism in Obstetric Practice. — "The Lancet" and "L'Union Médicale," 1853.

† "Meine Methode bei Placenta Prævia während der Geburtszeit." Von Dr. Cohen, in Hamburg. — "Monatsschrift für Geburtskunde," April, 1855.

cient to control the hæmorrhage and convert the labour into a natural labour. Dr. Cohen describes it as follows:—

THE OPERATION OF PARTIAL CERVICAL DETACHMENT OF THE PLACENTA.

The object of this operation is, *to convert a central into a lateral placenta*, in those cases where the symptoms are too urgent to warrant us in trusting to the spontaneous efforts of Nature to effect this end. By it we seek to change a labour, *quoad* placental attachment, from preternatural into natural.

Time.—Even in this comparatively simple operation it is desirable to wait until the os uteri is a little expanded. It may be justifiable to trust some time to the plug; but if the symptoms are too urgent for delay, one or two fingers may be at once passed through the os. Seek to determine which side of the uterus bears the great bulk of the placenta; feel for the edge of the placenta on the opposite side; rupture the membranes during a pain; tear the membranes freely from the border of the placenta, and sweep the finger round half the circumference of the os uteri internum, so as to detach the placenta completely from that side of the uterus to which the lesser portion adhered.

This done, there is nothing to prevent the os uteri from expanding, and carrying the liberated portion of placenta over to the side where the bulk of the organ adheres. In many cases this will be enough to arrest the hæmorrhage. Nature herself will do the rest.

This is the extent of Cohen's recommendation. He affirms distinctly that he has in numerous cases practised this method with success; that he has never lost a mother, rarely a child. It is to be regretted that he has contented himself with this general expression of the result of his experience, and that he has not recorded the cases in which he has put this practice to the test. For want of this, his essay is essentially dogmatic. It certainly is quite in accordance with my own repeated observations of the natural course of labour with placenta prævia. It may be contended that the good done is really effected by the rupture of the membranes. I have no doubt whatever that the evacuation of a portion of the liquor amnii, by permitting the womb to diminish its volume, greatly favours contraction and expedites labour. But it certainly does not, as I have before proved, account for the good result itself. One advantage of the loosing the placenta from its adhesions to the os and from the membranes, lies clearly in releasing the os and cervix from a mechanical impediment to dilatation,

The key to the whole.

and further in obviating the rending of the substance of the placenta during dilatation. Some obstetric practitioners to whom I have mentioned this subject have expressed a doubt whether the placenta is liable to be torn in this way. I have, however, seen such cases: one will be found in the Appendix. Others are on record.

If the hæmorrhage should continue, or be renewed with urgency, I propose as the next step,

THE TOTAL CERVICAL DETACHMENT OF THE PLACENTA.

The detachment must be carried further, by sweeping the finger round between the placenta and uterus on that side to which the main bulk of the organ adheres. In this manner the whole of that part which had been seated within the cervical zone will have been detached. We shall have imitated the operation represented in Fig. 3, as being occasionally—I believe often—effected by the spontaneous efforts of Nature. Now this detachment will not *of itself* stop the hæmorrhage. We may, I think, tranquillize our minds as to the effect on the mother of that small portion that will escape from the detached placental surface. But the uterine vessels may pour forth blood until the hæmostatic resources of Nature or Art come into

play. The resources of Nature are those I have before described: continued contraction of the muscular structure of the womb, the contractile action of the coats of the uterine arteries, and the formation of coagula in their mouths. In the majority of cases these resources are sufficient; the hæmostatic process may, however, be further assisted by plugging again. A method of plugging is recommended by high authority, which appears deserving of attention. Moreau advises the application of a lemon, the end of which has been cut off, to the os uteri, and to retain this *in situ* by firm pressure through rags or sponge. The acid juice favours coagulation as well as the pressure, and retention of the blood. The soaking of the sponges or rags used for plugging in vinegar is a common practice; but it seems to me reasonable that more powerful styptics should be used. I suggested some time ago the injection of the sesquichloride of iron. Dr. Schreier,* of Hamburg, has related some instances in which this agent was employed with success. M. Dupierris, of Havana,† advises the use of tincture of iodine. He says that he has injected a mixture of one-third tincture of iodine with two-thirds water, in one hundred cases

Dr. B's method is the same as that of Dupierris.

* "Monatsschr. f. Geburtshk.," June, 1855.

† "North American Med.-Chir. Review," January, 1857.

of uterine hæmorrhage of various kinds with uniform success. He relates three cases of hæmorrhage attending labour. The sesquichloride of iron, however, appears to me the preferable agent.

By the proceedings I have described, we may reasonably hope that in the vast majority of cases the hæmorrhage will cease. If it should not, time will have been gained; the os uteri may have become soft and dilated; and, in the event of its being felt necessary to resort to forced delivery, this operation may be performed with comparative ease and safety.

2. There is another class of cases, happily more frequent than the preceding, where there is less urgency, more scope for temporizing. We have seen that the expansion of the os may be effected without necessary loss of blood to such an extent as to constitute flooding. In the conduct of such cases we have in the physiology which I have enunciated a guiding principle that carries a rational faith in the resources of Nature. It is in these cases that the natural tendency to restrain the floodings caused by the successive detachments of zonular portions of placenta is most strikingly marked. A knowledge of this principle will give an intelligent confidence in all those measures, such as the plug, ergot, rupturing the membranes, which have been recommended on various physiological

or empirical grounds. Even in these cases, the operation of Cohen, of freeing the smaller segment of the placenta, so as to allow it to be carried over to the side of the uterus, which holds the main body, may be of essential service.

3. There is a third class of cases in which the principle is all-important. I mean those cases where, after even alarming losses, the hæmorrhage has ceased spontaneously. Under the prevailing dogmas, the arrest of hæmorrhage inspires no hope in the breast of the accoucheur. He is taught to believe that it will "*unavoidably*" return; he hastens to deliver; and the poor woman who had reached the haven of safety, is destroyed by the operation, a victim of the "*nimia diligentia medici.*"

Too sweeping.

I have but a few words to say in conclusion. I wish to guard myself against the imputation of having advocated a particular method of treatment as being applicable to all cases of placenta prævia. That is far from my intention. I claim to have developed the true theory, the true physiology of placental presentations, and thus to have supplied a scientific clue in the treatment of flooding from unnatural position of the placenta. This guiding knowledge excludes no method of treatment, no resource that has been found by experience to be useful in given cases. It gives the clue to the

right and intelligent application of each in proper time and place. It gives, in addition, the faith, so often necessary in medicine, so often absent when most needed, in the restorative power of Nature: teaching us how to assist that power, and warning us not to rashly supersede it. More than this, the new principle leads to a new method of treatment, a new resource in precisely the most desperate cases, where the ordinary methods of treatment are impossible or dangerous. This method may, as I have shown in many cases, supersede forced delivery altogether; and in many more will be the means of gaining the necessary time to admit of turning being performed with safety. In almost every case it may supersede the practice of wholly detaching the placenta, since the end in view being the arrest of the flooding, it is better to detach only just so much of the placenta as will effect this end, than, by detaching all, to incur the imminent risk of destroying the child, without more certainly conducing to the safety of the mother.

APPENDICES.

APPENDICES

APPENDIX I.

CASES EXHIBITING ARREST OF HÆMORRHAGE ON PARTIAL DETACHMENT OF PLACENTA SPONTA- NEOUSLY EFFECTED.

A. *Under specified or presumed Contraction of Uterus.*

B. *Under Rupture of Membranes and Contraction of Uterus.*

A.

The following remarkable case was published by the late Dr. James Reid.*

CASE 15.—*Placenta prævia; labour without hæmorrhage; recovery.*—Dr. Reid was sent for, by a midwife, to a woman who, at full time, had been seized the previous evening with labour-pains, which gradually increased in strength through the night, and continued till one, P.M.; at which time the os uteri was fully dilated, and the membranes ruptured, a much larger quantity than usual of liquor amnii escaping.

“By the account I received, it appears a fort-

* “Lond. Med. Gaz.,” vol. xvi.

night previous the patient had hurt herself by a strain whilst washing, and that since that period she had not felt any movement of the child, a severe pain remaining in the right iliac region. The midwife could not discover any presentation through the membranes during the expansion of the os uteri, and was much astonished, on their being ruptured, that she was still unable to do so; the only substance she could feel was a soft mass close to the os uteri." (Concluding it to be a placental presentation, she sent for Dr. Reid. To his surprise, as there had been no hæmorrhage, Dr. Reid found this conclusion correct.) "I found the os uteri fully dilated, and the placenta attached firmly to its pubic and lateral portions, so as to prevent effectually my finger from advancing in these directions. Forcing-pains came on during this investigation, they having been trivial all the afternoon. . . . I introduced my hand into the uterus towards its posterior part (a proceeding unattended by any difficulty), and found the hollow of the sacrum unoccupied; advancing the hand still higher, above the promontory, I could at length distinguish the child's head strongly encircled by the upper part of the uterus. A foot was seized, and delivery effected. The child was of moderate size, had evidently been dead some time, as the cuticle was desquamating, and the abdomen tense

and inflated with air. The placenta was readily brought away soon after. Patient did well."

The above case clearly proves a position I have put forward, namely, that the hæmorrhage in placenta prævia is not "unavoidable." In this instance the child was dead some time before delivery. It does not appear that the tendency to hæmorrhage is lessened by this circumstance; for cases related in another part of this Appendix, demonstrate that the death of the child affords no security against flooding.

The following case is from the posthumous work on midwifery, by the late Mr. Crosse, of Norwich. It exhibits arrest of hæmorrhage on spontaneous partial separation of placenta; and unnecessary resort to turning.

CASE 16.—"A woman, aged twenty-seven, eight months and a half pregnant, had a sudden loss three or four days ago. To-day a profuse gush, with uterine pain, which did not recur. The *hæmorrhage stopped*: but the woman was very faint; os partly dilated; placenta presenting. Turning was performed; the child was still-born. The placenta followed without fresh loss; it was healthy. Patient recovered."

The following three cases are from the series with which I have been favoured by Dr. R. U. West.

CASE 17.—“*No. 2367. April 11, 1855. A natural labour; living child; vertex presentation.*—On the 27th of January I was sent for to see this woman, who was expecting her confinement in April. I found she had had a sudden attack of violent hæmorrhage. There was no pain, and the os uteri was nearly closed, being rigid, thick, and undeveloped. I waited two or three hours; but there being no return of flooding, and no pains—in short, nothing like uterine action, either present or impending—I thought it best not to disturb anything, so I left her. I heard no more of the case until the date given above, when, at the full time, and without any abnormal symptoms, she gave birth to a living child.”

CASE 18.—“*No. 899. February 6, 1844. Second labour; vertex presentation.*—There was considerable hæmorrhage when the os uteri began to dilate, though the placenta was not to be felt. This ceased on the rupture of the membranes. When the placenta was expelled, I found a large and firm coagulum adhering to one of its edges; which proved that the placenta had been attached very near the os uteri, that a corner of it had become consequently detached when labour commenced, and that the blood had then passed between the membranes and the uterus. The pressure of the head stopping this flow, the coagulum formed.

There may thus be a sort of *internal* hæmorrhage before the birth of the child."

CASE 19.—“*No. 2453. January 25, 1856. Second labour; feet presentation. Premature; a six months' fœtus, still-born.*—This woman had menstruated several times, and profusely, during her pregnancy; and in the commencement of her labour, she had a good deal of hæmorrhage. On my arrival I found the feet protruding, and the hæmorrhage stopped. The case resembled Nos. 1170* and 1464 in some essentials. She was suckling her first child up to the middle of the November preceding this delivery; that child having been born November 16, 1852, was consequently sucking till it was three years old. Strange that the mother should have menstruated as she did, both while suckling, and while far advanced in pregnancy again. The child was not quite dead when born, but moved its limbs for some time.”

The following case was published by me in 1847.†

CASE 20.—“*Flooding at seven months; premature labour; placenta prævia; hæmorrhage*

* These numbers refer to Dr. West's Journal.

† On Flooding before Delivery, arising from Adhesion of the Placenta to the Os and Cervix Uteri. By Robert Barnes, M.D., &c.—“*Lancet,*” vol. i. 1847.

arrested by contraction before rupture of membranes ; recovery.—On the 21st of October, 1845, I saw Catherine D——, who had previously borne two children living, at the full time. She was seven months gone ; has been losing blood for the last fortnight, and suffering from pains in the loins and hypogastrium. At nine, A.M., pains racking and harassing ; externally, the abdomen presented a firmly-contracted tumour, rising out of the pelvis, about the size of a child's head at the full term ; it was remarkably well-defined and globular ; the os uteri was of the size of half-a-crown, soft and dilatable. On passing the finger through the os, the breech was found presenting ; the sacrum to the pubis of the mother. The tip of the finger could be carried freely round between the membranes and the cervix uteri. Anteriorly, the membranes were felt very thick and strong, and resisting the most violent contractions of the womb. At the posterior part a quaggy sensation gave intimation that the placenta was presenting ; it was now pretty extensively detached from the uterus at this part. The hæmorrhage, which had been considerable, was now moderate. There not appearing to be any urgency for active interference, I administered an opiate, and left till half-past three, P.M. At this hour the *pains had not ceased* ; the os was rather larger than a crown-piece ; *other things remained*

as before. By strong pressure and scratching during a pain, I ruptured the membranes; the waters escaped; the presenting part of the child was instantly driven through the os, and the child itself expelled from the vagina by the same pain. The placenta was withdrawn ten minutes afterwards; no hæmorrhage; the uterus contracted well. The child exhibited no sign of life, nor yet of decomposition. The placenta exhibited at one portion of the margin a paler appearance than elsewhere, and some infiltration in its substance at this part; this was the part which had been adherent to the posterior lip of the inner os, and had become detached. There was also expelled with the placenta a firmly-contracted coagulum of the size of a hen's egg, which was in all probability the result of hæmorrhage from partial separation of the placenta some days previously; and which, by the irritation it produced at the os, had probably excited active contraction of the uterus. The mother recovered favourably."

The following case, from my journal, has not been before published. It has many points of interest.

CASE 21.—“*Retroversion of the uterus at three months; reposition; hæmorrhage at seven months; placenta prævia; hæmorrhage ceasing spontaneously before rupture of membranes, contraction*

going on ; birth of living twins.—Mrs. W——. On the 26th of November, 1847, this patient being, as she supposed, three months gone, was seized with great pain in the back and in the pelvis, some hæmorrhage, and inability to pass urine. On examination, I found the fundus uteri tilted back and lodged under the promontory of the sacrum ; and the os, which admitted the tip of the finger, pressing the neck of the bladder against the pubic arch. There was great distension of the bladder, and pains resembling labour-pains constantly recurred, brought on by the condition of the bladder. A full-sized male flexible catheter was passed readily by directing the point well backwards ; nearly two quarts of urine were drawn off. She was much relieved ; but I could not at that time reduce the uterus. I drew off her urine for two or three days ; the uterus was then lifted over the promontory of the sacrum. She recovered for the time.

“ On the 20th of March, 1848, when about seven months gone, Mrs. W—— was suddenly seized with slight pains and profuse flooding, which continued till the 21st, when I saw her. I was able to insert the finger into the os uteri ; felt placenta protruding over posterior lip. The pains and hæmorrhage recurred at intervals throughout the 22nd. Although a considerable quantity of blood was lost,

still the constitutional effect was not great; consequently, did not interfere. On the 23rd, at eleven, A.M., pains more distinctly parturient had come on; the os uteri was the size of a half-crown piece; the hæmorrhage slight. At two, P.M., the pains had increased in force; the os was completely dilated; *no hæmorrhage*; a head felt presenting. According to the patient, the waters had broken on the 20th; but an escape of liquor amnii now ensued. Up to four, P.M., no progress perceived; pains, although continuing, had not expulsive effect. Not expecting any improvement in this respect, I determined to deliver by turning. The hand was no sooner passed through the os than I felt a foot, which I seized: suspecting twins, brought this foot down through the external parts, and secured it by a tape; then making traction upon it with one hand, and pushing up the presenting head, which belonged to the other child, the body and head hastily passed through the brim of the pelvis, and were born. The other child was born by the natural efforts almost immediately afterwards. Friction over the abdomen excited contraction; and in ten minutes the placentas, perfectly distinct, were removed. One placenta had in every respect a normal appearance. In a considerable segment of the uterine surface of the other, the sinuses were filled with coagula; this

was the one that had adhered to the neck of the womb. The children were both born alive, but not viable; they died a few hours after birth."

The following remark upon this case, as recorded at the time, is copied from my note-book:—

"The case is another example of the safety with which delay may be used in certain cases of placenta prævia. There being no urgency indicated by the state of the mother, I trusted to the accession of that stage when the whole of that portion of placenta which had been adherent to the os and cervix uteri should be detached, and the hæmorrhage arrested by coagulation. All this portion of placenta being cast off, and the open mouths of the uterine vessels plugged up, there is no further risk of any fresh portion being detached, the remainder of the placenta being attached to normal portions of the uterus."

I think it necessary to remark that I was induced to complete the delivery at a time when the os uteri was fully dilated, when the waters had escaped some time, and when no prospect of effective expulsive pains existed, by considerations drawn from my knowledge of the patient with whom I had to deal. She was a woman of delicate health, lax fibre, prone to hæmorrhage after labour; she had been weakened greatly by loss of blood.

It appeared to me that her strength was not equal to encounter a more protracted labour. I doubted whether there was power enough to enable the uterus to contract effectively while distended by child and placenta ; I feared that, even if these could be expelled by natural efforts, her remaining strength would be exhausted in the task, and that she would sink from post-partum hæmorrhage.

The following case is drawn from Mr. Ingleby :*—

CASE 22.—*Placenta prævia ; profuse hæmorrhage ; want of contraction ; plug used ; contraction excited ; hæmorrhage arrested ; membranes ruptured ; spontaneous delivery ; recovery.*—On the 26th of April, 1832, Mrs. — had reached the full term. Three weeks previously she was seized with a copious hæmorrhage, which subsided, and did not return till the date specified. “The labour-pains were then very feeble, and the discharge very considerable ; this, however, subsided at half-past two. At four o’clock the pains had ceased altogether, but the discharge had materially increased.” The os uteri was quite lax, dilated about the size of a half-crown, and several small coagula had collected over it. An edge of the placenta felt quite detached ; (exhaustion extreme.) Under an impression that immediate

* “Lond. Med. and Surg. Journ.,” 1832, p. 479.

delivery would be fatal, a soft silk handkerchief steeped in oil was inserted as a plug, and stimuli administered. (Admirable treatment! turning would have killed the patient!) In about an hour the pulse had improved; and as the plug had begun to excite uterine contractions, it was withdrawn, "*lest an additional mass of placenta might be separated by the action induced;*" the os rapidly dilating, and the membranes partially on the stretch, these were lacerated, and a large quantity of liquor amnii discharged. In half an hour the child was born living, but soon died.

We here find Mr. Ingleby, fearing to turn, lest the patient should not be able to bear the operation, resorting to means calculated to excite uterine contraction: we find him, when this object was accomplished, and *the hæmorrhage thereby stopped*, dreading further contraction, lest it should bring on the hæmorrhage again. His mind is clearly under the thraldom of the "unavoidable hæmorrhage" theory. Had the exhaustion been *less* marked, he would have forced his hand into the uterus, and in all probability have destroyed the patient.

It must be particularly observed that the flooding ceased as the system gained power, and the uterus contracted under the excitation of the plug, *before*

the rupture of the membranes: that is, simple contraction stopped the hæmorrhage.

The following case belongs to Dr. R. U. West's series.

CASE 23.—“*No. 2472. April 1, 1856. Pluripara; a living child; vertex presentation; alarmed by a sudden and violent flow of hæmorrhage.*—On my arrival (distance six miles), I found the os uteri dilated to the size of a shilling, and very rigid, the rigidity being *within* the os. The hæmorrhage had ceased, however. I ruptured the membranes, and gave a dose of ergot, repeating the dose in an hour, as the pains did not come on. The child was born, without any return of hæmorrhage, four hours after the first dose of ergot.”

The following case is from Dr. Ramsbotham's “*Practical Observations*” (p. 224, vol. ii.).

CASE 24.—“*Partial presentation; hæmorrhage spontaneously arrested by uterine contraction.*—A lady had been seized about four, P.M., on Tuesday, 28th of October, 1823, with an alarming hæmorrhage, which, after continuing a short time, ceased spontaneously. The placenta was slightly attached over the os uteri, with a portion of it detached. (At ten, P.M., found the flooding had not returned.) On the Sunday following the flooding returned; the membranes were ruptured, and the flooding

again ceased. The sudden loss of this evening had produced more alarming symptoms than the preceding attack. An occasional tendency to slight pains ; the os uteri was also a little dilated, and relaxed. *As the uterus had somewhat contracted and the flooding had ceased*, I was unwilling to have recourse to delivery under such an exhausted state of the system ; but I waited in the house till four, A.M., Monday ; during that interval there was no return, and the woman appeared much improved. I visited this woman at noon on Monday, the 3rd of November ; uterine action had then been established about four hours, without any return of discharge." The labour ended naturally.

The two following cases are from my notebook.

CASE 25.—“*Placenta prævia ; great flooding ; spontaneous arrest under contraction ; recovery.*—E. R——, a patient of the Royal Maternity Charity ; pluripara, at full time ; seized at seven, P.M., 23rd of October, 1857, with profuse flooding suddenly whilst in erect position, engaged in some domestic labour. This remitted somewhat, but a free draining continued till between eight and nine o'clock, when strong labour-pains came on. The child was expelled naturally at ten o'clock. Recovered.”

CASE 26.—“*Placenta dipping within ‘orificial zone;’ flooding, persistent during absence of contraction, arrested on contraction; recovery.*—R——, 7th November, 1857, a patient of the Royal Maternity Charity, presumed at end of eighth month; had copious hæmorrhage, sudden, in gushes, a fortnight ago; this stopped, and did not return until accession of labour last night. During night, and until nine o’clock next morning, hæmorrhage went on, with *spasmodic* pains in belly, until within two hours of delivery, when strong expulsive pains stopped the flowing, after a sudden copious discharge of blood and liquor amnii. Child born alive.”

The placenta was small, healthy; a thick clot adhered to the edge, measuring 1·5 of an inch in diameter. The rent in the membranes came within an inch and a half. These facts are evidence that the placenta was attached within the “orificial zone,” at a distance of 1·5 of an inch from the os uteri. This portion was detached by commencement of labour. Hæmorrhage at first, and clots afterwards being retained between placenta and lower part of uterus, caused “spasmodic” pains. Hæmorrhage went on until “expulsive” pains set in.

B.

HÆMORRHAGE CEASING ON RUPTURE OF THE MEMBRANES, AND RENEWAL OF CONTRACTION.

The following are from Dr. R. U. West.

CASE 27.—“No. 439. August 22, 1840.—When I arrived there had been considerable hæmorrhage. I was shown a chamber-utensil nearly full, besides what had been lost in the bed. The labour-pains had been good for two hours, *i. e.*, since the commencement of profuse hæmorrhage. On examining I found the os uteri fully dilated; the vagina anteriorly—about one-third of its space being occupied by the placenta, the remainder of its space by the membranes. The membranes were quite tense during a pain; there was, in fact, capital uterine action. I ruptured immediately, and the child—a living one—was expelled in about ten minutes. There was no hæmorrhage after the rupture of the membranes. On examination of the secundines, after their removal, I found the opening through the membranes close to the edge of the placenta. The woman did well—*pluripara*. This woman, living six miles away in the country, had sent for me two days before, thinking her labour was coming on; I found the os uteri quite closed, and slight hæmorrhage going on; that is, blood escaped *guttatim* on the floor as she walked

about. I waited three or four hours; but as no pains came on, and there was no alteration in the condition of the os uteri, I left her, with a caution to send immediately should anything like active hæmorrhage commence."

CASE 28.—"January 10, 1850. *Pluripara*; a living child, vertex presentation.—Labour commenced with hæmorrhage, which was profuse, but ceased as soon as I ruptured the membranes."

CASE 29.—"June 11, 1843. *Premature*; a six months foetus, still-born.—There was great hæmorrhage in this case for a day or two before pains came on. I applied cold, plugged the vagina, &c. The labour was very rapid when the pains did come on, and the hæmorrhage ceased when the membranes were ruptured. A *pluripara*; usually having had premature labours."

CASE 30.—"No. 2172. October 24, 1856.—This woman, pregnant for the twelfth time, began to feel pains at nine, A.M., slight. She went on in this way until the evening, when at about nine, P.M., she began to have considerable hæmorrhage. She immediately, in great alarm (for there had just before been a death in the next village from antepartum hæmorrhage, which had caused a great sensation), sent off for me, distance seven miles. On my arrival at half-past eleven, P.M., I found that hæmorrhage to some extent was still going on;

the os uteri dilated to the size of a crown-piece, with tolerable uterine action. I ruptured the membranes, and the hæmorrhage ceased. I then gave a dose of ergot, and in exactly an hour the child, a living one, was born, vertex presentation. Some large firm coagula were expelled immediately after the child was born, or perhaps, rather, simultaneously with its expulsion."

The following case is from my note-book.

CASE 31.—"*Placenta dipping within orificial zone ; hæmorrhage ; footling presentation ; hæmorrhage ceasing on expansion of os.*—December 7th, 1851, M——, a patient of the Western General Dispensary, pluripara ; had in two former labours malpositions of the child. I was sent for at seven, P.M., by the midwife in charge. Patient had been complaining of irregular pains for two days ; throughout the day these had been more frequent and severe. The waters had escaped. During last two hours, although os was fully expanded, the pains had become abortive, and the child did not descend. There had been considerable hæmorrhage. Patient in good spirits ; feels the child moving at times. Examination : the two feet were lying together ; the toes directed forwards. They moved away considerably on being touched ; being *retracted*, not moved by uterine contraction. Believing that the pains had

ceased in consequence of the obstruction offered by the malpresentation, I brought down the feet, and gently extracted to excite contraction, also by friction externally. The pains improved immediately; the pelvis was expelled sideways; the toes turning from the pubis to the right trochanter, so that the child's abdomen was directed to the mother's right hip. The pains now became inefficient again, the trunk being expelled with some traction; no disposition to progress; pulsation in cord stopped; meconium expelled. It was obvious that there was an obstacle to the entrance of the head into the pelvis; the right finger was therefore passed up along the thorax between it and the pubis, when I felt the child's left arm lying alongside its head hitched above the pubis. I turned the child round upon its long axis, so as to throw the toes backwards to mother's sacrum; almost directly stronger pains came on. I passed up two fingers of left hand, and threw the arm forward over thorax; the shoulders came through brim partly in transverse, partly in left oblique diameter. Strong expulsive pains came on, and shortly expelled the head, which entered pelvis in right oblique diameter, and emerged from outlet with the occiput resting on the pubis. A gush of liquor amnii followed. Uterus contracted favourably. The placenta removed in five minutes."

The placenta was of very irregular thickness, one side being very thin; in this side there was a nodule the size of a small walnut of firm fibrin. The rent in membranes was close to the thin edge of placenta.

In this case the hæmorrhage ceased on full expansion of the os, although no *active* contraction was present. The tonic contraction had sufficed to close the vessels bared by placental detachment.

APPENDIX II.

CASES EXHIBITING ARREST OF HÆMORRHAGE ON PARTIAL DETACHMENT OF PLACENTA DESIGN- EDLY EFFECTED.

CASE 32.—Dr. Beatty, of Dublin, communicated the following most interesting case to Dr. Simpson.* Dr. Simpson quotes this case as an example of hæmorrhage arrested by “probable entire separation of the placenta.” The statement, however, of Dr. Beatty seems clearly to prove that the detachment was only partial.

“The practice I adopted in this case was such as I never tried before, nor heard of, and from its success I think it necessary to note it. This lady sent for me at four o’clock on the morning of the 27th. I found that she had been flooding excessively, and, as the nurse said, she was in a sea of blood. She was within three weeks of her full time. I examined, and found the placenta directly

* “Obstetric Works,” vol. i. p. 769. It is taken from the note-book of Dr. Beatty’s father, and bears the date July 28, 1835 (1825?).

over the os uteri. I sent for Dr. Duke, and on his coming I introduced my hand into the vagina, and finding I could not turn without more difficulty than I thought necessary, it occurred to me to *separate as much of the placenta as was within my reach*. This I did to such an extent as entirely stopped the hæmorrhage, except a trifling oozing. She continued all day without pain, and about three o'clock the following morning labour set in, and she was delivered of a still-born child at half-past four o'clock, A.M. She had no further flooding, and is likely to do well."

The following case is from my note-book.

CASE 33.—"*Complete placental presentation; hæmorrhage; moderated on partial cervical detachment, and excitation of contraction; placenta torn by expansion of os; complete arrest of hæmorrhage on evacuation of liquor amnii; recovery.*—June 5th, 1850, Mrs. T——, *multipara*; menstruated in December last; considered herself in seventh month. Awoke at one, A.M., with flooding in a considerable gush, but did not experience any pain. Flooding continued at intervals in gushes; still not conscious of labour-pains. Dr. Humby, of St. John's Wood, was sent for at three, A.M.; he found os dilated to size of half-a-crown, and clots in vagina; could not feel any part of child presenting, but felt placenta. I arrived, on Dr. Humby's

summons, at five, A.M. ; found matters as described above. Still hæmorrhage at intervals, but no labour-pains of which patient was conscious. Two doses of ergot administered at intervals of fifteen minutes ; no effect. The os uteri was very high up, and far back, in contact with the promontory of the sacrum. Had to pass the hand into the vagina ; then two fingers passed through the os ; opening was occupied by a large clot ; but could not feel the child, nor even by sweeping the fingers round inside the cervix could I feel the edge of the placenta, so as to get at the membranes. Contraction of the uterus was felt to occur at intervals, and the os was evidently dilating. The hæmorrhage being now moderate, and the patient having a good pulse, we determined to wait. At half-past seven, A.M., the hæmorrhage had been going on slightly, excepting one gush. Os now more dilated ; bag of membranes protruding through it ; ruptured it ; liquor amnii escaped ; and head came down. Hæmorrhage now ceased altogether. Pains not strong. Administered another dose of ergot, and maintained pressure and slight friction over the uterus. Child born dead at eight, A.M. ; did not appear to be more than six months. Uterus maintained good contraction. Placenta removed in three minutes. It was small. Its centre seemed to have been torn open, so as to form a cup-shaped cavity, which con-

tained a large clot adhering. This was the part which was at the centre of the os ; the clot was the part felt on examination, and which separated the substance of the placenta from the finger. The centre of the placenta was marked by a well-defined line, forming a perfect ring—the edge of the cup—which no doubt was the line of adhesion to the os. The expansion of the mouth of the womb, pulling upon this ring in every part of its circumference, had not only partially detached the placenta, but had also torn its substance so as to form the excavation described. I am clear that this was not done by the finger during my examinations. The patient recovered favourably.”

I believe it is not common for the substance of the placenta to be torn during the process of separation from the uterus in the case of partial presentation ; that is, of adhesion to one side only of the cervix. But this case shows that when there is complete central presentation, the parenchyma may be torn by the dilatation of the womb. In these cases the child has to encounter a new source of danger : direct hæmorrhage from the umbilical vessels is added to the partial asphyxia resulting from the choking up of a portion of the placenta.

On demonstrating this placenta to my class on the following day, I called their attention to the

interesting facts, that the flooding had been greatest when the placental detachment had been the most limited ; that the flooding became moderated after I had effected a further detachment of placenta by sweeping my finger round the inside of the cervix, labour-pains—an all-important condition—being excited ; and that it ceased on the rupture of the membranes, and the full contraction of the uterus. I believe that I did not effect a sufficient separation of the placenta from the cervix. The whole orificial zone was not freed until the full contraction of the uterus completed what I had begun.

Would the mother have escaped with life had turning been effected ?

The following case, from Portal, is another example of the spontaneous laceration of the placenta by the expansion of the cervix. The same accident has been, I believe, also described by Dr. Radford ; but I am unable to find a reference to the remarks of this experienced observer. I call attention to these facts, because the possibility of this accident has been denied by obstetricians of some authority.

It seems obvious that by freely detaching the placenta by the finger from the orificial zone, and rupturing the membranes so as to allow the placenta to be carried over to that side of the uterus

to which its main bulk is fixed, we avoid the risk of this accident, and the consequent risk of the death of the child by direct loss of its own blood.

CASE 34.—A lady was almost *in extremis*, from hæmorrhage lasting nineteen days. Nov. 16, 1671, Portal found the os uteri quite stopped up by the placenta, which was *split in the middle as far as to the membranes*; delivered by feet, without the least violence, parts being much relaxed. Mother died.

APPENDIX III.

CASES EXHIBITING ARREST OF HÆMORRHAGE ON CONTRACTION FOLLOWING ADMINISTRATION OF ERGOT, RUPTURE OF THE MEMBRANES, ETC.

A. *Recovery by Natural Powers.*

B. *Death after Cessation of Hæmorrhage following on Forced
Delivery.*

The next case is taken from Dr. Ingleby's work on Uterine Hæmorrhage, p. 159. It is very instructive.

A.

CASE 35.—“*Placenta prævia; profuse flooding; great exhaustion; turning attempted and abandoned; contraction excited; recovery.*—A woman, who had reached the eighth month of pregnancy, was seized with a violent hæmorrhage, subsiding at intervals, but becoming on each return more excessive, and greatly increased by frequent vomitings. On the fourth day after the seizure, the flooding and sickness having recurred with great aggravation, I was requested to see her. The pulse was thready and fre-

quent, the countenance blanched, the surface of the body cold, and the flooding profuse. On examination, I found the os uteri somewhat dilated, very thin, and an edge of the placenta overhanging its anterior lip. Immediate delivery being determined upon, I introduced my hand into the vagina; but when my fingers had passed the os internum, the pulse became imperceptible, accompanied with so alarming an exhaustion as to threaten immediate death. Under a conviction of the patient's inability to sustain delivery, I resolved not to proceed; after a moment's deliberation, I lacerated the membranes extensively (the head of the fœtus resting on cervix uteri and pubis), applied a bandage tightly round the abdomen, freely administered brandy, and stimulated the uterus by retaining two fingers within its mouth. *Under slight pains*, the head rapidly descended to the outlet; but the pains proving inadequate to the expulsion, I completed the delivery by the short forceps. The placenta was quickly disengaged. Its edge, extensively detached and very smooth, had more the appearance of a coagulum than of placenta. The patient perfectly recovered. I am persuaded that this woman owed her recovery to this particular treatment, and that had the attempt to turn been persisted in, the issue would have been fatal. Rigby's twenty-third case is somewhat analogous;

but the hæmorrhage in this instance did not cease on the rupture of the membranes, though turning was not performed."

HÆMORRHAGE CEASING ON RENEWAL OF CONTRACTION AFTER ERGOT.

The following are from Dr. R. U. West.

CASE 36.—"No. 435. June 22, 1839.—There was considerable hæmorrhage during the first stage of labour—*i. e.*, during the dilatation of the os uteri—sometimes fluid, sometimes in large coagula. I was not able to feel any portion of the placenta, though it must have been attached somewhere very near the os uteri. I ruptured the membranes as soon as I could, and then I gave doses of ergot until the uterine action, which was very languid at first, became sufficiently strong, the hæmorrhage going on all the time. It was not until the woman had taken three doses, and three hours after the first dose was given, that a satisfactory effect was produced. I gave altogether ℥iv.—viz., ℥ij at nine, P.M., ℥j at ten, and ℥j at half-past eleven. The child was safely born at a quarter past one, A.M., and was living. The woman did well. *Pluripara.*"

CASE 37.—"No. 293. Dec. 28, 1837. *Primipara; aged forty.*—The head presented naturally, but I could feel the edge of the placenta in contact with the os uteri. There was not much hæmor-

rhage, the os uteri, on my arrival, being almost closed, thin, and rigid. After waiting some hours, during which time there was a continual dribbling away of blood, with scarcely any pains and no alteration of the state of the os uteri, I gave a dose of the ergot, which speedily brought on good pains. An hour or two after the os uteri had begun to dilate, I ruptured the membranes, after which there was no hæmorrhage. As the head descended, the placenta, which was attached posteriorly, seemed to slip up over it, and the labour was safely finished about four hours after the administration of the ergot. The child was still-born. The funis was attached to the extreme edge of the placenta."

CASE 38.—“*August 12, 1849. Primipara; vertex presentation; considerable ante-partum hæmorrhage.*—Labour commenced at seven, A.M., with hæmorrhage and slight pains. I arrived at half-past nine. Os uteri dilated to size of a shilling, rigid and thin. I ruptured the membranes and gave a dose of ergot at half-past ten. After these proceedings there was but little hæmorrhage, though it was nearly two hours before the head pressed well on the os uteri, and it was a good hour and a half before any improvement took place in the dilatation. I could feel the edge of the placenta near the os uteri, posteriorly. Her mother told me that

she had parted with at least a quart of coagula and fluid blood before my arrival. The labour, which was completed at two, P.M., was very rapid during the last half-hour. Living child."

CASE 39.—"Nov. 16, 1849. *Pluripara; vertex presentation; living child; considerable hæmorrhage ante-partum.*—Os uteri dilated, size of a shilling, very rigid. Could not feel the placenta. Ruptured the membranes, and gave a dose of ergot immediately. Hæmorrhage ceased at once. Labour over in two hours, after administration of ergot. There were some slight pains when I arrived."

CASE 40.—"Jan. 5, 1850. *Easy and quick labour, with presentation of vertex; third pregnancy; living child.*—This labour was ushered in with a good deal of hæmorrhage, which ceased on the rupture of the membranes. The placenta was partially adherent, requiring the introduction of the hand for its removal at the end of half an hour. This unfortunate woman died of mortification of both legs five weeks after her confinement, the consequence of phlegmasia dolens."

CASE 41.—"No. 2057. April 21, 1853. *Funis prolapsed; presentation of right foot; placenta felt; premature, still-born child, putrid.*—Water broke in the afternoon the day before. At six, P.M., funis came down. No pains then, nor all night. During

the night two coagula came away, one as large as the fist. I was sent for at eight, A.M. No pains. I felt a coil of the funis hanging out of the vagina, and just within the os uteri, which was rigid and dilated to about the size of a shilling. I distinguished the foot of a very small fœtus. At half-past eight I gave a dose of ergot. Examining again at half-past nine, I distinctly felt a portion of the placenta very near the os uteri. The feet being more within reach, I proposed a second attempt at delivery. This time I had very little difficulty in getting both feet down, but the rigidity of the os uteri continued very great, rendering the extraction of the child's head very difficult. The placenta followed without any trouble, and the woman did well."

CASE 42.—"No. 1796. August 8, 1851. *Pluripara; twelfth labour; living child.*—Hæmorrhage to a considerable extent without pains had been going on for several hours, when I saw her at half-past eight, A.M. Another medical man had been called in overnight, but he soon left her. I found the os uteri dilated to the size of a shilling, thick and rigid. I ruptured the membranes immediately, and gave a dose of ergot. Nice pains came on in an hour, and the child was born at a quarter to one. I could not feel any portion of the placenta. Patient had a very good recovery."

CASE 43.—“*April 17, 1843. Pluripara ; hæmorrhage during the labour ; a premature birth.*—Gave a dose of ergot ; living child ; patient did well.”

CASE 44.—*Two cases of hæmorrhage from placenta prævia arrested by ergot ; children born alive ; recovery.*—Dr. James Fountain, of Putshill, New York, states that for the first twenty years of his practice he delivered nearly one hundred women annually, and had not over twelve cases of misplaced placenta ; all except three or four were partially over the os uteri ; in two cases it seemed placed very centrally. In every case, excepting these two, he found the os sufficiently dilated to admit of the introduction of the hand. In the other two cases, the os uteri was “so firm, thick, and unyielding, that I deemed it not best to introduce the hand, but to arrest the flooding till the os was in a more favourable condition. In both cases, I presume in all such, *the hæmorrhage ceased during the pains*, except just at their commencement. To secure a *constant pressure* on the placenta, and thereby to stop the flow mechanically, I gave a full dose of ergot. The effect lasted about half an hour ; then the hæmorrhage began to return, but I had gained on the os ; so, to secure a further relaxation (of os, but contraction of muscle), I repeated the ergot, and with the same success.

At the end of another half-hour I found the os so far dilated, that I concluded to proceed. I bored my hand quickly through the placenta, turned the child, and as my hand came down I detached the placenta, and quickly brought all away together. Success was complete ; both children were living.*

From Dr. R. U. West.

CASE 45.—“ No. 2299. Oct. 15, 1854. *Pluripara ; vertex presentation ; still-born child.*—Was first attacked with great hæmorrhage, which had been going on four hours, when I arrived. She had had little or no pain. Os dilated to size of a shilling, very rigid and thick. Head lying high up. Ruptured the membranes, and gave a dose of ergot. Some pains came on, and the os uteri began to dilate slowly, but continued very rigid and unpromising for three hours, when it altered all at once for the better, the head beginning to press upon it. Gave a second dose of ergot at the end of four hours. Child born dead at the end of another hour—viz., five hours altogether after my arrival. There was no hæmorrhage after the rupture of the membranes, although *the head did not press on the os uteri for three hours after*, as I have said. A great portion of the maternal surface of the placenta was covered with thick adherent

* Dr. Trask's Work, p. 59.

coagula. The opening through the membranes was *not* near the placenta, but the membranes were studded with thick adherent coagula on their maternal surface, between the opening and the placenta. A considerable portion of the placenta must have been detached high in the uterus, and the blood escaping must have found its way between the membranes and the uterus, leaving coagula adhering to the maternal surface of the former on its way. Death of child probably owing to suspension of utero-placental circulation."

From Dr. R. U. West.

CASE 46.—“*No.* 2176. *Feb.* 5, 1854. *Hæmorrhage ante-partum; ergot.*—At half-past ten, P.M., Feb. 4th, Mrs. R——, of this town, was suddenly surprised by an immense gush of blood. She fainted, and was carried upstairs to bed. As I was detained at the time in attendance on another case at a considerable distance from home, I did not see her till half-past one, A.M.; meantime, she was under the care of one of my professional neighbours. On my arrival, I found the cranium presenting in the first position; the os uteri dilated to the size of a shilling, rigid, and rather thick. There were very slight pains at considerable intervals, each accompanied by a gush of slightly coloured serous fluid. I immediately ruptured the membranes, after which the flow of fluid ceased

entirely. There was, however, some faintness felt occasionally; there was frequent yawning, and a very blanched countenance. I then gave a full dose of ergot. This speedily brought on nice pains, and the labour was safely completed at a quarter past four, A.M. The child was quite dead, probably in consequence of the hæmorrhage, as it had been felt to move just before the labour began. Immediately after the child was born, a very large firm coagulum, larger than the after-birth, was expelled. I think it probable that the gushes of pale fluid which took place with the first slight pains were composed chiefly of the serum of the blood, the coagulum of which was expelled after the birth of the child. The opening through the membranes was found to be close to the edge of the placenta. I could not feel any portion of the placenta during the labour. A considerable portion of the maternal surface of the after-birth, near the opening through the membranes, was found to be covered with a thin layer of very adherent and firmly coagulated blood. Mother recovered."

B.

DEATH AFTER CESSATION OF HÆMORRHAGE, FOLLOWING ON FORCED DELIVERY.

The following case is from Dr. Ramsbotham's "Practical Observations" (p. 225, vol. ii.).

CASE 47.—*Partial presentation ; flooding profuse ; rupture of membranes ; cessation of hæmorrhage ; forced delivery ; death.*—Monday, August 6th, 1827, Dr. Ramsbotham saw a woman towards the close of pregnancy. “ On the 4th she had been suddenly seized with a discharge of blood, without pain, which, after continuing a short time, subsided ; on the 5th the hæmorrhage returned, and again ceased without producing much inconvenience ; on the 6th, about two in the morning, another attack of flooding had taken place, more violent than the preceding ones, which had continued incessantly to the time of my visit. I found this woman suffering under all the symptoms subsequent to a considerable loss of blood. I discovered that the placenta had been partially placed over the os uteri ; to its edge the membranes were attached, through which the head of the child could be distinctly felt. I passed my finger through the bag, and discharged the liquor amnii at once. From this time the flooding ceased, yet the woman’s powers did not in the least rally. After watching the case for about three hours, and observing no improvement, but rather a gradual diminution in the strength, I proposed delivery as a *dernier ressort* ; rather to prevent its being said that the woman had died undelivered, than in the expectation of saving her life. The child was

turned a little before ten, A.M., without difficulty, and was extracted *without much increase of loss*, but the woman did not long survive delivery."

The following is from Dr. Ramsbotham's "Practical Observations" (p. 206, vol. ii.).

CASE 48.—"*Placental presentation; flooding; partial remission; forced delivery; death.*—A woman had been subject to repeated attacks of uterine hæmorrhage during the month preceding labour, which had always spontaneously subsided. The os uteri was rigid, and but little opened; the placenta was felt. In the evening the drain had subsided. She continued free for the two following days; but in the night between Friday and Saturday she had a more violent return of hæmorrhage. At this time there was no disposition to labour-pain; the os uteri was more dilated, and felt more lax than on the former inquiry. The constitution had hitherto suffered little, yet the discharge was continuing; and although as yet it had made little sensible impression, it was evident that, if it was allowed to proceed, it must produce its usual effects. . . . I proceeded to the operation (forced delivery). The os uteri offered considerable resistance to the entrance of the hand, binding it tightly round like a cord. By degrees this opposition was overcome, and my hand, gliding into the uterus, seized a foot, and brought down the breech;

uterine action now became powerful, and presently expelled the rest of the child alive. The placenta was also soon thrown down, and removed. After delivery, this lady had no further loss, yet she seemed much exhausted, with a quick feeble pulse. But a smart shivering fit followed, which was presumed to be the effect of the forced delivery. On the day following she got sleep. . . . She seemed to promise favourably. In the night she was seized with vomitings of a dark green fluid ; she was complaining of pain in the belly, which felt tender and swelled. In the course of the next night she expired. A *post-mortem* examination was not allowed ; yet I could not divest myself of the suspicion, that some injury was inflicted upon the parts in the act of delivery, although I was not aware of such a fact at the moment."

The following case is from Dr. Ramsbotham's "Practical Observations" (p. 200, vol. ii.).

CASE 49.—*Placental presentation ; moderation of flooding ; forced delivery ; "tremendous" flooding ; and death during operation.*—Called to a woman in labour of her eighth child, under a dangerous flooding. "I found her under symptoms of extreme hazard ; she had a quick languid pulse ; a pallid countenance ; cold extremities ; and was breathing laboriously. This woman had been suffering under occasional attacks of slight

flooding for some weeks, which had always subsided; but for two or three days past the returns had been more frequent, and on Wednesday the flooding had been violent; to such an extent indeed, according to the nurse's account, 'that the woman could not have lost less than a gallon of blood.' (Violent flooding again on Thursday morning.) I detected the placenta immediately over the os uteri, which was opened to about the size of a shilling. The woman was near her full time, but she had no labour-pains; and although the discharge at the moment could not be called violent, there was a constant oozing from her parts. Under such unfavourable symptoms, I candidly declared that I saw little hope of saving her life; yet the only chance appeared to be in immediate delivery. (The operator) met with greater difficulty than he anticipated in the introduction of his hand; during that part of the operation the flooding was truly tremendous. At length the breech was brought down; but before the body, shoulders, and head could be extracted, the woman had expired. The placenta was found in the vagina."

In this case Dr. Ramsbotham seems to have lost sight of his own excellent caution against turning under great exhaustion. The indication here was to *excite contraction*. Had ergot been given, and galvanism employed, instead of turning, is it not

certain that the last fatal "tremendous" flooding would have been averted?

The following instructive case is also from Dr. Ramsbotham's "Practical Observations" (p. 197, vol. ii.).

CASE 50.—*Placental presentation; flooding without labour-pains; partial remission; forced delivery; "terrific flooding" under operation; death.*—A young woman near the end of pregnancy was seized with flooding, on a Wednesday. Another discharge took place on the following night. During the Friday and Saturday she was free. "On the Sunday night I was recalled. . . . The os uteri was rigid and unopened. I remained all night; and finding after some hours that *a drain continued*, and that she was disposed to be faint *without labour-pains*, I was anxious to have the presence of another accoucheur. Between four and five on the Monday morning the os uteri had begun to relax a little, and I was then enabled to detect the placenta immediately over it; presently afterwards my friend arrived. It was now determined that the woman ought to be delivered without further delay, notwithstanding the parts were so little dilated; I therefore proceeded to pass my hand; but in making the necessary dilatation an increased quantity of placenta was separated, and the flooding was, for the moment,

terrific. Having seized a foot, I brought down the breech. Uterine action now ensued, and materially assisted my extraction of the body and head ; after which there was a sudden gush of the waters and blood mixed together. The woman had now fainted, but on the exhibition of some brandy was considerably revived. The placenta was presently withdrawn with ease. The child was still-born. For nearly an hour after delivery, the poor woman seemed to be much improved ; but about that time she began to yawn violently, after which she became extremely restless, tossing about in every direction ; this state terminated in a convulsion fit, under which she expired, about an hour and a half after delivery."

Would the "terrific flooding" attending the forcing the hand into the uterus have occurred if this operation had not been performed ?

APPENDIX IV.

CASES ILLUSTRATING PERSISTENCE OF HÆMORRHAGE WITH WANT OF CONTRACTION.

A. *Placenta wholly detached.*

B. *Placenta partially detached.*

A.

The following case is from Giffard. It exhibits the persistence of hæmorrhage after entire detachment of placenta, from want of uterine contraction.

CASE 51.—“*October 17, 1731.*—I was sent for to the wife of a printer, near White Fryars, who had been seized about an hour before with a violent flooding; and when I came, I found she had lost a large quantity of blood, and I was told she was in about the seventh month of her reckoning. I found one arm of the child slipped out beyond the os internum, as also a large part of the placenta; wherefore I gave it as my opinion, that she ought to be immediately delivered. . . . I immediately passed up my hand into the vagina, and so on by the side of the shoulder into the uterus, where I

met with the remaining part of the placenta, wholly separated from the uterus. (The turning and extraction of the child were then effected with some difficulty.) However, at last I finished the delivery by bringing away the placenta, which, being before loosened from every part of the uterus, readily followed. I was then in hopes we had surmounted our greatest difficulties, and that the flooding would have stopped; but to my great surprise she continued still draining. I therefore again gently passed up my hand, believing that either some part of the placenta was torn off and left, or else that some coagulated blood kept the womb distended; but I could not meet with any part of the placenta, or any clots of blood. I then ordered cloths dipped in vinegar to be applied close to the parts, and what else I thought necessary; yet, notwithstanding all my endeavours to save her, *amisit eum sanguine vitam.*"

CASE 52.—Dr. Collins says:—“Dr. Clarke informed me, that he had met with one case of total separation; the patient was dying before he reached the house.”

The following case from Dr. Leet† is an example of hæmorrhage persisting after the separation of the placenta.

* “Practical Treatise on Midwifery,” p. 91.

† “Clinical Midwifery,” p. 106, 2nd edit., 1853.

CASE 53.—“On the 8th of February, 1830, I was called to a woman residing in Falconberg-court, who had been attacked by profuse uterine hæmorrhage at the end of the seventh month of pregnancy. The placenta was protruding through the orifice of the vagina. I immediately extracted it, and a dead child followed. A great hæmorrhage succeeded, and she remained for a considerable time insensible, without any pulse to be felt at the wrist; she, however, gradually recovered.”

CASE 54.—Drs. M'Clintock and Hardy also cite a case which occurred to Dr. Johnson. In this case, the hæmorrhage continued with little abatement after the spontaneous expulsion of the placenta, so that the hand had to be introduced, and delivery completed by turning.

The following case is from Dr. Lee's "Clinical Midwifery" (p. 163).

CASE 55.—“*Placenta prævia; great hæmorrhage; rupture of membranes; no contraction; hæmorrhage not abating; uterus emptied; then arrest of flooding.*—On the 25th of March, 1843, I was called by Mr. Skegg to a lady who was eight months pregnant, and who had been suffering from flooding for three weeks. The os uteri was open to the extent of a crown-piece, but it was thick and rigid. A large portion of placenta was felt through the os uteri; the *membranes had*

been ruptured, and the liquor amnii had escaped. The os uteri was gently dilated, the binder applied, and stimulants given; but *the pains became more and more feeble*, and at last entirely ceased, *while the hæmorrhage continued to increase to an alarming extent*. The operation of turning was impracticable, and the child was ascertained from the funis to be dead. The perforator was passed up between the uterus and detached portion of placenta, and the head of the child opened and extracted, but with much difficulty. The placenta followed the child, the flooding entirely ceased, and the recovery was rapid and complete."

From Dr. Lee's "Clinical Midwifery" (p. 163).

CASE 56.—"*Placenta prævia; hæmorrhage; rupture of membranes; relaxation; continued hæmorrhage*.—On the 30th of December, 1843, I was called by Mr. French to see a patient who was eight months pregnant, and had been suffering for two months from profuse flooding. A great quantity of blood had been lost. Mr. French had attempted to deliver by turning, but the rigid state of the os uteri rendered it impossible to introduce the hand. I felt the edge of the placenta, and as turning was impracticable, I ruptured the membranes and discharged the liquor amnii. *Labour pains did not follow, and the hæmorrhage continued undiminished*. It being ob-

vious that death would soon take place if the delivery was not speedily effected, and as there was no alternative, I employed the perforator and crotchet. The placenta soon followed the extraction of the child, the flooding ceased, and the patient got well."

The next case is from Dr. Lee.*

CASE 57.—"*Placenta prævia ; hæmorrhage ; rupture of membranes ; no contraction ; continuance of hæmorrhage.*—On the 26th of May, 1844, Mr. Angus, of Frith-street, requested me to see a patient, aged forty-one, with uterine hæmorrhage in the eighth month, from placental presentation. For several days the discharge was moderate ; but slight pains coming on, and dilatation of the os uteri taking place, an immense gush of blood suddenly occurred, and immediate delivery became necessary. I felt the edge of the placenta behind, covering about the half of the cervix uteri. I ruptured the membranes, and *discharged the liquor amnii, but pains did not follow, and the hæmorrhage continued.* The os uteri was neither sufficiently dilated nor dilatable to allow the hand to be introduced to turn the child. The head was opened, and the child extracted through the rigid os uteri with difficulty. The placenta was soon

* "Clinical Midwifery," p. 164.

expelled, and the discharge ceased. The patient recovered."

The following case is from Dr. Lee.*

CASE 58.—"*March 24, 1836.*—I was requested by Mr. Saunier to see a patient seven months pregnant, who, after suffering several days from uterine hæmorrhage, was suddenly reduced to a state of the most alarming weakness from a great gush of blood taking place. When I saw her the blood was flowing copiously. The placenta could be felt adherent at the back part to the cervix uteri; at the fore part I felt the membranes. The orifice was so rigid, that it was impossible to pass the hand into the cavity of the uterus to turn. I ruptured the membranes, and a great quantity of liquor amnii escaped, after which the flooding entirely ceased. The ergot of rye was given, but labour-pains did not come on till the afternoon of the 26th, the second day after the membranes had been ruptured, when the child and placenta were expelled without a renewal of hæmorrhage."

This case seems to show that the arrest of flooding that follows on escape of the liquor amnii, may sometimes be owing to the tonic general contraction of the capacity of the uterus, which, equally with active muscular contractions, constringes the mouths of the uterine vessels. The

* "Clinical Midwifery," p. 153.

common effect of rupture of the membranes is by producing a sudden diminution of the distending contents of the uterus to excite active contraction, as well as tonic contraction. When suddenly freed from a part of the internal distending power, the uterus will collapse like an india-rubber ball that is tapped after inflation. In the present case active pains did not ensue, yet the flooding ceased. It is almost certain that the sudden collapse of the uterus that follows upon evacuation of the liquor amnii has, in most cases, the effect of detaching a further portion of placenta. As I have explained in Lecture I., the structure of the placenta is such as not to admit of its following the receding uterine neck and preserving its adhesion. Probably in most, certainly in some cases, all that portion of the placenta which adheres within the cervical zone is, under these circumstances, cast off; yet under the influence of contraction, active or passive, there is no hæmorrhage.

The following interesting cases, condensed from Dr. Tanner's paper, strikingly resemble some recorded by Baudelocque and Crosse.

CASE 59.—“ Mrs. Q——, tenth child; had bad health; granular degeneration of kidney; much harassed by illness of a child; was suddenly roused by its cries. On getting up felt giddy and faint. She was found pale and exhausted; the counte-

nance anxious, and extremities cold; the pulse quick and feeble. A large clot found in the bed; blood flowing from the vagina. Os uteri dilatable; placenta not felt; membranes entire; head presenting. Treatment.—Rupture of the membranes; brandy, ergot, dilatation of os. Hæmorrhage ceased, and pains came on. The child was born, the placenta quickly following. Child breathed after attempts at resuscitation, but did not survive. Mother recovered.”

CASE 60.—“ Mrs. O——, ninth pregnancy; eight and a half months gone; thrown down by her husband; was shortly afterwards seized with sickness (dark-coloured matter); pains about umbilical region; faintness; said she was dying; much exhausted, cold, feeble pulse. Os dilatable; no placenta felt; no labour-pains. On examination slight contractions came on; a clot forced down. Treatment.—Rupture of membranes, when a large quantity of liquor amnii, of a deep red colour, came away; brandy, ergot, alternate heat and cold to abdomen. Head descended, when *pains suddenly ceased and flooding returned*. Forceps used, and a still-born child extracted. Immediately afterwards a large clot was expelled. Placenta easily removed. There was excessive prostration, and it was feared the patient would sink. She recovered.”

Dr. Tanner says the women in whom this separation of the placenta takes place are mostly of a relaxed habit of body, and have had large families.

These cases resemble several related by the late Mr. Crosse, who also objected to the terms "unavoidable" and "accidental," and proposed the term "previous separation," as applicable to both the cases which Mr. Rigby sought to distinguish from each other.

The following instructive case, to which my attention has been drawn by Dr. R. U. West, was related by the late Dr. Ryan.*

CASE 61.—*Placental presentation; profuse hæmorrhage; extreme exhaustion; perforation of placenta; escape of liquor amnii; uterine contraction; arrest of hæmorrhage; transfusion; forced delivery; post-partum hæmorrhage; return of exhaustion; second transfusion; death.*

—Mrs. —, aged forty-one, mother of ten children, in labour at seven months of gestation. Frequent gushes of blood during the last week, and a slight sanguineous discharge several times during the last month. 24th April, 1832.—This morning she fainted. Os uteri dilated to size of a shilling; very rigid; placenta fairly implanted over it. Repeated faintings. Extreme exhaustion. Stimuli

* "Lond. Med. and Surg. Journ.," 1832, p. 476.

freely given. It was considered that as asphyxia was imminent, and the os rigid, delivery was impracticable, as death would take place before its accomplishment. Secale given; and as there were frequent gushes of blood, the placenta was pierced by the finger, and the liquor amnii drawn off. *Uterine action commenced* during the operation. About four ounces of blood were lost, and *then the hæmorrhage entirely ceased.* Symptoms of exhaustion so extreme, as to threaten asphyxia returning. Dr. Blundell and Dr. Ryan resolved upon transfusing blood. This was done with great immediate benefit. 'The rally was quite complete, and never was there a case more gratifying to the medical attendants.' But the patient was still undelivered; this it was deemed necessary to effect; 'for if it were deferred, and *hæmorrhage should recur*, the favourable moment for the operation would be lost, and the patient might die undelivered.' Ergot and brandy were given, and turning effected by Dr. Blundell. She bore the operation well; but soon afterwards symptoms of collapse returned, the uterus relaxed, internal hæmorrhage took place. Transfusion was again resorted to; this time in vain. It was concluded that there was too little power left in the circulating organs to propel the blood. The patient sank."

APPENDIX V.

CASES EXHIBITING HÆMORRHAGE FROM DETACHMENT OF PLACENTA, ALTHOUGH THE CHILD WAS PREVIOUSLY DEAD; AND COMPLICATION WITH DISEASE OF PLACENTA.

The following case is one of Mr. Kinder Wood's.

CASE 62.—“I was desired to see a poor woman in Newberry-street. I found from the female attendant that the discharge had been going on long and copiously. The poor patient was extremely exhausted. Feeling that she could not survive long, if left to nature, and that she could not bear the hæmorrhage consequent upon the common operation, I separated the placenta, brought down the feet of the child, and delivered. The effusion produced by separating the placenta was extremely slight, and it ceased upon effecting the complete detachment. *The child was dead, and tending to putrefaction.* A stimulant was given before the operation, and during its continuance, but the heart never recovered its energy, nor the skin its

warmth. She died in about an hour from pure exhaustion. November 1st, 1821.”

The following case, from my note-book, exhibits *a complication of placental presentation, with disease of the placenta, and death of the fœtus.*

CASE 63.—On the 25th of October, 1851, my attendance was requested by Mr. Barker, of the Edgware-road, at the labour of a lady who had suffered considerable hæmorrhage in gushes, in order that I might be present should assistance be required. Mr. Barker informed me that after the hæmorrhage he found the placenta attached to the os uteri; a portion separated, and the funis prolapsed. The hæmorrhage ceased. He aided the expulsion of the fœtus, and on seeking to withdraw the placenta found it partially adherent, so that it was extracted with difficulty. The uterus contracted well. The patient recovered favourably. The child had been dead some time. The abdomen was distended with fluid, the skin dark-coloured, and the cuticle peeling off.

It appears that some time before labour this lady had ceased to feel the movements of the child; she was only conscious that it “fell about” in the womb; she knew that it was dead. She had borne one living child some years ago, but several succeeding pregnancies have terminated like the one just related. In one labour it was said that the

placenta was morbidly adherent, and had to be detached by the hand, much hæmorrhage attending.

The placenta of this case is one of those described in my second Memoir, "On Fatty Degeneration of the Placenta, and the influence of that Disease in producing Death of the Fœtus, Hæmorrhage, and Abortion;" published in the thirty-sixth volume of the "Transactions" of the Medico-Chirurgical Society. It offers, however, one or two points that call for special remark in this place. The placenta was free from signs of decomposition; its bulk was considerable; it had become a good deal torn in extraction, its consistence being soft. The cord was dark-coloured, distended with turbid serum. The structure of the placenta did not exhibit to the naked eye an appearance very different from the usual one; in parts, however, there were whitish glistening spots interspersed in the ordinary red substance. In two parts there was a mass of hard coagulated blood of longer date than the accession of labour. The microscopical examination of the white portions showed that the villi were mostly exsanguined, opaque, thickly studded with spherules of oil. The chorion was thickened, and destitute of nuclei. Similar appearances were also observed, although to a less marked degree, in other portions of the placenta.

In the Memoir referred to, I have shown that

hæmorrhage not unfrequently occurs in cases of fatty degeneration of the placenta, and I have described the process by which it is caused through partial detachments of the organ. In the case under consideration, the two hard clots were probably the result of partial detachments, brought about through the disease of the placenta, at periods prior to the accession of labour. The hæmorrhage in gushes, that occurred at the time of labour, were no doubt owing to the detachment of parts adherent to the cervix taking place in the usual manner.

In the appreciation of cases of placenta prævia, in estimating the causes of the hæmorrhage, and the extent and seat of the detachment of the placenta, I think it of great importance to take into account the condition of every part of the structure of the organ.

This is an essential element in the history of hæmorrhage from detachment of the placenta, hitherto almost entirely overlooked.

The following case is from Kinder Wood.

CASE 64.—“*Hæmorrhage from placenta prævia, although the child had long been dead.*—On the morning of the 11th of April, 1822, I was desired by a midwife to see Mrs. Rawson, in Little Lever-street. She was in the latter end of the eighth

month; she had sustained frequent and copious discharges the two previous months, and which were very profuse during the night. The pains were slight, but always attended with fresh discharge. The patient presented a very distressing appearance. (Extreme exhaustion described.) The os uteri was found low, soft, and dilated about the size of a half-crown, the cervix obliterated, the placenta over the os uteri, one portion loosened. (The placenta was wholly detached by Mr. Kinder Wood.) The operation was done quickly and easily, and with very little loss of blood. The presence of the hand excited uterine contraction, and seemed to rouse the languid patient. . . . After the placenta was separated, the membranes were ruptured, and the hand slowly withdrawn. . . . The labour-pains became stronger six hours afterwards, and in an hour expelled the placenta, and a *dead child, tending to putrefaction*. The patient recovered."

The next is from Dr. R. U. West.

CASE 65. — "April 16, 1854. — *Pluripara; vertex presentation; premature, still-born, putrid child; very short funis*.—This labour was accompanied and preceded by a good deal of *fresh hæmorrhage*."

The following is one of those in which the late

Mr. Kinder Wood first adopted the practice of wholly detaching the placenta.*

CASE 66.—“*Placenta prævia ; pains slight ; profuse flooding ; putrid child ; great exhaustion ; placenta artificially detached ; rupture of membranes ; arrest of hæmorrhage (presumed) ; recovery.*—On the 11th of April, 1822, Mr. Kinder Wood was called to a woman in her eighth month of pregnancy. She had sustained frequent and copious discharges during the two previous months, and which were very profuse during the night. The pains were slight, but always attended with fresh discharge. The patient presented a very distressing appearance: the pulse could not be counted; the lips were white; she was very cold, and spoke in a whisper; she had frequent syncope. Warm brandy was freely administered. Os uteri dilated to size of half-a-crown; the placenta was found over the os uteri, one portion being loosened. Convinced that this patient could not bear immediate delivery, and satisfied that the hæmorrhage would be very early fatal if she was left to nature, I insinuated the hand through the os uteri, *detaching the placenta by sweeping the fingers beneath it as the hand was passed forwards.* The operation was done quickly and

* Radford, “*Prov. Med. and Surg. Journ.*,” 1845.

easily. After the placenta was detached, the membranes were ruptured. (No mention of hæmorrhage after the operation.) The labour-pains became stronger about six hours afterwards; and in an hour expelled a dead child, tending to putrefaction. The patient regained health slowly, and had a severe attack of phlegmasia dolens."

The following case is from my note-book. It occurred in the Marylebone Infirmary, under the care of Mr. Sedgwick. The placenta was minutely examined by myself.

CASE 67.—"*February* 11, 1853.—A woman, aged twenty-nine, has had five pregnancies: the first three normal in course; the fourth went on well till the eighth month, when she received a severe shock from two of her children being scalded; four days after this, being in May last, she was delivered of a dead child. On the 17th of July following, she had an attack of flooding; this lasted, but much diminished in amount, for six days, and did not return till the 11th of February, 1853, when she felt a slight labour-pain, and a little discharge of blood, about four, P.M.; the quantity was less than half a pint; at seven, P.M., a second discharge of blood; at nine, P.M., the os was dilated to the size of a shilling; a little blood at intervals. The vagina was plugged; at four, A.M., on the 12th, plug came away; os now dilated, so

as to admit of turning. The placenta was attached to the anterior part of the uterus, the edge extending over the os to the opposite side to the extent of about two inches. The child made two distinct efforts to breathe. The uterus contracted well. The mother was doing well on the third day. The child was about six months and a half, universally anasarcaous. The placenta was unusually large, very pale and soft. There was no portion which exhibited the usual appearances of partial detachment from the cervix. The parts palest and most lacerable were affected with fatty degeneration. The margin had a hard fibrous deposit all round; and near this, as is not uncommon, the villi were more affected than elsewhere."

APPENDIX VI.

EXTENSIVE SPREADING OF PLACENTA; LOSS OF
MATERNAL BLOOD NOT INVOLVING ANÆMIA
OF CHILD; CHILD DIES OF ASPHYXIA.

CASE 68. — *Illustrating almost universal spreading of placenta over uterus; flooding; death before delivery; mother blanched; child full of blood.*—(This case is referred to in Lecture I. It was originally published in my Memoir of 1847.)

CASE 69.—“*Implantation of placenta over os internum, and to more than three-fourths of the whole superficies of the uterus; profuse hæmorrhage; death before delivery; post-mortem examination.*—Jane B——, forty-one, has had eleven children, of which two were born dead; in her latter pregnancies has had flooding before delivery. August 14th, 1846, was in labour with her twelfth child, under the care of an unusually ignorant and obstinate midwife. From what could be gathered

of the history, it appeared that pains came on at seven, P.M., of the 13th; flooding recurred at intervals during the night. At a quarter to six, A.M., on the 14th, she sank. Mr. Frost, of Notting-hill, was sent for in time to find her dead when he arrived. I assisted at the post-mortem examination. The woman was stout and well-developed. The skin was waxen and straw-yellow; the conjunctiva quite blanched. *Examination per vaginam*.—Os uteri was found dilated; placenta felt plugging up orifice completely. The presenting part of the child could not be felt. Brain.—A small quantity of blood in the sinuses; vascularity of membranes appeared normal; on incising the brain puncta were seen, but smaller and less marked than usual; no oozing of blood from the puncta. Chest.—Lungs healthy; serous mucus in bronchial tubes; they are generally paler than usual; very little escape of blood on incision, even at the posterior parts. Heart.—A small quantity of serum in pericardium; structure healthy; a small quantity of thin serous blood in each ventricle; a small polypoid concretion in left auricle; a larger soft coagulum in the right. On cutting across the inferior vena cava, a small quantity of thin fluid serous blood escaped. What little blood there was throughout the body was generally thin and fluid. The liver was healthy, but pale. In-

testines generally pallid, bloodless. Uterus presented a greyish-white aspect, and occupied the normal position. The rami of the ossa pubis were sawed through on either side, so as to expose the cervix uteri and vagina, and admit of the removal of the gravid uterus entire. The vagina was then slit up on the anterior aspect so as to expose the os. This was dilated to size of the rim of a wine-glass; the edges were thin and ecchymosed. At the upper part of the vagina, surrounding the os, three distinct lacerations of the mucous membrane were seen, of about half an inch long, surrounded by ecchymosis, the result of rough examination during life. Projecting through the os was a mass of placenta, hardened by infiltration of coagulated blood; the placenta was detached from the cervix all round for the space of two inches. The uterus was next laid open by a longitudinal incision in the posterior aspect, when the child was seen to be a male of the full size with the head presenting, the occiput having been directed to the right sacro-iliac synchondrosis. On removing the child, a quantity of meconium was found mixed with the liquor amnii; this was washed away, and the attachments of the placenta examined. This organ was found stretched over three-fourths of the entire area of the uterus, forming a complete cul-de-sac enveloping the child. The thickest portion was

inserted over the os and cervix uteri, from which centre it arose all round, adhering very firmly to the walls of the uterus on every side, generally of little thickness, and terminating in a very thin margin near the very fundus, so as to leave barely one-fourth of the whole internal surface of the uterus unoccupied by placental adhesion. The cord sprang from the very edge of the placenta, near the fundus. At the part corresponding to the insertion of the cord, the placenta was one inch and a half thick. It would seem as if the placenta, originally springing from the cervix, had been compressed and flattened out by the pressure of the child's head, causing it to spread laterally and occupy an unusual superficies to make up for its extreme thinness. There was but little blood in the placenta."

The child was of the full size; healthy; had been recently alive. It exhibited no mark of having suffered from loss of blood.

APPENDIX VII.

MEMORANDUM ON THE SOURCES OF HÆMORRHAGE DURING GESTATION.

THE late Dr. Ramsbotham laid down the following proposition :*—“ During the whole term of utero-gestation, as well as under the process of labour, a discharge of blood from the vagina can only arise from the detachment of a portion of the placenta from its adhesion to the uterine surface, and the blood which escapes is maternal.”

This opinion is still prevalent ; but it is far too absolute. It may, therefore, be useful to enumerate the various sources whence hæmorrhage flowing from the vagina during gestation may issue. To know that such hæmorrhages are not necessarily dependent upon detachment of placenta, is to be on our guard against erroneous diagnosis and improper interference.

An analysis of the cases of flooding during gesta-

* “ Practical Observations,” vol. ii. p. 115.

tion and before delivery, which I have met with, point to the following different sources of the blood, and causes of the flooding :—

I. From partial detachment of the placenta which had been adherent to the os internum and lower part of the womb, owing—

a. To the expansion and retraction of the cervix uteri.

b. To disease of the placenta, rendering it unfit to maintain its adhesion.

(Illustrations of this form will be found in Appendix V.)

The cases which have been distinguished from the foregoing, under the name of “accidental hæmorrhages,” have generally been equally supposed to depend upon separation of the placenta, the only difference being, that the original seat of the placenta was the normal one, and not near the cervix.

II. From partial or complete separation of the placenta, owing—

a. To accident, such as a blow upon the uterus near the seat of the placenta.

b. To great congestion of the vessels of the womb at the seat of the placenta, induced suddenly by mental emotions, or bodily exertion; the impression of cold, as by getting wet, or sitting upon a cold seat; by diseases inducing a dyscrasia

of the blood, or by acute indigestion. Examples of detachment of the placenta from most of these causes may be found in Baudelocque's work.

c. To disease of the placenta, unfitting it to retain its adhesion to the uterus. This cause of hæmorrhage, and the mode in which it operates, were first, I believe, clearly illustrated and described in my Memoirs on "Fatty Degeneration of the Placenta."*

III. Hæmorrhage, *without detachment* of the placenta. The lining membrane of the cavity of the womb may pour forth blood from parts *remote* from the seat of the placenta. This easily runs between the inner uterine wall and the membranes of the ovum, and may escape externally. This form of hæmorrhage is more especially apt to occur in the *early* months of pregnancy. It by no means necessarily involves the death of the fœtus, or abortion. The conditions that lead to it are generally the same as those which bring about the hæmorrhages of Class II.

IV. From the mucous membrane covering the cervix and os externum uteri.

a. This may be caused by simple congestion. This structure is as liable to hæmorrhage as is the Schneiderian or the bronchial mucous membrane.

* "Medico-Chirurgical Transactions," vols. xxxiv. and xxxvi.

b. By inflammatory or other diseased conditions of the part.

The following case illustrates what I have found to be a common source of hæmorrhage during gestation.

CASE 70.—In May, 1850, Mr. Gregory Forbes referred to me a woman, about eight months pregnant, who had experienced a sudden flooding, attended by something like labour-pain. Placenta prævia was suspected. On inquiry I found there had been profuse yellowish watery discharge preceding the hæmorrhage and since. Placental rush heard at left fundus; foetal heart very distinct in the middle and left lower region of uterus. Head felt hard, and close in contact with the cervix; *no placenta there*. The os was soft and dilatable; red, intensely congested, abraded, and fungous.

There were no further hæmorrhages in this case after the inflammation was subdued by appropriate treatment.

The following case from my note-book is another illustration of the same point.

CASE 71.—“*Hæmorrhage during gestation from inflammation and hypertrophy of os and cervix uteri.*—Mrs. M——, pluripara; had been under my care, at the Western General Dispensary, for great hypertrophy of the os and cervix uteri, with some inflammatory action. Before she was cured,

she became pregnant; and the treatment—which I should not have intermitted on this account—was discontinued through the irregular attendance of the patient. In August, 1851, being about five months gone, she had a considerable hæmorrhage, which stopped in three days and did not recur. I ascertained that the placenta was not presenting; and that the os and cervix were bulky, irregular in shape, very tender to the touch. She also had lumbo-sacral pains; and a copious mucous discharge followed for some time. On the 15th November, she considered her time had expired. For twelve days, however, previous to actual delivery, she was harassed with excruciating pains in the back, coming on periodically. On examination, the os was swollen, cushiony, tender. The suffering, which, like the hæmorrhage, was owing to the inflammatory condition of the cervix, was allayed by morphia and warm hip-baths. She had copious “shew” three times about the 21st, and was delivered on the 27th. No flooding before or after labour.”

This patient observed an interesting phenomenon, which I verified myself during examinations at the time. For several days before labour came on, she complained that her transient painful uterine contractions *came on immediately after feeling the movements of the child*. Reflex move-

ments of the foetus in utero acted as an excitant of contraction in the uterus. It has been questioned by some authors whether the child really does move in utero at all ; and whether the sensations of the mother, who says she feels these movements, are not fallacious. Of the fact of the child being subject to reflex movements, I have acquired absolute demonstration. The above case is one proof. I felt the child move whilst the uterus was still passive.

In another case recorded in this Appendix (No. 31), I felt the feet of the child drawn up by its own muscular action, whenever I touched them. In one of Dr. R. U. West's cases (Appendix V.) is recorded a similar instance ; and I suppose there are few obstetricians of much experience who have not observed similar phenomena.

A consideration of this classification of the sources and causes of hæmorrhages during gestation will make it obvious that a careful and accurate examination is necessary before deciding upon the treatment to be pursued ; and especially upon interference with the ovum.

APPENDIX VIII.

ON THE MORTALITY OF THE CHILDREN IN PLACENTAL PRESENTATIONS, AND THE MEANS OF LESSENING IT. APPRECIATION OF THE "MARSHALL HALL METHOD."

THE frequency with which the child is still-born in cases of placental presentation, is an important element in the history of this complication of labour. The subject has interesting bearings upon the physiology of placenta prævia, and upon the various methods of treatment. Admitting the principle that in this, as in every grand obstetric crisis, where the life of the mother is placed in one scale, and that of the child in the other, we must give the preference to those measures which are best suited to secure the mother's life, it may still be a question, in many instances, whether the life of the child may not be too hastily sacrificed. In every case of hesitation as to the course of treatment, we are bound to consider anxiously whether the preservation of the child is incompatible with that of the mother ; and, wherever possible, to select

that course which holds out a reasonable prospect of safety for both.

Unless in those rare instances in which it is necessary to resort to craniotomy in order to effect delivery, there is no method of treatment in placenta prævia which is, *ex necessitate rei*, fatal to the child. It is nevertheless true that, under the most favourable circumstances, there is great likelihood that the child will be still-born. The risks which it has to encounter before delivery can be accomplished are great and manifold. It is the more imperative that we should not add to these risks by the selection of improper methods of treatment. It is the more desirable that we should form a clear conception of the ordinary causes of death in the child, and hold ourselves in watchfulness to apply the most rational and successful means for the restoration of those still-born children in whom the vital spark is not extinct.

It will be useful to enumerate the chief causes of the frequent mortality of children in labour complicated with placenta prævia.

1. Disease of the placenta, leading to death of the fœtus before labour.
2. Immaturity of the child.
3. Malposition of the child.
4. Accidents preceding and attending labour and delivery. Excluding, of course, those causes

which destroy the child before labour, and those cases where the child is not viable owing to immaturity at birth, we find that all these accidents may be divided into two classes.

a. The interruption more or less complete to the functions of the placenta, occasioned by the disruption of this organ from the uterus, and hæmorrhage.

b. Pressure upon the child or umbilical cord, as in forced delivery, where the child is dragged through an insufficiently dilated os uteri. Malposition, as a source of danger to the child, resolves itself into this last accident.

It is needless to enter with any detail upon the mode in which pressure endangers the child. There are three chief perils which a child delivered artificially by turning has to encounter. First—Pressure upon the cord, cutting off the circulation of the foetal blood in the placenta. This is equivalent to tying the windpipe in an adult. Asphyxia is the certain result. The treatment here is the treatment for asphyxia. If the interruption of the placental circulation have not been too long continued, the method of treatment so admirably demonstrated in the last labours of our great English physiologist will almost certainly be successful. Secondly—The child's neck may be grasped in the rigid os uteri, and thus strangled by direct pressure upon its bloodvessels. This also produces as-

phyxia, but of a kind more frequently fatal than the first. Not uncommonly it leads to extravasation of blood in the cranium—the apoplexy of new-born infants. Thirdly—Having escaped these perils, the child's head may be so strongly and so long compressed in the passage, that its life is destroyed by direct injury to the nervous centres.

I revert to the first class of accidents as the topic calling for more especial reflection. Let us state the question distinctly.

Why does the child die in cases where the placenta is, previously to birth, wholly or partially detached, with or without hæmorrhage?

The reason why the child dies when the placenta is wholly detached before aërial respiration can be set up, is clear enough. It dies of asphyxia, self-poisoned. It seems marvellous that in such a case the child should ever be born alive, or even capable of being restored. The case, however, is not absolutely hopeless. For reasons stated in the preceding Lectures, I cannot, however, accept without distrust certain cases in which it is reported that the child was born alive after the operation of total detachment of the placenta had been performed.

Those who advocate the practice of totally detaching the placenta, seem naturally inclined to exaggerate the fatality to the child attending

turning. Thus, Dr. Simpson* says, "the infant itself is almost invariably lost when turning is attempted under the particular complication in question." I know that many able practitioners will question the truth of this conclusion. From personal inquiries amongst my obstetric friends, I believe that at least the majority of the children are saved by turning. Dr. Trask, in his "Statistical Analysis," says that, "after ordinary modes of delivery, including turning, there were saved *one in two and seven-tenths*." He shows again, that in sixty-six cases, in which the placenta was reported as wholly separated by artificial means, fifteen children were born alive. Of the correctness of this last result I entertain grave doubts. I have stated in the preceding Lectures reasons for concluding, that in many cases, where it was presumed that the placenta was wholly detached, it could in reality have been only partially detached. This fact entirely alters the case as regards the prospect of the child. But Dr. Trask's analysis supplies another proof of the fallacy of his statement. He has given an interesting summary of the time intervening between separation (assumed to be total) of the placenta and delivery of the child. Thus:—

Among the children *saved*, delivery took place—

* Collected Works, vol. i. p. 797.

- In 6 immediately.
- „ 3 apparently immediately.
- „ 1 immediately in part.
- „ 1 after dilating the os and turning.
- „ 1 in less than ten minutes.
- „ 1 in less than half an hour.
- „ 1 in five hours.
- „ 1 not stated.

The case in which the child is reported to have been born alive in less than half an hour after the separation of the placenta, has been discussed in Lecture III. The conclusion is fairly warranted that the placenta was only partially detached. The details of the case in which five hours are stated to have elapsed, are not given. But, of course, the probability that the placenta here also was only partially separated, is infinitely higher. It is right, however, to bear in mind the lesson taught by such cases as No. 16 of the annexed collection of cases, of the application of the “Marshall Hall method,”—namely, that infants may be restored after the suspension of circulation through the cord for twenty minutes.

Among the children *lost*, delivery was—

- In 5 immediate.
- „ 1 over twenty minutes.
- „ 2 in less than one hour.
- „ 3 in one hour.

- In 3 in one hour and a half.
- „ 1 in less than an hour.
- „ 1 in two hours.
- „ 3 in three hours.
- „ 1 in four hours.
- „ 1 in five hours and a half.
- „ 3 in six hours.
- „ 1 in nine hours.
- „ 1 in less than twelve hours.
- „ 1 in eighteen hours.
- „ 1 in a short time.
- „ 3 in a considerable time.

It thus appears that in no case is it proved that the child was born alive after the total detachment of the placenta, unless delivery was effected within ten minutes. And it must be remembered, that out of the first seventeen cases recorded of artificial total detachment, only one child was reported to have been saved. It must, however, be admitted, that the recent discovery of Dr. Marshall Hall tends to remove in some degree the powerful objection that may be urged, on behalf of the child, against the operation under discussion. If we could ensure the speedy birth of the child after the separation of the placenta, then might we, armed with the "ready method," hope to see the infantile mortality sensibly diminished. But unless we immediately follow up this operation, so

severe in itself, by turning and forced delivery (the very proceeding it was intended to supersede), the prospect of saving the child even by the "ready method" must be small indeed. But small as is this prospect, I venture to foretell, that if ever the operation of Kinder Wood, Radford, and Simpson, be destined to find a wide acceptance by the profession, it will be greatly owing to the conjoined application of the discovery of Marshall Hall.

This almost inevitable sacrifice of the child appears at last to be on the point of exciting a general revolt against the authority which imposed the practice of previous total detachment of the placenta. It is now strongly urged that this operation should be instantly followed by the extraction of the child. But is not this a virtual abandonment of the whole argument for the previous total detachment of the placenta? Why not turn first, and allow the placenta to be cast off naturally, or detach it afterwards, according to the old practice? The chances are better for both mother and child. It was at first strenuously contended that inasmuch as the child was "almost invariably born dead" after turning, in cases of placenta prævia, its fate was no element in the question, and that it therefore constituted no objection to the previous detachment of the placenta. Now, however, it is discovered that the operation

must be abandoned, unless it be immediately followed up by turning, in order to save the child's life! That is, we are enjoined to encounter all the dangers inherent to turning, adding to these the new danger of previously totally detaching the placenta.

If the death of the child, in cases where the whole placenta is detached previously to its birth, be almost certain, it is also an extremely frequent event to find the child still-born in cases where the placenta was only partially detached.

Why does the child perish when the placenta is only partially detached?

It has been supposed that the child perishes by the direct loss of blood from its own circulation. Mr. Kinder Wood says, "It is satisfactory to know that the child is rarely living in these cases of exhaustion, *its blood being poured out* through branches of the placental structure, along with that of the mother; and when brought down, its appearance, like that of the mother, is bleached and exsanguined. The time required to separate the placenta is very short, and the loss of blood during the attempt exceedingly trifling."

Numerous observations distinctly prove the inaccuracy of this conclusion. Except in those instances in which the proper placental structure is torn by the spontaneous or artificial dilatation of

the os uteri, no blood can flow from the circulating system of the foetus. And the assertion that the child is usually born bleached and exsanguined, like the mother, is directly opposed to facts. In one case recorded in Appendix VI. (Case 69), it was especially noticed that the child was full of blood.

The real process is asphyxiation. But the asphyxia is not sudden, as when the umbilical cord is strangled, or the placenta wholly detached. It is slowly and gradually produced. Two causes conduce to this state. 1st. There is the cutting off of a portion of the placenta—*i. e.*, of a portion of the respiratory organ. This is analogous to the obliteration of one lobe of a lung in the adult. It is by no means necessarily fatal, since the remaining portion of placenta may suffice for the depuration of the foetal blood. This cause operates in the following manner. It was shown by Wrisberg; and the demonstration is easy for any one, that the circulation of each foetal cotyledon is distinct from that of the rest of the placenta. And, practically, the maternal portion of each cotyledon is also distinct; since, on detachment, it gets choked up with coagula, so that the blood from the utero-placental arteries cannot get into it. Hence, one or more large branches of the umbilical veins no longer carry back to the foetus purified blood; they have become useless; and unless the capil-

laries of the remaining branches of the umbilical vessels continue to be bathed in freely circulating maternal blood, the foetus will perish. This danger is greatly enhanced by the

2nd. *Cause of asphyxiation.*—This is the impairment of the purifying capacity of the mother's blood. This capacity is impaired in two ways. The *quantity* of maternal blood is reduced by floodings. The *quality* is reduced by the enfeebled state of the mother, and her imperfect breathing. Blood so reduced in quantity and quality can hardly keep up the requisite depuration of the foetal blood. A foetus, whose life is depending upon it, may be likened to an adult confined in a limited quantity of air, the decarbonising power of which is being rapidly exhausted. If not soon extricated from such a position, it is needless to say that the foetus must speedily perish. Its prospect of surviving will rise with the degree of rapidity of delivery, and its vital power; it will fall with the extent of detachment of the placenta, and the degree of hæmorrhage of the mother.

Within what time must the child be born to insure its survival? The consideration just noted will show that no definite answer can be given to this question. I consulted Dr. Marshall Hall upon this point, and make no apology for introducing his reply:—

“Brighton, March 14, 1857.

“MY DEAR DR. BARNES,

“I was very glad to see your handwriting. I am sorry I have no *good* facts for you in regard to the human subject; but you will find the subject of Apnœa (for Asphyxia) admirably discussed, experimentally and physiologically, in the two valuable works by Legallois and Edwards. If you want more specific references to them, I will send them.

“Your subject is of intense interest. When do you give your lectures? I wish we could *talk* the matter over together. I *hope* to be in London in April or May. . . .

“Believe me, yours most truly,

“MARSHALL HALL.”

The truth is, as reflection will show, no definite answer can be given to this question. The conditions vary in every case. But much valuable information will be found in the great physiologist's posthumous work—that rich legacy of life to thousands yet unborn, the last fruit of a mighty intellect soaring into eternity.

Dr. Marshall Hall describes *four* stages of asphyxia (or apnœa) in new-born children.

The *first* is that in which the breathing is not quite extinct.

The *second*, that in which the respiration has ceased, but may be *excited* (by the various stimuli

to the eisodic nerves, so often enforced by Dr. Hall).

The *third*, that in which respiration has not only ceased, but is *inexcitable*; and in which, therefore, our *hope* of resuscitation is in *imitating* or *inducing* the respiratory movements—that is, in pronation and supination.

The *fourth* and last stage is that of true *asphyxia*—that in which not only all respiration, but all *pulsation* has ceased, and with it *almost* all hope. Sir B. C. Brodie emphatically says—“If that action of the heart by which the circulation is maintained should cease, it can never be restored. This I positively assert, after having made it the subject of a very careful investigation.”

The experiments of Harvey, Buffon, Legallois, Edwards, Brown-Séquard, and Marshall Hall concur in proving another fact of the highest importance.

I suppose no experienced accoucheur can doubt that the chances of recovery from asphyxia are much greater in the new-born infant than in the adult. We have not yet been able to determine the limit in duration of apnœa in a child beyond which we are authorized in declaring that all hope of resuscitation must be abandoned. Many are the instances in which a child, laid aside in a flannel for dead—the idea of revival not even

entertained,—has, after a considerable lapse of time, astonished all present by its unexpected cries.

The following facts, illustrating the preservation of the vital principle pending the setting-up of respiration in the mammalian foetus, embrace the physiological basis of the treatment of the apnoea of new-born infants.

Buffon placed a greyhound bitch, on the point of giving birth to young, in a tub of warm water, where she brought forth. The pups were transferred to a tub of warm milk, but without giving them time to breathe. At the end of half-an-hour they were taken out, and all found alive. They were allowed to breathe for half-an-hour, and again submerged for half-an-hour. All lived.

Legallois found that new-born rabbits lived twenty-eight minutes without breathing. But Edwards found a remarkable difference in this power of maintaining life in different animals. Those which produce the *least* heat at birth live longest, and *vice versa*. He divides the young mammalia into two classes: 1st, those which produce so little heat, that they have, as it were, no temperature of their own; 2nd, those which produce enough to maintain a high temperature when the air is not too cold. The first live longest without air; the others for a short time. The external character serving to indicate the class to

which any given species ought to be referred, is derived from the state of the eyes. Now the infant is born with its eyes open, and belongs to that class which produces most heat; from which we may conclude that it will, when deprived of air, live a much shorter time than animals of the first class.

The experiments of Edwards and Brown-Sé-
quard show that within certain limits, which may in general be fixed at 60° and 100° Fahr., the duration of life in the case of suspended respiration is *inversely* as the temperature. Above and below these temperatures respectively, heat and cold have each a directly injurious effect. The observations of these distinguished physiologists concur in proving that young animals asphyxiated maintain life longest at a mean temperature of about 65° to 75° Fahr. If the temperature be lowered to 50°, or raised to 100°, the duration of life of the animal is rapidly cut short. It results from these facts, as Dr. Marshall Hall contends, that the continuous warm-bath, taken alone, must be utterly excluded in the treatment of apnoea—that it can only be considered as admissible when respiration is either not extinct, or admits of being excited, or is effectually imitated artificially.

“The foetus breathes less, develops less heat, and supports suspension of respiration better than

the infant. It supports apnœa proportionably longer.”*

Deeply impressed with the importance of our keeping first principles in sight as our guide in medicine, I have thus recapitulated the leading facts in the physiology and pathology of the apnœa of new-born infants. As regards treatment, I will not be guilty of the presumption of doing more than quote a summary of the directions of Dr. Marshall Hall; and having done this, I shall conclude the present memoir by a tabular summary of cases in which his method has been followed.

In the *first* stage of asphyxia, that in which breathing is not quite extinct, and also in the second, that in which, although respiration has ceased, it is capable of being *excited*, the mode of treatment is to excite respiration by dashes of water, alternately of the temperatures of 60° and 100° Fahr., on the face and chest; a smart slap on the nates, or fillip on the chest, in the course of Bell's nerve; holding a weak solution of ammonia occasionally under the nose. Perhaps countless children have been given to life by these simple means. Postural respiration will not be necessary unless the breathing fail, and the *third* stage of apnœa, that in which respiration is *inex-*

* Marshall Hall, On Drowning, &c., p. 35.

citabile, be present. In this case our only hope is in *imitating* or *inducing* the respiratory movements; that is, in pronation and supination.

1st. "The infant must be placed in the prone position, in order that all fluids, which might obstruct the entrance into the windpipe, may flow away.

2ndly. "Nature's mode of operation being to impress the trifacial and cutaneous nerves, the external *exciters* of respiration, by the external cold, we must dash a few drops of cold water on the face and the general surface.

3rdly. "We must proceed, having failed to *excite* respiration, to *imitate* respiration, by *drawing*, not *forcing*, air into the lungs. This is accomplished by first placing the little patient briskly in the prone position, to clear the fauces; then pressing gently on the back; and then removing that pressure, and turning it gently on the side and a little beyond.

4thly. "Meantime the limbs are to be rubbed, with gentle pressure upwards, to promote the circulation, by propelling the venous blood towards the heart.

5thly. "At proper intervals, we must again endeavour to *excite* the respiration physiologically."

One more observation of Dr. Marshall Hall I must cite. "It will be observed that the process of imitated respiration *begins*, not with *inspiration*,

but with *expiration*, this being the effect of the *prone* position with dorsal pressure. In this we imitate nature: the compression of the infant's thorax and abdomen as it passes, after the birth of the head, through the vagina, must act in the same manner, *first* producing *forcible expiration*, and so expelling all mucus from the air-passages." It might be added: and so preparing for an immediate *inspiratory* movement by the consequent play of the resilient expanding power of the chest.

I have disposed in a tabular form the histories of such of the cases in which the "Marshall Hall method" has been applied to the restoration of asphyxiated infants, as I have been able to collect. It is not a statistical table. It is simply a convenient mode of relating a series of cases, and of exposing their chief features in an instructive form. Twenty-one of these cases are taken from the work of Dr. Marshall Hall and the *Lancet*, in which journal many of them were originally published. The remainder have been communicated to me by my friends, Dr. M'Clintock, of Dublin, Dr. Burchell, Mr. Brown, of St. Mary-Axe, Mr. Dukes, and Dr. R. Fowler, and have not been before published. Had leisure permitted me to make more extensive inquiries, I have no doubt that many more cases would have been brought to light.

CASES IN WHICH MARSHALL HALL'S METHOD WAS APPLIED FOR RESTORATION
OF ASPHYXIATED NEW-BORN CHILDREN.

| No. of Case. | Authority. | Nature of Labour. Child exposed to Pressure? Hæmorrhage? | State of Child at Birth. Breathing? Livid? Heart beating? | How long was Rotation continued? | How soon did Natural Respiration begin? | Result. |
|--------------|---|---|--|----------------------------------|---|-----------|
| 1 | Dr. Alexander. (Marshall Hall.) | Breech. | Not breathing; no signs of life. | 20 minutes. | In 20 minutes. | Restored. |
| 2 | Ditto. | Natural presentation. | Not breathing. | 35 minutes. | | Failed. |
| 3 | M. H. Higginbottom, Esq. (Marshall Hall.) | Breech; much pressure on cord, which ceased beating fifteen minutes before birth. | Not breathing; livid; heart not beating. | 20 minutes. | In 20 minutes. | Restored. |
| 4 | Charles Vaudin, Esq. (Marshall Hall.) | Funis twice round neck; no pulsation. | Flaccid, cold, livid; not breathing; heart-motion imperceptible. | 33 minutes. | In 33 minutes. | Restored. |
| 5 | Dr. Nicholls. (Marshall Hall.) | Placenta prævia; turning. | Apparently dead. | Over 30 minutes. | More than 30 minutes. | Restored. |
| 6 | J. T. Savory, Esq. (Lancet.) | Placenta prævia; great hæmorrhage; turning. | "Perfectly asphyxiated;" "quite inanimate." | 30 minutes. | In 30 minutes. | Restored. |
| 7 | J. C. Chappell, Esq. (Marshall Hall.) | Premature. | Not breathing; livid; heart not felt. | 20 minutes. | In 20 minutes. | Restored. |
| 8 | Charles Osborn, Esq. (Marshall Hall.) | Turning. | "Perfectly asphyxiated." | 20 minutes. | In 20 minutes. | Restored. |
| 9 | H. S. Chavasse, Esq. (Marshall Hall.) | Child breathed naturally; but afterwards ceased. | | 10 minutes. | In 10 minutes. | Restored. |
| 10 | Thomas Newham, Esq. (Marshall Hall.) | Forceps. | "Asphyxiated." | 8 minutes. | In 8 minutes. | Restored. |
| 11 | Dr. Swayne. (Lancet.) | Turning. | Not breathing; heart scarcely perceptible. | "Short time." | "Short time." | Restored. |

| No. of Case. | Authority. | Nature of Labour. Child exposed to Pressure? Hæmorrhage? | State of Child at Birth. Breathing? Livid? Heart beating? | How long was Rotation continued? | How soon did Natural Respiration begin? | Result. |
|--------------|--|---|---|----------------------------------|---|-----------|
| 12 | Dr. Swayne. (Lancet.) | Breech. | Not breathing; heart scarcely perceptible. | "Short time." | "Short time." | Restored. |
| 13 | Edward Capron, Esq. (Marshall Hall.) | Funis presentation; pulsation stopped. | "Apparently quite dead." | 30 minutes. | In 30 minutes. | Restored. |
| 14 | J. S. Beale, Esq. (Marshall Hall.) | Cord round neck for 10 minutes before release. | Not breathing. | A few minutes. | A few minutes. | Restored. |
| 15 | Same. (Marshall Hall.) | Breech. | Great lividity; no pulsation in heart or cord. | "Several minutes." | "Several minutes." | Restored. |
| 16 | Dr. Cowan, (U. S.) (Marshall Hall.) | Footling; circulation in cord had ceased for 20 minutes before birth. | Quite livid. | 3 minutes, 30 seconds. | 3 minutes, 30 seconds. | Restored. |
| 17 | H. Craigie, Esq., of Canada. (Marshall Hall.) | Placenta prævia. | "Removed as dead." | 10 minutes. | 10 minutes. | Restored. |
| 18 | — Collins, Esq. (Lancet.) | 20 minutes between birth of head and shoulders. | Livid; pulsation in cord scarcely perceptible. | 2 hours, 15 minutes. | 2 hours, 15 minutes. | Restored. |
| 19 | Dr. Burchell. (Communicated to Dr. Barnes.) | Placenta prævia; turning; great pressure on cord for 15 min. | Not breathing; livid. | 15 minutes. | 15 minutes. | Restored. |
| 20 | Same. | Premature; cord round neck, but not much compressed. | Not breathing; livid. | 30 minutes. | 30 minutes. | Restored. |
| 21 | Same. | Child very large; delivered by long forceps; but with great difficulty. | Not breathing; livid. | 25 minutes. | 25 minutes. | Restored. |

| | | | | | | |
|----|--|---------------------------------|--|--|----------------|-----------|
| 22 | Dr. M'Clintock. (Communicated to Dr. Barnes.) | Funis presentation. | Not breathing; heart beating slowly. | A few minutes. | A few minutes. | Restored. |
| 23 | Same. | Difficult labour; for- ceps. | Not breathing; heart beating feebly. | 3 minutes. | 3 minutes. | Restored. |
| 24 | Same. | Difficult labour; vectis. | Livid; heart beating slowly. | 4 minutes, then abandoned, and artificial respiration tried, by which | | Restored. |
| 25 | Mr. Brown. (Communicated to Dr. Barnes.) | Breech. | Not breathing; livid. | 20 min., when apparently re- covered, put into a warm- bath when ap- nea returned, from which it was again restored by "ready me- thod." | 20 minutes. | Restored. |
| 26 | Dr. Barnes. | Premature. | Not breathing; livid; heart beating feebly. | 5 minutes. | 5 minutes. | Restored. |
| 27 | James Hadaway, Esq. (Lancet.) | Breech. | Not breathing; pulsa- tion in cord ceased in 8 minutes. | 25 minutes. | 25 minutes. | Restored. |
| 28 | Horatio G. Skinner, Esq. (Lancet.) | Funis. | Breathless; livid; pul- sation in cord stop- ped before delivery; pulsation in heart not felt. | 30 minutes. | 30 minutes. | Restored. |
| 29 | F. J. Reilly, Esq. (Lancet.) | Face; turning. | Breathless; livid; flac- cid. | 1 hour. | 1 hour. | Restored. |
| 30 | C. Conyngham, Esq., of Buenos Ayres. (Lancet.) | Face; protracted. | Breathless; livid. | 40 minutes. | 40 minutes. | Restored. |

| No. of Case. | Authority. | Nature of Labour. Child exposed to Pressure? Hæmorrhage? | State of Child at Birth. Breathing? Livid? Heart beating? | How long was Rotation continued? | How soon did Natural Respiration begin? | Result. |
|--------------|---|---|--|--|---|--------------------------------|
| 31 | E. Dukes, Esq. (Communicated to Dr. Barnes.) | Face; 8 months child. | Breathless; livid; pulsation of heart not felt. | 30 minutes. | 30 minutes. | Restored. |
| 32 | Dr. Fowler. (Communicated to Dr. Barnes.) | 8 months child; had been born, and was lying in discharges 45 minutes, when seen by Dr. Fowler. | Gasping slightly at times, but means used to "excite respiration failed." | 1 hour. | 1 hour. | Restored; but died next day. |
| 33 | Same. | A 7 months child; born before seen by Dr. Fowler. | Not breathing; livid; cold. | Nearly 1 hour. | Nearly 1 hour. | Restored; but died 2 h. after. |
| 34 | Dr. Snow. (Marshall Hall.) | Shoulder; turning un- der chloroform; child large; some compression of funis. | Breathing by distant gasps; slow pulsation in funis; means to "excite respiration" failed. | A very short time. | A very short time. | Restored. |
| 35 | Dr. Lente. (Amer. Jour. of Med. Sc., Oct. 1857.) | Protracted labour; ergot given. | Pulsation had ceased in cord 15 minutes; not breathing; heart beat at long intervals; livid lips; means to <i>excite</i> respiration failed. | 45 minutes, including an interruption after partial recovery, when warm bath was tried, with the effect of <i>renewing the asphyxia.</i> | 45 minutes. | Restored. |

These cases illustrate almost every variety of accident that can lead to asphyxia in the new-born infant. They include three cases of placenta prævia, in all of which turning was performed. This operation was perhaps the chief cause of the asphyxia.

Some of these cases throw light upon the interesting question before started: how long may the placental respiration remain suspended, and the "Marshall Hall method" be resorted to with success, or a reasonable hope of success? All cases of partial asphyxia must be too indefinite, as to our knowledge of the *extent* of the asphyxia, to justify any attempt at close limitation of time. It is enough to quote the opinion of Dr. Marshall Hall that, since "the new-born infant is a creature of the *lowest* degree of respiration, its life, and the hope of its restoration in apnœa, is the *longest* ; and that therefore the application of the restorative method should be *the most persevering*."

In one case before us, that of Mr. Collins (No. 18), full respiration was not induced until after persevering for two hours and a quarter.

But we have also cases where the duration of total apnœa seems to be defined with precision. In Case 3, it is stated that, through pressure on the cord, the pulsation had ceased for

fifteen minutes before the birth of the child ; and in Case 16, twenty minutes.

We are, then, in possession of the important fact that a new-born child may be restored to life after complete apnœa of at least twenty minutes' duration. But, further, as this is not proved to be the limit of viability, we are not to abandon as hopeless, children whose apnœa has lasted even longer.

Two most interesting cases, those of Mr. Brown (No. 25) and Dr. Lente (No. 35), strikingly illustrate the danger of the continued warm-bath.

These cases further show conclusively that the "ready method" is *a new power* in the hands of the accoucheur. The means previously in use were successful only in restoring children whose asphyxia was of the second degree—that is, in whom respiration could be *excited*. The "ready method" comes to the rescue of that large class of children whose asphyxia is more profound: *in whom respiration cannot be excited* ; who must, but for this method, irretrievably perish.

As a gift from Medicine to mankind, this last discovery of Marshall Hall is second only to that of Jenner.

THE END.

WORKS AND MEMOIRS

BY THE SAME AUTHOR.

1. Edited M. Baillarger's Lectures on
Mental Diseases.
Lancet, 1844—1845.
2. On Flooding before Delivery arising
from Adhesion of the Placenta to the Os and
Cervix Uteri (with Cases).
Lancet, 1847.
3. History of Six Cases of Poisoning by
Arsenic.
Lancet, 1847 ; and *Transactions of the
Pathological Society*, 1848.
4. A Case of Post-Mortem Solution of the
Stomach.
Transactions of the Pathological Society, 1848.

2 *Works and Memoirs by the same Author.*

5. A Case of Ruptured Aneurism of the Aorta.

Transactions of the Pathological Society, 1848.

6. Account of a Remarkable Case of Arrested Development. (The Dutch Dwarf.)

Pathological Society; Medical Gazette, 1848.

7. An Introductory Lecture to a Course on Obstetrics:—"On the importance of Faith in Physiology as a guide to the rational and safe conduct of Labour."

Medical Gazette, 1849.

8. Anæsthesia in Natural Parturition, with an Analysis of Twenty-seven Cases in which Chloroform was administered by Dr. Sachs, in the Berlin Lying-in Hospital.

Lancet, 1850.

9. On a New Form of Leucorrhœa dependent on Scarlatina.

Medical Gazette, 1850.

10. On a New Form of Leucorrhœa dependent on Small-Pox.

Medical Gazette, 1851.

11. On Fatty Degeneration of the Placenta,
and the influence of this Disease in causing
Hæmorrhage, Death of the Fœtus, and Abortion.
*Transactions of the Royal Medical and Chirurgical
Society, Vol. XXXIV., 1851.*

* * * "Previously to the researches of Professor Kilian and Dr. Barnes, pathologists were unacquainted with fatty degeneration of the placenta."—*British and Foreign Med.-Chir. Review*, 1853.

"We regard this discovery as the most original and important contribution to pathology which has for a long time past been made to medical science."—*Lancet*, 1852.

12. An Inquiry into some of the Relations
between Menstruation, Conception, and Lactation;
and the Influence of Lactation in causing
Abortion. Founded upon an Analysis of the
Histories of 100 Women. (Read before the
Medical Society of London.)
Lancet, 1852.

13. A Remarkable Form of Bullous Disease
observed in New-born Infants and Children.
Lancet, 1852.

14. A further Account of Fatty Degeneration
of the Placenta, and of the influence of this
Disease in causing Hæmorrhage, Death of the
Fœtus, and Abortion.
*Transactions of the Royal Medical and Chirurgical
Society, Vol. XXXVI., 1853.*

4 *Works and Memoirs by the same Author.*

15. On the Management of Labour characterized by Defective Uterine Action; and the Comparative Value of the Ergot of Rye and Galvanism in Obstetric Practice. (Read before the Medical Society of London.)

L'Union Médicale, and Lancet, 1853.

16. A Case of Sarcina Ventriculi associated with Fatty Degeneration of the Liver; with observations on the relations of this parasite to disease.

Lancet, 1854.

17. Memoirs on "The Diseases of the Placenta."

British and Foreign Medico-Chirurgical Review, 1855—1856.

18. A Treatise "On Uterine Polypus; its Nature, Early Detection, and Treatment."

London, Churchill, New Burlington-street, 1855.

19. Reports on Midwifery.

British and Foreign Medico-Chirurgical Review, 1855—1856—1857.

Faint, illegible text, possibly bleed-through from the reverse side of the page. The text is arranged in several lines and appears to be a list or a series of entries, but the characters are too light and blurry to transcribe accurately.

