

ON THE
MANAGEMENT OF LABOUR
IN
CONTRACTED PELVIS.

AN INAUGURAL THESIS, FOR WHICH A FIRST PRIZE WAS AWARDED BY
THE MINISTER OF PUBLIC INSTRUCTION OF FRANCE.

BY

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P R E F A C E .

THE following pages contain nearly a literal translation of my Inaugural Thesis written for the Faculty of Medicine of Paris, in 1864. During eight years of hospital practice in that capital, I often had occasion to remark the great difference that existed between two cities now so near to each other as London and Paris, in the treatment of certain diseases. In no instance is that difference more striking than in the management of labour which is rendered difficult by contracted pelvis. Version, an operation much in vogue in Great Britain, is never practised in France for dystocia of this kind, whilst cephalotripsy, considered by the French to be the heroic mode of treatment, is scarcely known in England; yet experience has convinced me that each of these methods may be called upon to render signal service.

This memoir was written by me in Paris with the desire of making my French *confrères* better acquainted with our English mode of proceeding. The reception which it met with at the Faculty of Medicine, and the honour conferred on it by the Minister of Public Instruction, encourage me to hope that a translation may not prove uninteresting to English accoucheurs, inasmuch as twenty-four cases of cephalotripsy are recorded in the statistics. Why the cephalotribe should be an instrument ignored or rejected in this country, I am at a loss to understand. That it is useful in all but extreme cases of narrowing is attested not only by the statistics which I have

presented, but also by the results which are reported in the remarkable Thesis of Dr. Lauth, of Strasburg, in 1863, in the able *Thèse de Concours* of Dr. Guéniot, of Paris, in 1866, and still more recently in the last edition of Cazeaux's *Traité d'Accouchements*, by Dr. Tarnier, who, citing the statistics of Dr. Henning, and my own, and at the same time fully acknowledging the gravity of the operation, proves that in numerous cases cephalotripsy is incontrovertibly successful. Dr. Graily Hewitt is, I think, the only English accoucheur of eminence who has spoken in its favour before the fellows of the Obstetrical Society of London, but the learned Professor of University College appears to be its solitary advocate among them. Dr. Guéniot asserts that the rejection of the cephalotribe in England is partly attributable to its being of French origin; but surely that is not the case, for, be it a French invention or not, English practitioners, were they once convinced of its efficacy, would, I venture to say, not hesitate to adopt it.

I have appended to this translation, in a tabular form, an abridged account of all the cases upon which my statistics are based, and have arranged them in order according to the degree of pelvic contraction. As it is difficult to ascertain on the living subject the exact dimensions of the pelvis when its antero-posterior diameter exceeds three inches and a half, I have marked with figures those cases only where *post mortem* examinations have enabled me to measure with precision; but when the diameter descends from three inches and a half, mensuration becomes much easier, and, with one exception only, necroscopical examination has confirmed, almost to a millimetre, the diagnosis made on the living subject by means of digital exploration.

To those who are acquainted with the hospital *Des Cliniques*, the number of cases of distorted pelvis which I have recorded as taking place there during three years, may seem out of proportion to

its size, as that part of the building which is devoted to obstetrics contains only thirty-six beds, about eight hundred women being delivered there annually. This is to be explained by the fact that the reputation of its chief Surgeon, Baron Paul Dubois, was so great through France that deformed women were sent there, not only from all parts of Paris, but even from the remotest provinces of the Empire, in order to have the benefit of his experience and skill. Altogether, about fifty-six cases of narrowed pelvis were treated at the *Clinique* during the years 1857, 1858, 1859; but I have only recorded fifty-one, that being the number that came under my personal observation.

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ON

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CONTRACTED PELVIS.

AVANT-PROPOS.

THE study of malformations of the female pelvis suggests the most difficult and the most delicate questions than can occur to those who are engaged in the art of healing. They are questions which affect the most sacred interests of society; for upon them depends the preservation of two beings—the life of a mother and of her child.

It is, moreover, a study exceedingly complex, embracing everything—philosophy, morality, religion. The responsibility and conscience of medical men are deeply involved in it. We, therefore, cannot wonder at the stormy discussions and diametrically-opposed opinions to which this thorny and interesting subject has given rise in various academies and learned societies.

In the treatment of parturition rendered difficult by narrowing of the pelvis, the accoucheur's conscience and responsibility are indeed seriously at stake. Is it his duty to interfere and shorten the duration of pregnancy—in a word, induce labour, and in some cases, happily rare, bring on abortion? In other circumstances, ought he to sacrifice the mother? Ought he to sacrifice the child?

Acting under such immense responsibility, it is the imperative duty of the accoucheur to consult with one, even with several, of

his fellow-practitioners. He must do so, because his path of duty is not clear in a scientific point of view; therefore his conscience cannot be entirely at ease, even when this responsibility is shared by his medical brethren.

The progress which has been made in obstetrical science, by the discovery of auscultation and anesthetics, by the improvement of instruments, and by the results obtained from clinical observations, would, *à priori*, seem sufficient to enable the accoucheur to lay down some sure immutable regulations by which his conduct should be guided. Unhappily, it is not so; for constantly he sees rise before him this double question, so important and alarming—ought he to act? Ought he to wait and confide in nature? Then the problem of the preservation of the mother's and the child's existence presents itself to the troubled mind of the practitioner. If he interferes, the life of the mother may be put in danger—if he delays, that of the child may be seriously compromised. Sad problem, where all would seem hypothetical and uncertain.

Apart from medical opinions, there is also a religious view of the question to be considered; and this certainly is of much value. The *non occides* of the Bible has its partisans, and some accoucheurs wait for the spontaneous death of the foetus before they deem it right to interfere. But by this conduct the life of the child is deliberately sacrificed; and, if the mother succumb not also, her after-existence may be afflicted with those grievous and irremediable infirmities which a lingering labour too often produces. Nevertheless, this is a practice which has been advised and followed by many celebrated accoucheurs, and, among others, by one of comparatively recent date. I allude to Dr. Collins, who for seven years was master of the Dublin Lying-in Hospital, the largest of its kind in the United Kingdom.

In his "*Practical Treatise on Midwifery*," page 359, this author, referring to the lesions which are caused by protracted labours, makes the following remarks:—"I do not know of any occurrence more calculated to render the patient's life one of endless sorrow, or, at the same time, more likely to cause the practitioner such lasting regret. When it unfortunately happens (as in some instances is

unavoidable), in consequence of the protracted length to which we are at times compelled to permit the labour to proceed, owing to great difficulty in the passage of the head, the child being *alive*, here the medical attendant's mind cannot, on his *own* account, feel distressed, as the *only* means he could adopt to guard against the danger would be to lessen the head, which, in my opinion, *no consideration* should induce him to do under such circumstances." The same author also writes :—"When the patient has been properly treated from the commencement of labour, where strict attention has been paid to keep her cool, her mind easy, when stimulants of all kinds have been prohibited, and the necessary attention paid to the state of her stomach and bladder, under such management, the death of the child takes place in laborious and difficult labours before the symptoms become so alarming as to induce any experienced practitioner to open its head for the sake of its mother." In the latter passage, it will be remarked, that the accoucheur eases his conscience by giving the child time to die instead of destroying it by an operation. In the other part of his work, he owns that, by such a proceeding, the life of the mother may be rendered one of endless sorrow. Can it surely be considered proper management that we should calmly wait until the life of the unborn child becomes extinct ?

In presence, then, of cases so difficult, and which lead to such serious results, there is no absolute rule by which the accoucheur can regulate his treatment. He must be guided entirely by *opportunity*. *Not to hurry ; to know how to wait, but not to wait too long*, ought, in *résumé*, to be the practitioner's line of conduct. That which he ought particularly to avoid in this, as indeed in every other branch of medical art, is a tendency to act too systematically. In obstetrics especially, the spirit of system is pernicious. Inspiration must be drawn from circumstances as they present themselves ; therefore we cannot attach ourselves to any unique and unvarying mode of treatment, which never changes, but submits to its narrow and absolute routine everything that may occur, however different, however dissimilar.

The preceding reflections have been suggested to me by the results

of three years' experience at the hospital of *La Clinique d'Accouchements* in Paris. During that period, I attended more than a thousand accouchements, among which, many cases of dystocia specially attracted my attention. Having remarked that the variety of dystocia which is caused by contracted pelvis was the most frequent, and resulted in a large mortality, I thought it right to devote my inaugural thesis to this subject, with the hope of showing that, although in obstetrics a too absolute system is pernicious, we can, nevertheless, by studying the results of statistics, deduce certain conclusions which would enable us to establish some general rules.

I shall, therefore, commence by giving a short analysis of the statistics on which I rely; then, proceeding to the study of each class of contracted pelvis, will endeavour to trace the line of conduct which ought to be pursued in each case, and to deduce the prognosis therefrom.

Far from having any pretensions to lay down a new method of treatment, my only object is to consider by means of reflections suggested by the statistics, and by comparing with them the works of the most recent authors in France and England, whether it could not be possible to save a greater number of mothers in those cases where the pelvis is slightly contracted, and to diminish the mortality of infants when the contraction is considerable.

To save life, to avoid injuring the ulterior health of the mother, to perform operations in the least repulsive manner, are the three grand considerations which the accoucheur should ever bear in mind, each of them in turn being subservient to the other.

STATISTICS.

The statistics contained in Table I. (p. 6,) are based upon 51 cases of deformed pelvis, observed by me at the hospital of *La Clinique d'Accouchements* in Paris, during a period of a little more than three years. In almost every case the brim of the pelvis only was contracted, but often accompanied by a lateral deviation of the vertebral column. Twice only the inferior outlet was found to be narrowed, and in these cases the upper strait was but slightly affected.

The classification which I have adopted is that introduced by Baron Paul Dubois, in his remarkable *Thèse de concours* of 1834. This monography is incontestably the best and most methodical that has appeared on this subject in France, or in any part of the world.

Antero-posterior diameter above 3½ inches.

In consulting table I, we find that in 51 accouchements there were 16 where the pelvis was narrowed, but this diameter was not under 3½ inches. (First category of M. Dubois.)

Putting aside that portion of the statistics which refers to the number of primiparæ, the nature of the presentation, &c., and looking only at the mode of termination, and the mortality resulting therefrom, as it is that part which is of chief interest, it will be seen that the accouchements terminating spontaneously were in the proportion of about 37 per cent. (6 in 16). All the mothers recovered. One child only was lost in labour.

The forceps * were used 7 times, 3 mothers died (proportion 43 per cent.), and 2 children perished (mortality in the proportion of 28 per cent.) Among these cases of deaths of mother and child is one where the narrowing was at the inferior outlet.

* Throughout this work that which is termed in England the *long forceps* is always alluded to.

TABLE I.

STATISTICS OF ACCOUCHEMENTS IN 51 CASES OF CONTRACTED PELVIS.

| Sacro-pubic Diameter. | Number of Accouchements. | | Presentation. | | | | Mode of Termination. | | | | | | | | | | Average Duration of Labour. | | Average Weight of Child. | | Mortality. | | | |
|--------------------------|--------------------------|----|---------------|---------|---------|-------------|----------------------|----------------------------|-------------------------|---------------|-------------|----------------------------|-------|---------------------------------|-------------------------------|----------------------|-----------------------------|---------------|--------------------------|----|------------|--------|--------|----------|
| | | | Primipara. | Vertex. | Breech. | Transverse. | Face. | Spontaneous. | | For- ceps. | | Version. | | Detruncation and Cephalotripsy. | Craniotomy and Cephalotripsy. | Caesarian Operation. | | | | | Infants. | | | Mothers. |
| | | | | | | | | Preceded by uter. Douches. | Preceded by Craniotomy. | Spontaneous. | Artificial. | Followed by Cephalotripsy. | Boys. | | | | | | | | Girls. | Total. | | |
| | | | | | | | | | | | | | | | | | | | | | | | Total. | |
| Above 3½ inches . . . | 16 | 8 | 14 | 2 | 1 | ... | 6 | ... | 7 | 1 | ... | ... | 1 | ... | 2 | ... | 33 h. | lb.oz 6·10 | 6 | 1 | 7 | 5 | | |
| Between 3½ and 3 inches | 15 | 10 | 11 | ... | 3 | 1 | 2 | 1 | 2 | ... | 1 | 2 | ... | ... | 7 | ... | 46 h. | 5·7 | 9 | 1 | 10 | 1 | | |
| Between 3 and 2½ inches | 11 | 7 | 9 | 1 | 1 | ... | ... | 2 | 2 | 1 | ... | ... | 1 | 1 | 4 | ... | 53 h. | 3·8 | 2 | 7 | 9 | 1 | | |
| Under 2½ inches . . . | 9 | 8 | 6 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 6 | 1 | 45 h. | 4·3 | 5 | 3 | 8 | 6 | | |
| Total | 51 | 33 | 40 | 6 | 5 | 1 | 8 | 3 | 11 | 2 | 1 | 2 | 2 | 3 | 19 | 1 | | | 22 | 12 | 34 | 13 | | |

In one case the forceps were used after craniotomy, and notwithstanding the sacrifice of the child the mother died.

Version was performed once (transverse presentation) followed by detruncation and cephalotripsy; the result was favourable to the mother.

In 2 cases craniotomy was followed by cephalotripsy. One mother died.

Antero-posterior diameter between 3½ and 3 inches.

In the second category in the total of 15 accouchements 2 terminated spontaneously. The 2 mothers and the 2 children were saved.

In another case the termination of the accouchement was spontaneous after having been induced by uterine douches; the mother and child were saved.

In 2 cases the forceps were used; the result was favourable to both the mothers, but 1 child died.

Once I was witness of a case of spontaneous version (at full term); it terminated favourably for the mother, the child was dead-born.

Twice (in transverse presentations) turning was performed; the 2 mothers were saved, and 1 child died; same result as by the forceps.

Seven times recourse was had to the cephalotribe. One mother succumbed.

Antero-posterior diameter between 3 and 2½ inches.

In this third category, including 11 accouchements, it was necessary in every case to have recourse to an operation.

Twice the forceps were used; 1 mother died, the 2 children were saved.

Once the forceps were applied after craniotomy, the mother recovered.

Once turning was performed (transverse presentation); but it was found necessary to resort to detruncation, and afterwards to apply the cephalotribe; the result was favourable to the mother.

In 1 case (a breech presentation) detruncation was effected, and

the cephalotribe afterwards used ; the result was successful for the mother.

In 4 cases where the cephalotribe was applied after craniotomy, the 4 women were saved.

In 2 cases artificial (premature) accouchement was induced by means of uterine douches, and the termination was spontaneous, the 2 mothers were saved, but the 2 children were dead-born.

Antero-posterior diameter under 2½ inches.

The fourth category contains 9 accouchements ; 8 times the termination was effected by means of cephalotripsy ; in many of these cases attempts had been made to deliver with the forceps.

In 5 cases a direct application of the cephalotribe was made on the head ; 2 women were saved ; 3 perished (proportion of 60 per cent.) One died in 24 hours, another on the fifty-second day after the accouchement, the third succumbed the same day without being delivered.

In 2 cases of breech presentation detruncation was followed by cephalotripsy ; 1 mother died.

In 1 case where version was performed after cephalotripsy the woman died immediately ; she was moribund at the time of operation.

Lastly, in the case where the Cæsarian section was performed the mother succumbed after two days ; the child lived.

Remarks. In comparing the results of the first category with those of the second, it would seem in a general way that the advantages are in favour of the more contracted pelvis, for the spontaneous accouchements in the second category were all favourable ; less mortality followed the use of the forceps, especially as regards the mothers ; nevertheless, the average duration of labour was 46 hours in the second category, while in the first it was but 33 hours. If this result were based upon a larger number of cases it would merit attention. But it appears to be only the simple effect of chance. It is worthy of note that the average weight of the child was much greater in the first category. The same remark

can be made with reference to the use of the forceps in the third category. As far as regards the cephalotribe the proportion per cent. seems to be in favour of the third category over the second.

Finally, in the fourth category the result is most disastrous, since, notwithstanding that the average duration of labour did not exceed 45 hours while this average was 46 hours and 53 hours in the second and third category respectively ; in 9 accouchements 8 children and 6 mothers perished.

It would seem also to result for this category that it is the nature of the operation rather than the duration of labour which proves destructive. We also see that cephalotripsy, when performed in a very narrow pelvis, is, notwithstanding the sacrifice of the child, a very murderous operation for the mothers, since the mortality among them is in the proportion of 66 per cent. But, in order to be within the bounds of truth, it must not be forgotten that this mortality occurred in an hospital, where the most deleterious influences of nosocomiality are collected ; and, I have no doubt that in private houses, especially in the country, the list of successful cases would be more considerable.

The statistical table also shows that, according as the degree of contraction becomes greater, the forceps, which gave such favourable results in the first two categories, became altogether powerless in the fourth category ; and that its use would even be injurious, as it would unnecessarily fatigue the patient. When the forceps proved to be unsuccessful, recourse was had to cephalotripsy, a terrible mode of treatment, but advantageous as far as regards the mothers, when the narrowing is not extreme ; for, according to the results of the third category, all the mothers were saved.

It is true that in the less contracted pelvis of the second category this operation (cephalotripsy) was followed by the loss of a mother ; but it can be explained thus : the more the deformity is manifest, the greater is the decision and firmness with which the accoucheur acts ; and instead of losing precious time in repeated and fruitless applications of the forceps, he at once sacrifices the already greatly compromised life of the child, in order to assure that of the mother, otherwise in wishing to save the two lives he might lose both.

There is this other fact to be deduced from the statistics ; the use

of the forceps which saved so many children in the first category, and that of the cephalotribe which saved so many mothers in the third, have quite opposite results, when we consider them inversely in the third or in the first category.

In the fourth category, where the narrowing was extreme, the utter impotence of obstetrical therapeutics is manifested; for, out of 9 children, 1 only was saved, and that at the expense of the life of the mother, upon whom the Cæsarian section was performed, an operation almost inevitably mortal in the great centres of population. It has been so at least for many years.

In the five transverse presentations, not one mother lost her life.

In the breech presentations there was a mortality of 2 in 6 among the mothers. Of the two women who died, the first (pelvis narrowed to 2 inches) is the one who succumbed after the Cæsarian operation. The labour had lasted 48 hours, and the os uteri was not completely dilated. As for the second, whose pelvis was narrowed to the same degree, and who was seven months *enceinte*, she died after undergoing five utero-vaginal douches, which were administered for the purpose of inducing labour. At the autopsy, a rupture of the uterus was discovered.

With these and other statistics before me, I shall now proceed to consider what practical conclusions can be deduced from them.

SECTION I.

What ought to be the conduct of the Accoucheur when the conjugate diameter of the Pelvis is narrowed, but not under $3\frac{1}{2}$ inches?

The accoucheur's conduct would evidently vary according to the kind of presentation.

A. *Cephalic presentation.*—The number of spontaneous accouchements (6 in 16, Table I.), proves that the intervention of medical art is often not necessary. The first period of labour is prolonged on account of the elevation of the head. But, if the membranes remain intact, and if the pains be strong and regular, the prognosis is not unfavourable. A rigorous surveillance should be exercised over the state of the child after the membranes are ruptured; and if he is warned by auscultation, or by a discharge of meconium, that

the child is suffering, intervention on the part of the accoucheur becomes indispensable. In this case, the best treatment is to apply the forceps. I have too often witnessed its employment at the hospital of *La Clinique*, in such cases, not to be convinced of its efficacy; and the results contained in Table I. confirm this assertion. The use of this instrument is of still greater service in those cases, though they are rare, where the narrowing is at the inferior outlet, and for reasons which are easy of demonstration.

In fact these are cases, especially among primiparæ, where other causes are added to the obstacle already produced by the deformed bones: these are rigidity of the soft parts, unfavourable position of the head, exhaustion consequent upon protracted labour, &c. When the narrowing is at the superior aperture, the instrument should be in skilful hands, and applied at a suitable time. Experienced accoucheurs have rarely any difficulty in introducing the instrument when the pelvis is slightly contracted.

On consulting my notes which refer to the three women who died after being delivered by the forceps, I find that the labour was long and painful. The first was 65 hours in labour; the second, 50 hours (she died from peritonitis during an epidemic). As for the third, so protracted was the labour, that it was found to be necessary to make incisions on the edge of the os uteri in order to aid dilatation. All those who survived were much less time in labour.

B. Breech presentation.—Is the prognosis in this presentation less favourable for the child? This is a question which I will endeavour to solve in a future part of this work. As to the treatment, it is the same which is adopted when the pelvis is normal. Moderate tractions upon the trunk and the introduction of the finger or the crotchet in the child's mouth, are often useful manœuvres. Sometimes the forceps becomes necessary.

C. Transverse presentation.—In this case it is evident what must be done. Version must be performed. The cephalic version has been recommended, but this operation is not practicable unless in exceptionally favourable circumstances. The difficulties attending this manœuvre in a narrow pelvis would render the prognosis less

favourable for the child, and the accouchement more laborious to the mother.

D. *Face presentation*.—M. Paul Dubois and some other accoucheurs, recommend that this presentation should be converted into that of the vertex by inducing flexion of the head. If the circumstances be such that this manœuvre can be executed without much difficulty, it would be well to adopt it; but if its execution be attended with any obstacles, it is preferable to have recourse to the forceps, or to version. If the position be mento-anterior, a single application of forceps would often suffice. What time must elapse before the accoucheur should interfere? Considering the difficulties which attend accouchements in cases of a face presentation, even in normal pelvises, it is advisable not to wait long after the complete dilatation of the os, in order not to have a too unfavourable prognosis.

SECTION II.

What ought to be the accoucheur's conduct when the conjugate diameter of the pelvis is between $3\frac{1}{2}$ and 3 inches?

I now enter into the important part of my subject. Here nature does not herself suffice to deliver the woman, and in general, recourse must be had to medical art. I do not pretend to say that a natural labour is very rare when the diameter is under $3\frac{1}{2}$ inches, even when the woman is at full term of gestation. Table I. gives a proportion of 13 per cent. of labours terminating spontaneously. In fact, if the child be small and the diameter not under 3 inches, the delivery can be spontaneous, especially if the fœtus be dead; but it is well not to reckon too much upon it. And I think that, considering the fatal results that have accrued from delay in cases of dystocia of this kind, it would be more prudent not to look for a spontaneous termination of the accouchement, except, perhaps, in those cases where there is a certainty that the child has ceased to live since several days.

What ought to be done? Before this question can be answered it is necessary to establish with precision, all the circumstances in which the woman is placed, with regard to her being primipara

or multipara, the period of her labour, the nature of the contractions, &c.

A. Cephalic presentation.—Auscultation announces that the child is alive: the general condition of the woman is satisfactory. The os uteri is completely dilated, and the membranes are intact, or just broken.

After having waited a proper time, that is to say, two or three hours after the complete dilatation of the os, the accoucheur should apply the forceps (especially if they have been successfully used in a previous accouchement), and make moderate tractions. If they prove to be insufficient, the instrument should be withdrawn; then, according to the best authors and the most eminent modern accoucheurs of France, such as Paul Dubois, Depaul, Pajot, Blot, &c., the contractions must be left to produce their effect for an hour or two. If no result be obtained, the instrument should be again used; and if a second, or even a third application be fruitless, then recourse should be had to embryotomy. But this is a treatment which I think ought not to be adopted. In fact, what is the prognosis with regard to the mother and child in the favourable conditions which have been supposed? For the former, the prognosis is satisfactory; for the latter, it is less assuring. All that we can desire is not to render it less good for the one nor worse for the other. Now, it is quite evident, as is proved by Table II., that the more prolonged the labour is, the less favourable is the prognosis for the mother, and the more disadvantageous for her infant.

TABLE II.

AVERAGE DURATION OF LABOUR IN 51 CASES OF CONTRACTED PELVIS.

| | Number of Accouchements. | Mortality. | |
|---------------------------|--------------------------------|------------|----------|
| | | Infants. | Mothers. |
| Under 24 hours | 20 | 10 | 3 |
| From 24 to 48 hours . . . | 12 | 8 | 4 |
| Above 48 hours | 19 | 16 | 6 |
| | 51 | 34 | 13 |

The results of this table, together with numerous cases contained in my notes, point out that the infantile mortality is two-thirds.

Does there exist another operation besides the repeated applications of the forceps capable of more rapidly terminating the accouchement, at the same time fulfilling the conditions of prognosis which I have laid down? This is a problem which I will endeavour to solve, and will proceed to consider whether the operation of version practised by the old accoucheurs, recommended by Madame Lachapelle, and brought into fashion in Great Britain by Sir James Simpson, offers a solution. This method has been adopted by many English accoucheurs, but is not accepted by the French, with the exception of Cazeaux, who writes favourably of it in the last edition of his "*Traite d' accouchements*," after having condemned it in the preceding editions.

The partisans of this method affirm that it is very advantageous for the child, whose existence it saves in many cases where it would have been sacrificed, either by being left to perish in a protracted labour, or by being mutilated by instruments.

The importance of this subject induces me to enter into it with some detail, for I think that it is a mode of treatment which has been rejected in France without having being sufficiently tested. If version produces good results in one country, ought it not to do so in another? Here the *modus operandi* being purely mechanical, it cannot be compared with certain medicaments whose mode of action varies according to the climate.

Nevertheless it must be confessed that Sir James Simpson and most of the English accoucheurs who have recommended this method support it by reports of cases which are wanting in precision. It is to be regretted that they have not entered into more circumstantial details in the cases which they cite of accouchements terminating favourably for the child by means of turning.

The celebrated Professor of Edinburgh fully explains the arguments upon which he founds his theory. He considers the head of the child in its *ensemble* as a truncated cone having for its upper base the bi-parietal diameter ($3\frac{1}{2}$ to $3\frac{1}{4}$ inches), and for its lower base the bi-mastoid diameter ($2\frac{1}{4}$ to $3\frac{3}{4}$ inches). The latter, which

represents the base of the cranium, is a solid osseous mass, and therefore irreducible, while the former is elastic and perfectly reducible to the extent of from $\frac{1}{8}$ to $\frac{1}{4}$ inch, owing to the presence of sutures and fontanelles.

If the summit of the head attempts to pass through an aperture which is narrower than itself, such as happens in a contracted pelvis, it will become flattened, and the more so as the force brought to bear upon it becomes greater; and consequently the bi-parietal diameter, the upper base of the truncated cone, will be increased. On the contrary, when the inferior base of the truncated cone represented by the base of the cranium (bi-mastoid diameter) presents, tractions made on the trunk of the child compress the two parietal eminences between resisting points, and this compression brings these eminences nearer together.

Sir J. Simpson makes use of the letter A in order to explain his theory: the feet of the child are represented by the top of the letter, the solid and incompressible part of the head by the bar, the bi-parietal diameter by the base of the letter, and its two diverging feet represent the compressible elastic arch of the cranium.

I think the mechanism may be well understood by means of the following comparison:—

If we place our two hands together so as to put in contact their thenar and hypothenar eminences respectively, the fingers of the one being flexed and partially shut, while their dorsal surfaces are covered by the palmar sides of the other, we figure a kind of truncated cone representing the head of a fœtus in a rough manner, but sufficiently resembling it as to enable us to compare the two solid and irreducible carpal regions to the mastoid apophyses, and the relief of the metacarpo-phalangeal articulations to the parietal eminences.

If, while the two hands are kept inert in this position, we endeavour to *push* them through a rigid orifice which is not so large as the *bi-metacarpo-phalangeal* diameter and larger than that of the *bi-radio-carpal*, the resistance encountered by the curved phalanges (whose prominences represent the vertex) would tend to increase the length of the first of these diameters, thus simulating

the lengthening which takes place in the bi-parietal diameter when the cranial arch is flattened by pressure.

But if, on the contrary, we keep the hands in this same position, and endeavour to *draw* them through the same orifice, there would be a diminution in the length of the bi-metacarpophalangeal diameter similar to that which would occur to the bi-parietal diameter through the operation of turning.

It therefore follows that if compression exercised on the parietal bones be capable of producing a *chevauchement* which reduces the bi-parietal diameter to 3 inches, we can by means of turning bring accouchements to a successful termination where the antero-posterior diameter of the pelvis is at least 3 inches. We have also by means of this operation the advantage of being able to graduate the force necessary for the extraction.

Sir James Simpson maintains that in these circumstances version offers another advantage, namely that of being able to place in relation with the narrowed antero-posterior diameter not the larger diameter of the head (bi-parietal) as would occur in vertex presentation; but the smaller diameter (bi-temporal), for, by turning, the parietal prominence would correspond with the larger space in front of the sacro-iliac symphysis.

If Dr. Simpson could prove that it always happens thus, he would destroy the most serious objection that has been brought against this method; but some accoucheurs do not accept his assertion. This is the objection:—By the operation of turning in a narrowed pelvis, there is danger of putting the child's head in a state of forced extension, and of the chin being hooked on the pelvic brim. But if the head be placed in the position which I have described, that is to say, with the parietal prominence in relation with the sacro-iliac symphysis, and if, as it generally happens, the contraction of the antero-posterior diameter be accompanied with lengthening of the transverse diameter of the superior outlet, as well as with that of the pelvic cavity and of the inferior outlet, it is easy to perceive that this deflexion of the head is not an unfavourable circumstance; and what is more, the lengthening of the diameter of the lower aperture and the increased size of the pelvic cavity, would render it

easier for the accoucheur to hook the chin with his fingers or the crotchet. I have notes of cases which prove that this takes place ; but only when the narrowing is exclusively antero-posterior. For, if it be accompanied by lateral deviations of the sacral promontory, turning might only augment the obstruction by placing the largest diameter of the head in relation with the diminished side of the pelvic aperture.

If, then, the theory in favour of turning, which has just been described, be accepted, and if it can be put in practice, let us consider what will be the prognosis, with regard to the mother and child, by adopting this mode of treatment, and comparing it with the use of the forceps and embryotomy.

Let me first recall that which I have laid down in my *avant-propos*, namely, that the accoucheur has three things essentially to bear in mind. First, to save life ; second, to avoid injuring the ulterior health of the mother ; third, to perform operations in the least disagreeable manner possible. With these maxims before me, I will first proceed to consider that which is relative to the child.

It is incontestable, as experience has unhappily too often proved, that the life of the child is very much menaced in this class of dystocia (proportion of mortality in Table I., 66 per cent.) The child dies because, by the ordinary treatment, no effort is made to save its life, because its death is often waited for before it is considered expedient to interfere ; and when recourse to the forceps is decided upon, it is almost always at an advanced period of the labour. Even when this instrument is used earlier—before the child gives signs of suffering, the result is often unfavourable. The partisans of version assert that it is difficult to apply the blades of the forceps on account of the elevation of the head ; and when, after having much tormented the mother, their application is effected, they exercise a compression on the head in an antero-posterior direction,—a circumstance which is unfavourable for physiological reasons, and which has a tendency to increase the bi-parietal diameter, that of all diameters which ought to be lessened.

Is it possible, by means of version, to obtain more favourable results ? In order to give a satisfactory answer to this question,

the theory must be corroborated by facts ; for, however good a theory may be, it has no value in medicine, unless supported by facts. I regret that I am able to present but few cases of this kind observed in France, for the reason that this method has been rarely practised by French accoucheurs. I, therefore, think it right to publish, in Paris, the most recent results that have been obtained by English accoucheurs.

In the fourth volume of the "*Transactions of the Obstetrical Society of London*," recently published, is a "clinical memoir on turning, in cases of disproportion," by Dr. M'Clintock. The reading of this memoir was followed by a discussion in which many eminent accoucheurs present took part, and who declared themselves to be in favour of version.

As this is an interesting monography and the last that has appeared on the subject, I am happy to avail myself of it. Unfortunately the author gives no figures by which the degree of narrowing is indicated ; I am therefore obliged to quote at some length in order that the value of his remarks should be better appreciated.

The following are extracts *passim* :—

"This, like any other question of a practical bearing, can only be decided by clinical observation. The primary object, then, of this communication is to lay before the society the results of my own experience of this practice. As to the rationale of the measure and the principles upon which it is based, Dr. Simpson has discussed them so fully as to leave nothing to be said thereupon. At the same time I must observe that Sir Fielding Ould, one of the earliest authors to recommend the practice, and whose treatise was published 120 years ago, had a very good notion of the peculiar advantages belonging to it ; for he observes : 'It may be objected that the same narrowness of the passage through the pelvis which hindered the natural expulsion with the head foremost may hinder its extraction when brought forth by the feet. This is also allowed, but yet, if we consider the matter properly, it will appear that, by drawing from a small end, which is the feet, in order to bring forth the larger, with the additional assistance of holding the legs in one hand, and having

the fingers of the other in the child's mouth, there is a far greater probability of bringing it forth than when the large end comes first, and that without any probability of assisting the mother's efforts but by the destruction of the child.'

"Some writers have been at much pains to make out the exact limits of pelvic capacity within which the operation should be restricted. I confess I do not see much utility in this, for the very obvious reasons that the size of the child is liable to considerable variation, even at the full time, and also because the exact capacity of the pelvis cannot be determined with precision during life."

Dr. M'Clintock furnishes the particulars of 17 cases in a table which I reproduce (vide Table III.)

TABLE III.—(From Dr. M'Clintock's Memoir.)

CASES IN WHICH TURNING WAS PERFORMED FOR DISPROPORTION.

| No. | Age. | Hours in labour. | Child. | | Former Births. | | Got Chloroform. | Result to Mother. | Observations. |
|-----|------|------------------|--------|-------|----------------|---------|-----------------|-------------------|---|
| | | | Alive. | Dead. | Alive. | Dead. | | | |
| 1 | 25 | 15 | — | G | — | B 2 G | Yes | Recovered | } Same { Child's heart beating at birth. } Patient { Of puerperal fever. |
| 2 | 27 | 12 | B | — | — | B 3 G | Yes | Died | |
| 3 | 42 | 22 | G | — | 4 G | 4 B | Yes | Recovered | } Same { Funis presented; craniotomy, head } Patient { [locked in brim. } Indentation of parietal bone. |
| 4 | 32 | 36 | — | B | G | 2 B 2 G | Yes | Recovered | |
| 5 | 34 | 6 | B | — | G | 3 B 2 G | Yes | Recovered | } Same { Funis presented; craniotomy, head } Patient { [locked in brim. } Indentation of parietal bone. |
| 6 | 35 | 12 | G | — | B G | 3 B 2 G | Yes | Recovered | |
| 7 | 30 | 26 | — | B | — | 2 G | Yes | Recovered | } Child's heart beating at birth. |
| 8 | 34 | 11 | — | B | G | 3 B | Yes | Recovered | |
| 9 | 30 | 16 | — | G | 4 G | B | Yes | Recovered | } Child's heart beating at birth. All her labours } [difficult. |
| 10 | 28 | 26 | G | — | — | 2 B | Yes | Recovered | |
| 11 | 35 | 14 | — | B | 3 G | B 4 G | No | Recovered | } Child's heart beating at birth. Parietal bone frac- } Child's heart beating at birth. [tured. |
| 12 | 28 | 38 | — | G | — | B | Yes | Recovered | |
| 13 | 32 | 18 | — | B | — | — | Yes | Recovered | } Same { Craniotomy necessary to complete ver- } Patient { [sion. |
| 14 | 33 | 33 | G | — | — | B | Yes | Recovered | |
| 15 | 36 | 16 | B | — | G | B | Yes | Recovered | } Boy saved by bringing down leg, after 55 hours' } labour, breech having presented. |
| 16 | 27 | 17 | G | — | B | 2 G | Yes | Recovered | |
| 17 | 30 | 18 | G | — | B 3 G | 2 B | Yes | Recovered | All her previous labours difficult; two instru- [mental. |

“Of the 17 children 9 survived birth. The foetal heart continued to pulsate for a period varying from 15 to 20 minutes after delivery in 5 of the children recorded as “dead-born” in the Table.

“Of the 9 children born alive, 4 were boys and 5 were girls; whilst of those dead-born the numbers were reversed, 5 being boys and 3 girls. The influence of sex upon the result of labour, *quoad* the foetus, is thus well illustrated. But a more striking exemplification is to be found in the general result of all the births which the 12 women had. The total number of mature children born to them was 64, viz., 27 boys and 37 girls. Of the boys, 21 were born dead, which is a proportion of 78 per cent. upon all the male births; whilst of the girls only 16 were dead-born, being in the proportion of 43 per cent. of all the female births. In every instance where turning was performed, before determining upon the operation, the child was ascertained by auscultation to be alive.

“What now, it may be asked, is the practical value of this measure, and what are the limits of its utility? These are important questions. In none of these patients were there any considerable contraction of the pelvis. The evidence, in nearly all of them, tended to prove that the amount of narrowing must have been, comparatively speaking, slight, and altogether confined to the upper strait, as most of these women had given birth by the natural efforts to mature children. Nevertheless, in every instance force had to be employed, subsequently to turning, and in some instances powerful force, in order to bring the head into the pelvic cavity; and on one occasion the perforator and crotchet had to be used before this could be effected at all. Of the children, we have already seen that rather less than one in two was lost. Upon the gross average of all cases of turning, the infantile mortality according to Dr. Churchill's statistics, is a fraction more than one in three. Here is a difference of about 17 per cent. in favour of the latter over the former class of cases.

“Looking to the interests of the child, then, I think that the value of this measure has been exaggerated by its advocates, and that it is only where the degree of pelvis contraction, or, more properly, of

disproportion, is *very slight*, we can resort to it with any certainty of saving the foetus. Hence I would not deliberately advise a patient who had a decided contraction of the pelvis to await the natural accession of parturition, and trust to turning, in preference to the induction of premature labour, for the saving of herself and child.

“I am very far from wishing to underrate the value of turning as a means of saving foetal life in the class of cases under consideration.

“That it really gives an increased chance of safety to the child is a proposition which admits of being proved from the Table I have given. The 11 women (for the primipara need not be included) were delivered of 47 children by *other* modes than turning—some by the natural efforts, some by the forceps, some by craniotomy; of these 47 children, 18 were born alive, that is 38 per cent.; whilst of the children of the same women (including the primipara), delivered by turning, the proportion born alive was almost 53 per cent. If we carry this comparative analysis to the sexes of the children, we find the proportion of boys born alive after turning to be four-ninths, or 44 per cent.; whereas of those delivered by other means, only 2 out of 18, or 11 per cent. were alive. With the female children the contrast is not so great. Five-eighths, or 62 per cent. were extracted alive by version; and of 29 children delivered by other means, 16, or 55 per cent., were living. The results of these comparisons are, no doubt, favourable to turning; but they must be accepted with reserve, the data they are based on being so limited.

“Setting aside all theoretical considerations, and looking merely at the results of practice, I cannot help thinking that the limits within which version is strictly applicable are so confined that it can hardly, if at all, supersede the artificial induction of labour, especially with the improvements which Dr. Barnes has pointed out to us for assuring and accelerating this operation. In nearly all the cases upon which this memoir is based the existence of any defect in the capacity of the pelvis was rather a matter of inference than of demonstration. The character of the woman's previous labours led us to *infer* that there probably existed some deficiency of space, but in only three or four instances was this palpable to the examiner. Yet how great was the force required to bring the head through the brim!

A much less degree of force, applied for a longer time, would, no doubt, suffice. But the very nature of this mode of delivery absolutely precludes a delay of more than a very few minutes, if the child is to be saved.

“There may be room for instituting in these cases of slight pelvic contraction a comparison between the relative advantages of turning and of the long forceps. This is a controverted point, however, which I shall not now stop to discuss, as my experience in the use of the long forceps, when the head is at or above the brim, is perhaps, too limited; but I freely confess that in cases of disproportion, I would confine the high forceps operation to those in which turning is impracticable, or would be attended with great risk.

“Where the results of a patient’s previous labours, or of careful admeasurement of the pelvis, warrant the conclusion that a live birth is not to be expected with a natural, that is, a head presentation, under such circumstances I would resort to turning as early in labour as the state of the os would admit.”

I wish that it were in my power to make an exact comparison between the results obtained from my table and those of Dr. M’Clintock’s; but this comparison can only be made approximately, for Dr. M’Clintock has omitted in most cases to furnish figures indicating the degree of narrowing. He has omitted measurement probably because the progress of preceding labours and the manner in which they terminated permitted him to judge of the seat and degree of contraction.

If we look at the average mortality of the first two classes in Table I. (without considering the cases terminated by version) and the average mortality of Dr. M’Clintock’s 17 cases, it will be seen that mine presents a mortality of 52 per cent., while that of the Dublin Professor gives 47 per cent.; the result therefore would be in favour of turning. But, if we suppose, which is more probable, that the average degree of mortality in the 17 cases of Dr. M’Clintock corresponds with the average of my first category, the result is reversed, since the mortality in this category is not more than 40 per cent.

In spite of theory, then, I am not justified in concluding with Sir James Simpson and many English accoucheurs that the operation of version is more advantageous for the child where the pelvis is contracted between $3\frac{1}{2}$ and 3 inches. The favourable cases which they cite lose their value because no measurement is given. I am inclined to think that turning ought to replace *repeated* applications of the forceps. It ought to be employed after one or two fruitless attempts with that instrument. The narration of cases by Madame Lachapelle in her "*Pratique des Accouchements*" confirms me in this conclusion; for, if in 5 cases of slight contraction the 5 children were saved, on the other hand, in 14 cases narrowing where the diameter was under $3\frac{1}{2}$ inches, only 2 children lived. Such is the result recorded in her memoir.

On the 15th July, 1862, Dr. Blot read before the Academy of Medicine a memoir containing a very good description of a case of version in a pelvis narrowed to 8 centimetres or 3 inches. (*Archives g n rales de m decine, July, 1863.* Pamphlet published by P. Asselin, Paris.) This case is the more interesting to me as it is that of a woman at whose accouchement I assisted at the hospital of *La Clinique* in 1857, and who, after two unsuccessful attempts with the forceps, could only be delivered by means of cephalotripsy. M. Blot was able by turning to deliver this same woman of a living child at full time of gestation, while the preceding accouchement could only be terminated by the destruction of the f etus. This would seem to be a case especially fit to decide between the comparative merits of the two modes of operation, for in each case the weight of the child was nearly the same and above the average (seven pounds). But on consulting my notes I find that in the first accouchement the face presented. Now, to establish the superiority of turning as a general method of treatment in these cases it would be necessary to show instances where it has succeeded in the ordinary presentation after the forceps has failed.

For this reason the case reported by Dr. Blot would have had much more value if, in the preceding accouchement, the presentation had been that of the vertex.

If the English accoucheurs who often perform version in these

cases published their memoirs with the clearness which characterizes that of Dr. Blot, we should perhaps have sufficient elements wherewith to enable us to solve the problem as to the value of turning in these circumstances.

There is an objection that can be brought against turning in narrowed pelvis, insomuch as relates to the life of the child, namely, that it exposes the umbilical cord to compression, such as occurs in breech presentations. This would seem a complication that could not fail to occur. But, according to Dr. Simpson, it is quite the contrary; for if, as it most frequently happens, the pelvis is contracted in its antero-posterior diameter, there is less probability of the cord being compressed, because the exaggerated projection of the sacro-vertebral angle forms on its sides, depressions in which the cord can be safely lodged. Therefore there would be more reason to fear this accident when turning is performed in a pelvis of normal proportions. Dr. Barnes is also of this opinion, for, in the discussion following the reading of Dr. M'Clintock's memoir, he expressed himself as follows:—"It might seem strange, but he had seen reason to believe, that in these cases of disproportion, the child had a somewhat better chance of being born alive than after turning under ordinary conditions. The common cause of disproportion was a slight projection of the promontory of the sacrum; on either side a marked hollow was preserved, in one or other of which the cord would be protected."

Lastly, another objection brought against this operation is, that it may cause a depression on the bones of the foetal skull. This is an accident certainly to be regretted, but the lesions which result from it are not necessarily fatal to the child. This is proved by the case recorded in the memoir of Dr. Blot.

Ambrose Paré compares these depressions made on the bones of the cranium by the sacro-vertebral projection to the bruises seen on a silver kettle-drum which has been thrown on the ground. These depressions are cured very rapidly. Madame Lachapelle cites cases of considerable *enfouchements*, which have not been followed by serious results (see also cases I., II. and IV., from Dr. M'Clintock's memoir).

I shall now consider the influence which the operation of turning is likely to produce on the life of the mother. I have no hesitation in thinking that it is a mode of treatment preferable to the use of the forceps, for it permits us to interfere at an earlier period of the labour. Now, it can be seen by Table II., that the mortality, which among children follows a progression that is in relation to the duration of labour, becomes also greater among mothers, when labour is prolonged beyond twenty-four hours. In pelves belonging to the category which is now under consideration, the mortality among mothers in instrumental cases depends much more upon the period at which the operation is performed than upon the operation itself. In other words, it is the duration rather than the intensity of pressure upon the soft parts, which produces mischief. And I base this assertion upon statistics that have been established by many eminent writers.

After the operation of version in the two cases referred to in Table I., the mothers recovered and quitted the hospital in good health. Nevertheless, in one of these cases (that in which the child died) the operation was performed under very disadvantageous circumstances; this is the more to be regretted, as, from the slight narrowing of the sacro-pubic diameter, a more favourable result might have been hoped for.

As I have already stated, I regret that it is in my power to offer only a limited number of observations bearing upon cases of turning where the operation has been performed by the art of the accoucheur. But, to make amends, I have had the advantage of witnessing a most extraordinary phenomenon in the annals of obstetrics, a phenomenon where nature was, so to speak, the sole operator. I allude to a case of spontaneous version in a pelvis whose antero-posterior diameter was narrowed to 3 inches, and at full term of pregnancy (vide case VII.) What makes this case more remarkable is that the woman in the preceding year had a very long and painful labour (67 hours), and which could only be terminated by means of cephalotripsy, the child presenting by the vertex. Does nature show us by this example what ought to be our treatment in a similar case?

Of the seventeen operations reported in the memoir of Dr.

M'Clintock (Table III.), one only was followed by the death of the mother (case No. 2). The learned accoucheur referring to this case, remarks:—"But it is hardly fair to attribute this event to the effects of the operation. Her labour was only twelve hours long from first to last, and the version was not attended with any unusual difficulty. She was in a depressed state of mind from domestic causes, and died of puerperal fever—then rather prevalent, on the eighth day after delivery. This child was born alive; but the right parietal bone, which had lain next the sacrum, showed a great depression. This disappeared in the course of a few days, however.

"Her first labour was difficult, her second also difficult, and terminated by instruments, the child being lost upon both occasions. On her third labour she came, for the first time, under my care (case I. in table). Having waited for four hours after the rupture of the membranes, to see if the pains, which were vigorous, would cause the head to descend into the pelvis, and finding that no impression was made on it, I had her put under chloroform, and Dr. Byrne, one of the Assistant-Physicians to the hospital, turned the child without much difficulty. Considerable delay took place in the extraction of the head; and though the foetal heart pulsated at birth, and the child made two or three gasps, still respiration could not be established.

"The gross average mortality of the mothers after the operation of turning is stated by Churchill to be about 1 in 15. Hence its performance in the class of cases now under consideration, would not seem to be attended with any increased risk to the parent.

"The average length of the labour in the seventeen cases was considerable, viz., *nineteen* hours; the extremes being *six* and *thirty-eight* hours. In *twelve* instances the membranes had been ruptured for some hours before turning. With one exception (case II.), chloroform was administered on every occasion."

Dr. M'Clintock further remarks:—"Looking to the interests of the mother only, I think this operation has stronger claims than when viewed in its relation to foetal life. By an early resort to turning, the duration of the labour may be materially abridged; and if successful, all danger from the rupture of the uterus, or from

the alternative measures of craniotomy, and the high-forceps operation, is completely avoided. On the other hand, it must not be forgotten that, if the operation fail, and the head become locked in the brim, not only is the child lost, but the woman must undergo a second operation."

Up to the present, I have supposed that the woman is in a favourable condition, that the membranes are intact, that exhaustion has not set in, &c. Unfortunately the opposite case is more frequently met with, and then the treatment and prognosis are no longer the same. Here, indeed, the child's life is seriously compromised, and often that of the mother is in danger. I think the best treatment is to try version, which is often practicable, especially with the aid of chloroform. In the cases cited by Dr. M'Clintock the membranes had been ruptured several hours before turning was performed.

If the uterus be so contracted that it is impossible to introduce the hand, the forceps should be used, and in most cases it suffices to extract the head, but with very little hope of bringing forth a live child. If, notwithstanding vigorous tractions with this instrument, the head does not descend, it is well to leave the blades in their place, and, without further delay, perforate, if the child give no signs of life. By these means the accouchement can often be terminated without withdrawing the forceps in order to have recourse to the cephalotribe. I have seen Professor Depaul employ these means successfully in cases where the pelvis was considerably contracted.

But, if the child, notwithstanding the unfavourable conditions in which it is placed, still gives indications of being alive, ought our conduct to be the same? The rule generally laid down is that we should wait until the mother or child show signs of being in danger.

Wait is a word that is often heard repeated in obstetrical clinical teaching, and it is essential that young accoucheurs should be well convinced of its importance. To have patience and to know how to wait, are qualities indispensable in obstetrical art; but there are very precise limits to their application. It is well to let nature act; nevertheless, when a deformed pelvis is Nature's work, it is for Art

to correct it before further irreparable mischief results from it. I think, therefore, that we should not wait until the child or mother shows signs of suffering; for that is an indication that it is often too late. When we are called to attend upon a woman who has been a long time in labour, all our pre-occupation should be to terminate the accouchement as rapidly as possible. Recourse should be had at once to the forceps, which is an instrument often efficacious in the degree of narrowing now under consideration. If the head cannot be brought down, we must diminish its volume by craniotomy, and this operation would probably be performed on a dead child, for after strenuous attempts at delivery by the forceps, the life of the foetus is often lost. But should the child be still alive, it would be repugnant to our feelings to thrust an instrument into its head, and as we would not like to leave it to die, nor at the same time prolong the sufferings of the mother, we could always have recourse to version. By adopting this line of conduct, we should do all that lies in our power to save the existence of the infant, and at the same time employ the necessary precautions to secure the life and health of the mother by avoiding a prolongation of her sufferings. If, by this manoeuvre, we terminate the already much compromised existence of the child, there remains at least the consolation of knowing that we do not destroy it by breaking its head, but by an operation which offers still some chance of saving it.

B. If the child present by the breech, by the trunk, or by the face, all the rules already laid down are applicable.

SECTION III.

What ought to be the Accoucheur's Conduct when the conjugate diameter of the Pelvis is between 3 and 2½ inches?

LET us again suppose that we have to do with a woman who is at full term, in good health, and at an early period of the labour. What is the prognosis? For the child it is always very serious; as for the mother it varies according to the treatment adopted. If, with the hope of bringing a live child into the world, we leave the labour to itself in order to see what nature can do, and afterwards,

finding her altogether insufficient, we apply the forceps, and notwithstanding the difficulty of introducing and placing the instrument we reapply it two or three times at intervals of some hours, we shall have done much to aggravate the prognosis relative to the mother. Nevertheless most of the women referred to in my statistical table had undergone this treatment before coming to the hospital.

If, on the contrary, being called to attend a woman who is in the good conditions above mentioned, and desiring to profit by them, we rupture the membranes and apply the forceps, either with the hope of the child being small, or relying on one or two anterior accouchements, and then finding the forceps ineffectual, we proceed immediately to perform version, we should not aggravate the prognosis relative to the child, but we certainly should render it more favourable with regard to the mother.

But it is said that version performed in a pelvis which is contracted to this degree is a very difficult and dangerous operation; and according to Dr. Joulin (*"Thèse de Concours,"* 1863, p. 7) when we examine one by one the cases reported by Madame Lachapelle, who has recommended this method, "we can see that by an inexplicable error she has transformed into successes results which are most disastrous both to mother and child." Is this reproach merited? * Madam Lachapelle, in her ninth memoir, (*"Pratique des Accouchements,"* vol. 3) has reported 19 cases. Out of this total there are 5 of slight contraction, in which all the children were born alive and 1 mother died of peritonitis. In 10 cases of considerable contraction all the children were dead, 6 mothers recovered and 4 perished. I shall shortly refer to these, but will first examine 4 cases which enter into the class of slight contraction.

Of these 4 cases, 2 children were born alive, and two were dead and *putrified*. Two mothers died; one came to the hospital after

* Dr. Joulin also asserts that Dr. Simpson in his immense practice could only produce three cases of version attended with success during eight years. Dr. Joulin is completely in error; for Dr. Simpson says, in the work cited by Dr. Joulin, that he had during the eight years many successful cases, but only cites three taken from his own practice and from that of his *confrères*.

being 36 hours in labour "in a pitiful state after having undergone several operations of various kinds which had only served to *rupture the uterus*." The other came in *much exhausted* after 24 hours' suffering. Now, on examining these cases one by one, I do not see that they furnish any reason for us to conclude against version; for they do not prove that its results are disastrous when it is performed according to the principles which ought always to form the basis of its employment, that is to say, when it is adopted with a view of preventing exhaustion.

In Table I. there is but a single case of version performed in this category of contraction. On referring to the report of this case (No. 8), it will be seen that it is not one of those by which the value of this method can be judged.

If, instead of the favourable conditions supposed, we have to do with an uterus from which the liquor amni has long been discharged, the treatment is still the same; that is to say, the forceps should be used, and if too much difficulty be encountered, version must be tried. If the state of the uterus render this operation impracticable, there is no choice, embryotomy is the only resource.

When the contraction approaches to $2\frac{1}{2}$ inches, we must have recourse to an operation difficult and dangerous to the mother, and almost certainly fatal to the child. In such a case nature is impotent; it is for art to act.

Let us again consult the cases reported by Madame Lachapelle. Out of the 19 already referred to 6 belong to the class of narrowing now under consideration. Two mothers and all the children perished. Of the children the first came into the world presenting some signs of life after a labour of 16 hours. It weighed $6\frac{1}{2}$ pounds. The pelvis of the mother measured $2\frac{1}{2}$ inches. The second child had been, unprotected by the amniotic fluid, exposed during a considerable time to the action of uterine contractions, and before its birth gave no signs of life; it weighed 6 pounds, and the mother's pelvis measured $2\frac{3}{4}$ inches. The third showed symptoms of suffering before its birth—the liquor amni contained meconium; the pelvis of the mother measured $2\frac{3}{4}$ inches. The fourth was a large child, born alive but not *viable*; the pelvis of the mother had a diameter

of $2\frac{3}{4}$ inches. The fifth gave no signs of life before its birth, it had been long dead and weighed 5 pounds; the mother's pelvis measured $2\frac{1}{2}$ inches. The sixth weighed 7 pounds, and the pelvis of the mother measured $2\frac{3}{4}$ inches.

It can easily be seen in all these cases that from various causes besides the disproportion there were no grounds to hope for the safety of the child. Even if its life had been attempted to be saved by another operation, the result would perhaps have been less favourable to the mother, and at the same time there would have been the sad necessity of mutilating the infant, an operation which ought always to be avoided when possible. Of the two women who died, one had been very well during many days but succumbed to peritonitis the thirteenth day. The other, whose labour only lasted 6 hours, was also attacked by peritonitis, from which she became convalescent, but afterwards died suddenly without any known cause.

In these cases it would perhaps be right to attribute death to another cause than version.

Dr. Charrier in his excellent memoir, for which a prize was awarded by the Faculty of Medicine of Paris, expresses himself thus with regard to the etiology of epidemic puerperal fever:—
 “The influence of obstetrical manœuvres is not so unfavourable as some authors have been pleased to assert, and in this also I am happy to be of the same opinion as Professor Dubois. . . . When there is no epidemic raging we often see the most difficult labours unattended with any accident. This happens also during epidemics, and I have often remarked that when bad results accrue they must be attributed chiefly to the cause which requires the accoucheur's interference, namely a lingering, painful labour, bad or incessant contractions, all of which produce such a state of nervous exhaustion as to place the woman in the worst conditions. So true is this, that when obstetrical art can be had recourse to at an early period of the labour she is not affected. This I have often observed.”

Although the cases cited by Madam Lachapelle are not such as to enable us to judge of the value of version, I must confess that my Table No. 1 gives less unfavourable results than those recorded

by the learned midwife; for, notwithstanding the great mortality of children (proportion 66 per cent. excluding the cases of turning and breech presentation) the mortality of mothers does not exceed 11 per cent. Besides, in two cases where the pelvis was narrowed to a little more than $2\frac{1}{2}$ inches, the forceps afforded the means of extracting alive two children at full term. This is the instrument to which I would have recourse; but when it proves to be ineffective, as is exemplified by five cases in the Table, ought we to perforate the head of a living child in order to extract it? I have always an extreme repugnance to perform this operation when it can be avoided, and would prefer to resort to version, with little or no hope of extracting the child alive, but to save the mother from the great exhaustion consequent upon difficult and lingering labours, and perhaps rescue her from afflictive infirmities. The question therefore is, not so much whether the forceps operation is to be preferred to version, as to make a choice between the latter method and embryotomy. It is true that it may happen, and probably will happen, even with version, that the passage of the head is attended with insurmountable difficulties, that, after having extracted the trunk, we may be compelled to have recourse to cephalotripsy (vide Case No. VIII.) But then, we should only perform this operation after having done all in our power to avoid it. If it be objected that, by turning, the cranial bones of the fœtus become depressed by the projection of the sacrum, or that the head be dislocated through the force of tractions, accidents which might cause the death of the fœtus, I can only repeat that which has before been said, that it is preferable to kill in attempting to save.

Sometimes we may be reduced to the necessity of performing detrusion in order to terminate the accouchement. This is doubtless a repulsive operation, but I do not think that it is more so than the perforation of the head of a child, who is alive. There would be at least the certainty of avoiding a spectacle which I witnessed at the Hospital of *La Clinique* on the 1st of January, 1858. It was that of a child whose head had been perforated and afterwards crushed by the cephalotribe, making convulsive respi-

rations during the space of a quarter of an hour after its birth. What a frightful spectacle to take place in the presence of the family !

In the case of detruncation followed by cephalotripsy referred to in Table I., the operation was performed under very unfavourable circumstances. The membranes had been ruptured twenty-four hours previously—the presentation footling—and the diameter of the pelvis measured $2\frac{3}{4}$ inches. The child weighed a little more than 7 pounds without the cerebrum. This operation was also performed after turning in a case of shoulder presentation where the pelvis was narrowed to $2\frac{1}{2}$ inches, the membranes having been ruptured three days before the accouchement.

SECTION IV.

What ought to be the Accoucheur's Conduct when the conjugate diameter of the Pelvis is under $2\frac{1}{2}$ inches ?

I have said in the last section that unless the circumstances be altogether exceptional, there is very little hope of saving the child when the narrowing approaches to $2\frac{1}{2}$ inches. But when it falls below this figure and the child is alive, the accoucheur finds himself in presence of a question most delicate and most embarrassing with regard to the conduct which he has to pursue. Here, all hope of extracting a living child by the natural passage is inadmissible. If he decides on reducing its volume by mutilation, what is the prognosis relative to the mother ? Experience proves it to be very unfavourable.

In the memoir of Madame Lachapelle, from which I have already quoted, there are two cases described of version performed in a pelvis of this diameter. In one, the sacro-pubic diameter was narrowed to 2 inches 2 lines, the child (a girl) was dead-born, weighing 8 pounds. The mother recovered. In the second, the diameter measured $2\frac{1}{4}$ inches ; the woman died after a labour of eighteen hours, although turning was performed under favourable conditions, the membranes being broken only at the commencement of the operation. The child, who was alive before the operation,

weighed $6\frac{1}{2}$ pounds. Out of four individuals, three perished. But these two cases are insufficient to establish statistics upon which a basis can be formed.

Of the 51 cases referred to in Table I., 9 present a contraction under $2\frac{1}{2}$ inches, 8 terminated by the mutilation of the child, and 6 mothers perished, which gives a proportion of 66 per cent. If we consider that the total mortality of mothers and children is 14 out of 18, we are led to deplore the impotency of obstetrical art in cases of this description.

In the preceding sections, I have had to consider the conduct of the accoucheur in a purely medical point of view; for in none of the operations was the hope *entirely* lost of saving the two existences. Now that hope can no longer be preserved.

Without wishing to consider, in a religious and moral point of view, the question which has been so often discussed, as to whether the life of the mother or the child should be sacrificed, I do not hesitate to say that it is the mother's existence which is before all the object of my preoccupation; that is, provided only that she be not put into too much danger by the efforts which are made to save her.

Professor Depaul teaches with reason that, if the operations necessary to deliver a woman who has a very contracted pelvis are of such a nature as to seriously compromise her existence, it would be the duty of the accoucheur to perform the Cæsarian section, which, while it exposes the mother to greater danger, presents at least favourable chances for the life of the child. This learned Professor is of opinion that, if the diameter of the pelvis approaches to 50 millimetres (a little under 2 inches), recourse must be had to the Cæsarian operation, if the child be alive, and *a fortiori*, in cases of contraction under this figure.

Cazeaux, in his *Traité d'Accouchements*, says:—"Whenever the pelvis offers at least 2 inches in its smallest diameter, embryotomy must be performed, if the child be alive. The Cæsarian operation is, unfortunately, the only resource when the pelvis presents only 50 millimetres in its smallest diameter; for then the extraction of a mutilated foetus is so difficult, long and painful, that in necessarily

destroying the foetus the mother is exposed to dangers as great as those which attend the Cæsarian operation.”

Professor Velpeau also fixes at 2 inches the limits within which the extraction of the child, by the natural passage, can be attempted.

The opinion of M. Depaul, above referred to, has been again pronounced by him in a clinical lecture which he delivered, *à propos* of a very little woman who came under his care a few months ago. She was excessively deformed; and the conjugate diameter, measured by the finger, was under $2\frac{1}{4}$ inches. She was about six months and a-half advanced in pregnancy. M. Depaul, in presence of such great deformity, felt inclined to let the woman arrive at full term, and then to perform the Cæsarian operation under the best possible conditions; that is to say, in the country. But, before adopting this conduct, M. Depaul consulted Dr. Danyau, who was of opinion that premature accouchement should be induced as soon as the woman had passed the seventh month of gestation. This last treatment was adopted. Labour was promptly brought on by means of the instrument of Dr. Tarnier; but, after fruitless attempts with the forceps, M. Depaul perforated the skull, cessation in the pulsations of the umbilical cord, which prolapsed, having announced the child's death. The accouchement was terminated the next morning by cephalotripsy. The woman died five days afterwards. The autopsy showed that, besides the projection of the sacro-vertebral angle, which was deviated considerably to the left, there existed a projection of the posterior surface of the pubis which had not been ascertained during life, and which reduced the conjugate diameter to a little more than $1\frac{3}{4}$ inches, besides which there was presented the curious phenomenon of a bifid uterus; but there was no material lesions sufficient to cause death, which was probably due to nervous exhaustion.

This case supports the opinion of Dr. Depaul, with regard to the Cæsarian operation under these circumstances. But, I confess that, if I had reason to think that another operation could give a chance of safety to the mother, the diameter of whose pelvis was not below $1\frac{3}{4}$ inches, I would not hesitate for an instant to practise it.

In fixing then, at this figure, the limits within which the extraction of a full grown foetus through the pelvic canals can be attempted, I appear to make a subdivision in my fourth category. But, in truth, it is difficult to do otherwise, when we consider that many particular circumstances might occur which would modify the general precept laid down.

But when once a decision has been made we must no longer temporize, but act with firmness; for, having abandoned all hope of saving the child, our whole solicitude must be directed towards the mother. To a want of this necessary energy, to delays in the performance of opportune operations must probably be attributed the bad results shown by the statistical Table in cases of extreme contraction. In fact, it will be seen on referring to the cases which I have reported, and to those which have been published by different accoucheurs, that women are generally in a very bad state when brought to the hospital to be delivered.

If the diameter of a woman's pelvis is between $2\frac{1}{2}$ and $1\frac{3}{4}$ inches, is she exposed to great danger when embryotomy is practised at an early period of the labour? In other words, are the operations necessary for mutilating the child and the tractions necessary for extracting it, of such a nature as to produce serious lesions on the maternal parts when the operation is commenced as soon as the dilatation of the os permits the introduction of instruments. To solve this question it is necessary to have well-made statistics which refer to women who have been operated on under these favourable circumstances. These statistics are wanting.

Admitting that embryotomy, even when practised under these favourable circumstances, be followed by bad results, it may be asked whether the ordinary method cannot be replaced by a better one. In the last division of Table I. a mortality of two-thirds of the mothers seems to indicate that the instruments in ordinary use are defective, or that embryotomy should not be performed in these cases, unless, of course, the child is dead; for, in eight of the cases in question, the contraction was not less than $1\frac{3}{4}$ inch.

The cephalotribe is an instrument which can be easily used in a slightly contracted pelvis. But, when the narrowing is extreme,

the head of the child is so high, that there is great difficulty in reaching it in such a manner as to act on the base of the skull. For this reason it is often impossible to re-introduce the instrument when a first application has crushed the head.

I have seen M. Dubois, notwithstanding his great experience and well-known dexterity, succeed only with great difficulty in placing the instrument between the head and the maternal parts, so much does the anfractuosity caused by the raised skin of the cranium offer obstacles to its re-introduction ; and even when the instrument is placed, the elevation of the head is such that the blades, having only a partial hold, slip over without lowering it.

The cephalotribe of M. Depaul is not liable to this defect. I have seen it act several times with great success, especially in the case of the woman with the bifid uterus to whom allusion has been made. The crushing and the extraction only occupied twelve minutes. The superiority of this instrument is due, as is well known, to a crotchet placed at the superior and internal part of the blades. Thanks to this crotchet, the instrument, when it has a firm hold on the head, can exercise powerful tractions without slipping in the slightest degree.

But the greatest objection that has been made against the cephalotribe is, that in a pelvis much narrowed antero-posteriorly the blades are always placed on the non-contracted sides ; and it would therefore follow that the head is diminished in the direction of the transverse diameter, and is increased in the direction of the contracted diameter, where diminution is most necessary. Authors certainly say that a movement of rotation should be performed, so as to make the reduced diameter of the head correspond with the shortened diameter of the pelvis. But, in extreme contraction, this advice is easier to give than to follow. Do not these manœuvres often inflict serious injury on the maternal tissues, especially when practised upon women who are fatigued and exhausted by repeated attempts at delivery ?

Dr. Pajot has, during the last few years, taught a method on which he has lately published a pamphlet entitled : *La Céphalotripsie répétée sans tractions, ou méthode pour accoucher les*

femmes dans des rétrécissements extrêmes du bassin. It is because he has personally convinced himself of the real difficulties and dangers which attend the ordinary method of cephalotripsy in extreme contractions, that M. Pajot is induced to recommend his method. According to this celebrated accoucheur the following are the advantages:—The basis of this method consists in the absence of all traction. The instrument is introduced as soon as the os uteri is sufficiently dilated to receive it, and the cranium is perforated before the dilatation is complete, precisely with the view of facilitating it, as the process of this dilatation is often slow in cases of extreme narrowing.

It remains to be determined whether the labour more or less prolonged to which the woman is exposed by the method of M. Pajot is less injurious than tractions made with more or less force by another mode of operating. M. Pajot publishes the particulars of seven cases, three of which I was fortunate enough to witness with him at the Hospital of *La linique*. Of the seven cases, five were successful.

It is on reading the details of the two unsuccessful cases that I am induced to ask whether the failure cannot in some degree be attributed to the imperfection of the instruments employed. In one case great difficulties were experienced in introducing and placing the branches of the instrument on account of the folds formed by the skin of the head; in the other, the pelvis being extremely contracted, not only was there much difficulty in placing the cephalotribe, but it was impossible to break the bi-malar diameter which formed the only obstacle to the passage of the head.

Case XII. refers to a woman who was left to die undelivered after many fruitless attempts of cephalotripsy were made. M. Dubois was fearful lest she might succumb during the operation if the Cæsarian section were performed. This was the most extreme case of narrowing that I have met with; the conjugate diameter measured only $1\frac{1}{2}$ inch. The autopsy showed that if the cephalotribe could have been placed in such a manner as to seize the non-crushed portion of the base of the skull, the operation might have been followed by success. Two or three attempts more with the

cephalotribe, and perhaps the head of the fœtus could have been turned, and the operation would have been successful. But this result, easy enough to discover on the dead body, could only have been divined when the woman was living.

It is especially in these cases, and perhaps in embryotomy generally, that two instruments which are not well known in France may be of some service: I refer to the *forceps-scie* of M. Vanheudel, and an instrument invented by Sir James Simpson.

Dr. Verrier has published lately (at Adrien Delahaye's, Paris) a memoir which gives a complete description of the *forceps-scie*, and contains the history of several cases which testify to the success of this method. Among the 15 cases there are two that belong to the category which I am now considering. In the case of most extreme contraction (2 inches) the woman died after the operation.

The instrument of Sir James Simpson is a kind of cephalotribe which he calls *cranioclast*. As the celebrated Professor has done me the honour of describing fully its mode of application, I think that I should confer a benefit on French obstetrical surgery by translating the description which he gives of it.

But before giving the translation,* with which I shall terminate this work, a few words with regard to the resources that version can offer in the difficulties now under consideration, and its utility as a mode of treatment generally in contracted pelvis, will lead me to sum up all the preceding reflections by some general conclusions that have been suggested by them.

It is at once evident that in cases of extreme contraction turning can be of no utility to the child, whether it be substituted for embryotomy, or whether it be used as a means adjuvant to embryotomy. There must be no illusion in the matter; it is anything but easy for the accoucheur to introduce his hand into a pelvis whose diameter approaches to 2 inches; the difficulty in extracting the head and shoulders almost always compels him to resort to instruments of embryotomy. Of the 19 cases of version recorded in the memoirs of Madame Lachapelle, to which I have referred, 2 belong

* Vide *Medical Times*, 1860, vol. i.

to the class of extreme narrowing. In one the pelvis measured 2 inches 2 lines; the child was dead-born, weighing 8 pounds, duration of labour 14 hours. The head was not much deformed by the extraction. The mother survived. In the second, the diameter of the pelvis being 2 inches 4 lines, the head offered such a resistance to the efforts of traction that the vertebræ of the neck became separated from the occipital; traction having been suspended during an hour and a half, the head was expelled spontaneously by simple uterine contractions. The mother died 16 days afterwards in an adynamic state.

Case IX. is an instance where it became necessary to have recourse to turning after cephalotripsy had been performed. Unhappily version was practised on a woman who was in a dying condition.

Of the two cases of detruncation followed by cephalotripsy, the first (Case XI.) was a breech presentation, the mother was saved; the operation was performed under those conditions which are required for version, namely, at an early period of the labour (15 hours). The other case of detruncation is not of so much value; for it was an accouchement that had been induced by uterine douches in a pelvis narrowed to 2 inches, and at seven months' gestation. The child, which also presented by the breech, was born in a state of maceration. The labour lasted 41 hours. The mother died after four days, the autopsy showing that the uterus was ruptured.

I may remark *en passant* that of 52 accouchements in contracted pelvis, which came under my observation at the Hospital of *La Clinique*, in 5, labour was induced by means of utero-vaginal douches. The results were far from being brilliant; for only one child survived and 2 mothers died, one undelivered, and the other, a short time after delivery.

Now, with regard to the value of version as a mode of treatment generally in contracted pelvis, I think it results from all that I have said, that, notwithstanding the seductive theory which is in its favour, it cannot be considered as more advantageous for the child than the use of the forceps. It is true that Dr. M'Clintock establishes by figures (53 against 38), the superiority of turning over the other modes of terminating the accouchement. Nevertheless, it

must be remarked, that this accoucheur confesses to have had but limited experience in the use of the long forceps, when the head is at or above the brim. It is precisely in these circumstances that the long forceps is of essential service.

But I agree with Sir J. Simpson, Dr. M'Clintock, and other English accoucheurs, that version may be of great utility to the mother.

When the contraction is moderate and the dilatation of the os uteri is slow, it presents the advantage of giving aid at an earlier period of the labour. It can enable us to save the mother's life and also rescue her from lesions and those infirmities which are consequent upon them. If we are fortunate enough in certain cases to terminate the accouchement by this method alone, we obtain a very desirable result—that of dispensing with the use of instruments, especially those which mutilate the child, and, at the same time, we give it a chance, however small, of life. Embryotomy alone takes away all chance.

In cases of considerable contraction, it is not so much by the operation itself, but as ancillary to embryotomy, that it ought to be judged. Here the difficulty of cephalotripsy consists much less in the action of crushing the head, than in taking hold of it, especially in its greatest diameter. By means of version, the hand of the accoucheur may succeed in placing the base of the skull in such a position as to make the use of crushing instruments efficacious. At other times, turning can, by changing its position, draw out the head already crushed by the cephalotribe, but which has resisted all tractions made by this instrument.

CONCLUSIONS.

1. When there is only slight contraction of the pelvic brim and the presentation is favourable, Nature is often sufficient in herself to terminate the accouchement. When the measurement approaches to $3\frac{1}{2}$ inches, spontaneous accouchement at full term would be long and painful even if it could take place. In order to save the child's life, and preserve the maternal parts from lesions, the accoucheur ought not to wait more than an hour or two after the complete dilatation of the os uteri, especially if the labour has lasted from 20 to 24 hours. In that case the forceps should be used. If the labour be not much prolonged, the prognosis is good for the mother, serious for the child.

2. When the diameter of the pelvis measures between $3\frac{1}{2}$ and 3 inches, the life of the child at full term is in great danger. After waiting long enough to see whether by a fortunate chance the foetus be so small that natural contractions suffice to expel it, the forceps ought to be used. If, after one or two attempts, this instrument is found to be ineffective, and especially if the measurement approaches to three inches, symptoms of danger menacing the mother or child should not be waited for. In this case it is better not to reckon upon the birth of a living child, but to direct one's whole attention to the mother. With this view version should be performed, and if it be insufficient, embryotomy must terminate the accouchement. Turning may be had recourse to at once in certain cases of oblique oval pelvis ; but the diagnosis of this variety is very difficult to make on the living subject.

If the labour be not too prolonged, the diagnosis is good for the mother, but very bad for the child.

3. When the diameter of the pelvis measures between 3 and $2\frac{1}{2}$ inches, spontaneous accouchement at full term is impossible unless

the foetus be macerated or exceptionally small. The forceps may be tried, but it is better in the interest of the mother to perform version. This operation can rarely terminate the accouchement without embryotomy, especially if the measurement approaches to $2\frac{1}{2}$ inches. The prognosis is good for the mother if assistance is given at an early period of the labour. The birth of a live child cannot be hoped for.

4. When the diameter of the pelvis measures under $2\frac{1}{2}$ inches, the mutilation of the mature foetus is indispensable if the accouchement is to be terminated through the natural passage. In this case embryotomy must be performed. This operation can sometimes be aided by version. The prognosis is serious for the mother, and so much the more serious as the measurement approaches to 2 inches. Under this figure the accouchement at full term, even with the mutilation of the foetus, is very dangerous or impossible. Here the Cæsarian operation is indicated. By this means the prognosis becomes excessively bad for the mother, but good for her infant.

C A S E S.

The first four cases are extracted from the memoir of Dr. M'Clintock, the eight following are selected from my notes of the 51 cases of Table I.

CASE I.

Pelvis Slightly Contracted ; Version performed three times, the first followed by Craniotomy ; the Child Saved in the last two.

This patient (Case Nos. 4, 5 and 6 in Table III.,) first came under my care in her sixth labour, all her previous labours having been difficult, and four of her children dead-born. When admitted, she had been many hours in labour, and the funis was presenting along with the hand and head. Version was effected under chloroform, without any great difficulty. The head stuck fast in the brim, and no amount of force could extract it, so that eventually it became necessary to perforate, which I did by fixing the small end of a blunt hook on the lower jaw, and then carrying up the perforator through the mouth and the base of the skull.

This woman I delivered by turning, and saved the children in her two succeeding labours. The latter of them (No. 6,) took place in January, 1861. It required very powerful exertion to bring the head of the child through the upper strait of the pelvis, and it presented a considerable depression in the situation of the anterior inferior angle of the left parietal bone,—the one which had lain next the sacral promontory. A very large, sanguineous tumour formed on the left side of the head and around the indentation, immediately after birth. This disappeared in some days, but the depression remained, and, when I saw the child a month afterwards, had undergone little change.

CASE II.

Pelvis Slightly Contracted; Version; Death of the Child.

In this case (No. 12, Table III.), chloroform was not given, in consequence of the woman's determined opposition. The turning and extraction of the child went on very well till it came to the head; but, at this stage, immense difficulty was encountered. The pulsations ceased in the funis, and I really thought it would be necessary to employ the perforator and crotchet. At length the head was pulled through the brim, and instantly it cleared the outlet. The foetal heart was beating, and continued to do so for a quarter of an hour. Respiration could not be established. On the right parietal bone (that next the sacrum), was a marked depression, and, as in the case last mentioned, a tumour speedily formed in this situation. Upon dissection, this tumour was found to be caused by the extravasation of blood between the scalp and pericranium. This parietal bone was fractured, the solution of continuity extending upwards from the inferior or temporal edge, and nearer to the coronal than the lambdoidal suture. There was a slight depression of the posterior portion of the bone.

The woman recovered without any untoward symptom.

CASE III.

Diameter of Pelvis about 3½ inches; Version Performed three times, the first followed by Craniotomy, the Child Saved in the last two.

M. M. (case No. 13, 14 and 15, Table III.), in labour of her first child, was brought in the hospital at 9 a.m., the waters having come away the preceding day. Moderate pains were present. The hand and funis partially protruded through the os, which was soft, and nearly fully dilated: the head could be felt immediately above. There was some pulsation in the cord. She was immediately chloroformed, and the hand was introduced into the uterus, and one leg of the child seized and brought into the vagina, though not without some difficulty; but all the force we could use, pulling at

the leg or pushing up the head, or doing both simultaneously, could not make the child revolve. Having vainly endeavoured, for upwards of two hours, to draw down the breech into the pelvis, we had to abandon the attempt, and, as all pulsation in the cord had long ceased, I made an opening into the head. This done, a great deal of cerebrum came away, and now I was able, with moderate exertion, to pull down the breech and deliver the child, which proved to be a large male.

This woman seemed to have a pelvis not actually deformed perhaps, but of the deep masculine kind. Her two subsequent labours proved that there existed some deficiency in the size of the pelvis.

Her second labour (No. 14) lasted nearly thirty-three hours. I waited for some hours after the full dilatation of the os uteri, to see if the head would descend, but it remained quite at the brim. I endeavoured as carefully as I could to measure the pelvis with my hand when she was under chloroform, and the result showed the conjugate diameter to be about three and three-eighths inches; but this can only be an approximation. The child was a girl and born in a very weakly state, but was brought round by the persevering employment of restoratives. On the posterior part of the left parietal bone was a marked depression, which, I consider, was caused by the sacrum before the version was undertaken, the head having presented in the first position.

This woman was delivered by version a third time (No. 15) with successful result both to mother and child.

CASE i 7.

Pelvis Slightly Contracted ; Version ; Success.

This (No. 17) was the woman's seventh labour. Three of her children had been boys and three girls. With each of the former parturition was most difficult. One of them I delivered with the forceps, by the high operation. Great force had to be used; and, though the foetal heart was beating when the instrument was applied, the child was dead-born. Another boy was also dead-born,

having been delivered instrumentally by my predecessor, Dr. Shekleton ; and the third boy was expelled alive by the natural efforts ; but from the time of the breaking of the membranes till the child was born—a period of twelve hours—the pains were incessant, and of the most expulsive, violent kind. On the present occasion the waters were discharged about five o'clock A.M., after which the pains became more frequent and very much stronger than before. The foetal heart was audible high up and to the right side. For five hours this strong uterine action continued ; the head meanwhile remaining stationary at the brim. Seeing no prospect of the advance of the head, and apprehending rupture of the uterus, I put her fully under the influence of chloroform, passed up my left hand, and turned the child. The head was entering the brim in the second, or right occipito-anterior position. I had brought down only one leg, and had some little difficulty in getting the child to turn. There was much difficulty extricating the arms, and very great difficulty with the head, which was a good deal compressed laterally, and presented a depression on the right parietal bone, this having borne against the sacrum. The humerus of the sacral arm had sustained a partial, or green-stick fracture. This was the only occasion on which I ever broke the humerus when extracting the arms, though I own to having several times broken the clavicle. There was scarcely any cardiac pulsation in this child when born ; nevertheless its resuscitation was speedily effected.

The woman recovered very well.

CASE V.

Diameter of Pelvis $3\frac{1}{2}$ inches ; Transverse Presentation ; Version Performed under Unfavourable Circumstances ; Death of the Child.

D....., 29 years of age, gave birth to a boy at full time at the hospital of *La Maternité*, in Paris, on 10th July, 1856. The child lived ten months. She was again seized with the pains of labour on 28th December, 1857, at 4 o'clock p.m.

She was at first attended by a midwife who did not discover the

nature of the presentation until about an hour after she had ruptured the membranes (December 30th, at 2 p.m., after thirty-four hours' labour). She then sent for a doctor, who, having examined the patient, contented himself with prescribing some powders, which were probably composed of ergot of rye. In fact, the woman asserted that after she had taken the powders the pains became stronger and more frequent. The doctor quitted his patient between five and six o'clock in the morning and returned to her at nine. He then merely examined her again, and said that there was nothing to be done but to wait. It was only at 3 p.m. that a second doctor was sent for, who, after having examined the woman, immediately tried to turn the child. Not being able to succeed, he advised that she should be taken to the hospital of *La Clinique*.

On her arrival at the hospital, the uterus was found to be in a very contracted state; nevertheless, the child, whose right arm lay in the vagina, was still living. The beatings of the foetal heart were slow, but regular. M. Dubois, having made himself acquainted with the state of the case, proceeded at once to perform version. After having fixed the arm with a piece of broad tape, he with his right hand brought down the right leg, then the left, and afterwards the trunk was extracted. Up to this time the operation, notwithstanding the rigidly contracted state of the uterus, and especially of its orifice, did not present very serious difficulties; but, when extraction of the head commenced, the difficulties became very considerable. They were due not only to the contracted state of the os uteri, but also to a projection of the sacro-vertebral angle by which the antero-posterior diameter of the superior pelvic aperture was reduced to $3\frac{1}{2}$ inches; although the patient declared that she had been very easily delivered of a first child, who was large and lived ten months. The labour was terminated at 5.30 p.m., December 30th. The child was dead-born, weighing 6 pounds.

Chloroform was used during the whole period of the operation. It did not appear to have much influence on the contracted state of the uterus.

The woman quitted the hospital, in good health, on the 14th January, 1858.

CASE VI.

Antero-posterior Diameter of Pelvis, 3½ inches ; Transverse Presentation ; Version ; Success.

G....., primipara, 35 years of age, good condition. This woman being at full time of pregnancy, felt the first pains of labour on the 26th July, 1859, at four o'clock p.m., and the rupture of the membranes took place on the 28th, at one a.m. On her arrival at the hospital at noon of the same day, the presentation was found to be transverse (left cephalo-iliac), the os uteri being completely dilated.

M. Dubois immediately turned the child, the operation presenting no serious difficulty, and brought into the world a girl, weak, and weighing 4 pounds.

The mother had excellent *suites de couches*, and she and her child quitted the hospital in good health on the 13th August.

CASE VII.

Antero-posterior Diameter of Pelvis, 3 inches ; Transverse Presentation ; Spontaneous Version at full Term of Gestation ; Death of the Child.

E....., 20 years of age, dressmaker, of good constitution, second pregnancy.

This woman's first accouchement took place at *La Clinique* on the 25th July, 1858. After many vain attempts to deliver her with the forceps, the accouchement could only be terminated by cephalotripsy.

Her second labour commenced very suddenly on the 4th August, 1859, at 4 o'clock p.m. At 7 o'clock the midwife not being able to discover the presentation ruptured the membranes, and then found

that the shoulder presented. She immediately sent for a doctor, who on learning the circumstances under which the former accouchement had taken place advised that she should be again taken to the *Clinique*. She entered the same day at 11 p.m.

When the particulars of her first accouchement became known at the hospital, and when it was ascertained that there was now a transverse presentation in a pelvis so deformed at the brim that it was necessary the preceding year, after 67 hours' labour, to lessen the head, which presented by the vertex, the child weighing 6 pounds; the prognosis was considered to be very unfavourable both for mother and child.

M. Dubois was sent for, but not being able to come, M. Taurin, his *chef-de-clinique*, attended instead. He found, in fact, that the right shoulder presented with the funis protruding. After examining the woman, he deemed it advisable to adjourn all operation until the morning. Since the membranes were ruptured the pains had become very weak, and continued so on the 5th until half-past 6 a.m. The contractions then became excessively strong.

Shortly after my arrival in the *salle d'accouchements* (at 7 a.m.) I examined her, and found that a change had taken place in the presentation. The pains were so extremely intense that the woman's screams became extraordinarily violent, and in a short time the left buttock appeared at the vulva. The breech and lower extremities were then gradually expelled, but notwithstanding the persistence of most energetic contractions, things remained in this state for half an hour. The absence of pulsations in the umbilical cord which was protruding, had already given me the certainty that the child was dead.

Seeing that the labour did not appear to have the least probability of making progress, and knowing that at nine o'clock it was intended to deliver the woman by artificial means, I was about to quit her for a short time, not having any hope of seeing the labour terminate naturally; but reflecting further on the extraordinary phenomenon of which I had been witness, namely, a primitive shoulder presentation converted, without artificial means, into a breech presentation, the child at full time and in a deformed pelvis, I

resolved to see, though without much hope of success, whether, profiting by such very strong contractions, nature, which had already done so much, could not be aided.

With this view I passed up my hand, and found that the shoulder had passed the brim, and that the arms were flexed on the breast. I reached the head, not without difficulty, and found that it was above the brim. Introducing my index finger into the mouth (the face being turned to the left), I profited by the coincidence of strong contractions to use vigorous tractions on the chin, and had the satisfaction to feel that the head came down. I then, with some difficulty, withdrew the shoulder, and in about ten minutes afterwards the woman was delivered, to my great surprise, and to the astonishment of many who had been attracted to the spot with the expectation of witnessing a difficult operation, similar to that which the patient had undergone the preceding year.

The child weighed $5\frac{1}{2}$ pounds. The principal diameters of the head measured:—

| | | | |
|---------------------------|---------|-----------|----------|
| Fronto-occipital diameter | . . . | 4 inches. | |
| Mento-occipital | „ . . . | 4 „ | 8 lines. |
| Bi-parietal | „ . . . | 3 „ | 2 „ |

With the exception of a slight bilious attack the *suites de couches* were very good, and the woman quitted the hospital in perfect health at the end of nine days.

CASE VIII.

Antero-posterior Diameter of Pelvis $2\frac{1}{2}$ inches; Premature Accouchement accidentally induced by Rupture of the Membranes; Uterus rigidly contracted; Transverse Presentation; Version; Detruncation; cephalotripsy; mother recovered.

V....., 24 years of age, primipara, enceinte seven months and a half, entered the hospital of *La Clinique* on the 5th July, 1858. A premature rupture of the membranes without any appreciable cause had taken place. From this time she had weak pains separated by long intervals. It was only on the 7th July,

about eleven o'clock at night, that they began to be strong and frequent.

On the morning of the 8th July, an examination was made, and the left shoulder was found presenting in the second position (right cephalo-iliac), the arm lying in the vagina. The patient was immediately taken to the *salle d'accouchements*, when M. Dubois examined her, and discovered that the pelvis was considerably narrowed antero-posteriorly; he thereupon immediately proceeded to perform version, though he feared that the operation would be attended with great difficulties, practised under such unfavourable circumstances. Nevertheless, as the fœtus had not arrived at full term of intra-uterine life, he did not despair of success. At the commencement of the operation much difficulty was encountered owing to the very contracted state of the uterus. But, after many laborious attempts, the right foot was brought out, then the left, and the extraction of the trunk was effected. But in the extraction of the head the difficulties became altogether insurmountable, chiefly owing to the considerable narrowing of the upper strait, but also partly to the great resistance presented by the os uteri which was strongly contracted on the neck of the child.

Detruncation was then effected, the non-viability of the fœtus being beyond a doubt. M. Dubois then applied the cephalotripe twice, and thus succeeded in bringing out the head. The operation of cephalotripsy itself was rendered difficult by the strong resistance of the os uteri.

During all these long and tedious operations the patient was kept in a complete state of anaesthesia by the inhalation of chloroform.

She quitted the hospital thirteen days after the accouchment.

CASE IX.

Antero-posterior Diameter of the Pelvis, 2 inches; Version performed in extremis after Cephalotripsy.

F....., entered the *salle d'accouchements* of *La Clinique* on the morning of the 16th August, 1858. She was 19 years of

age, primipara, and at full time. Labour commenced on the previous evening at 10 o'clock, but the pains were slight and separated by long intervals.

Struck by her very diminutive stature I examined her, and found that there was a considerable narrowing of the pelvis, the sacro-subpubic diameter measuring only about two inches and a half. On questioning her, she said that she was nearly seven years old before she commenced to walk. Her limbs were curved and also the spinal column.

At half-past seven in the morning the uterine orifice was dilated to the size of a crown piece, and at nine the dilatation was complete. At this hour M. Dubois arrived and ruptured the membranes.

At 4 p.m., the labour making no progress, craniotomy was performed by M. Taurin, who immediately afterwards applied the cephalotribe and crushed the head; but this could not be brought down, in spite of strong tractions. The second time part of the head seemed to come down. The woman was then left until half-past five, at which hour the cephalotribe was again used, but without being able to get a good hold on the head. M. Dubois again tried, but had great difficulty in inserting the branches of the instrument, on account of the anfractuousness caused by the broken bones of the skull. After two fruitless attempts he adjourned further operations until eight o'clock. At that hour things were *in statu quo*, the patient having had but slight pains in the interval. Three pills of extract of opium were administered, and she was left until the morning.

On the 17th, at 7 a.m., the patient was in exactly the same state as far as regards the labour. The skin hot and dry, pulse at 120. At 9 o'clock, M. Dubois, having again employed the cephalotribe in vain, requested M. Taurin to perform version. This was effected by pushing back with the fingers the bruised bones into the cavity of the cranium, the integument covering them completely. The operator then passing his hand over the head succeeded in taking hold of the left foot, which he brought out with some difficulty, and to which a tape-string was attached. But in spite of repeated efforts the other leg could not be brought down. The cephalotribe

was then applied to the pelvis, but all attempts to extract the fœtus remained unsuccessful. Much blood then escaped, and soon afterwards the woman became very pale. She had been half an hour in a complete state of chloroformisation; and M. Dubois, taking into consideration the character of the facies, caused all operation to be suspended. Cold water was sprinkled over the face and a current of fresh air directed towards her, wine was administered, and in ten minutes she recovered.

It was now 9 a.m. At half-past 10, severe rigors came on, which lasted twenty minutes. At eleven she vomited black matter abundantly. From this moment she became plunged into a state of exhaustion, strong uterine contractions coming on at intervals. At noon M. Dubois came to see the patient, and, after some minutes, advised M. Taurin to use tractions by means of the leg which protruded from the vulva every time that contractions supervened. He made these tractions two or three times until half-past one o'clock, and then succeeded with the crotchet in bringing down, or rather disjuncting the other thigh. Some minutes afterwards the fœtus was entirely extracted; but at the same instant the unfortunate woman expired.

18th, *Autopsy*. Vagina torn, uterus not completely ruptured, but presenting on its inner side an *enfoucement* of the finger of a glove shape, penetrating almost through the tissue of the organ. The dimensions of this lesion correspond in size with the blade of the cephalotribe.

The pelvis is more deformed than was supposed, its antero-posterior, or sacro-pubic diameter measuring not quite $2\frac{1}{2}$ inches; its left side very contracted.

The child weighed $5\frac{1}{2}$ pounds without the cerebrum. It appeared very large, owing to a state of infiltration.

CASE X.

Antero-posterior Diameter of Pelvis, $2\frac{1}{4}$ inches, Vertex Presentation; Craniotomy; Cephalotripsy; Death of the Mother.

D....., 29 years of age, of weak constitution, entered the hospital of *La Clinique* on the 31st March, 1857, at 10 o'clock a.m.

She had had a miscarriage at two months' gestation, but was now at full time.

Before her arrival at the hospital no attempt at artificial accouchement had been made; the dimensions of the pelvis were judged to be such as to render it indispensable that the expulsion of the child should be aided by the highest obstetrical skill. It was not alive.

The pains of labour commenced on the 29th, about one o'clock in the morning, and the membranes ruptured spontaneously on the 30th at noon.

The conduct to be adopted in this case was plain and clear. M. Dubois perforated the cranium, and after the evacuation of the cerebrum, the head was left to make progress by the effort of nature. As this progress did not take place, M. Dubois resolved on terminating the accouchement by means of the cephalotribe. Notwithstanding all his endeavours, he could not get a hold on the head so as to crush it. Placed completely above the brim it rolled under the pressure of the forceps, and escaped from the teeth of the instrument. It was therefore, necessary to wait until contractions should render it more seizable. At 8 p.m. another attempt was made, but not more successful than the first, and from the same cause. It was considered expedient to wait.

The next day, 1st April, the head was more down, it could be held by the instrument, and at 9 a.m. M. Dubois terminated the accouchement, still with much difficulty, but this time it was more attributable to the narrowness of the passage. The extraction of the foetus was accompanied by an escape of gas and bloody discharge

of such fetid nature that those present were much affected by it. When all was finished the patient was carried to a clean bed. An intense tympanites soon came on, which caused severe abdominal pains, and the woman succumbed about 6 o'clock the same evening.

The autopsy showed that a rupture of the vagina, extending to the lateral and posterior part of the uterine neck, had been produced during the labour, and had probably been the cause of the prompt death of this woman.

CASE XI.

Antero-Posterior Diameter of Pelvis, 2 inches; Breech Presentation; Detruncation; Cephalotripsy; Recovery of the Mother.

C....., 24 years of age, of weak constitution, entered the hospital of *La Clinique*, on the 17th February, 1859, at full time of her second pregnancy.

She had been delivered of a mature foetus by M. Dubois, on the 24th December, 1857, by cephalotripsy.

The first pains of labour came on the 17th February, 1859, at 4 o'clock a.m. The membranes ruptured spontaneously the same day at noon, whereupon she immediately set out for the hospital. On the road the umbilical cord escaped from the vulva, and on her arrival at the *salle d'accouchements* it was still pulsating. The presenting part of the child was very high up, and there was some uncertainty with regard to the diagnosis; but in a few minutes a foot emerged from the uterine orifice, and the presence of the breech was no longer doubtful.

The narrowness of the abdominal strait not permitting us to hope for a spontaneous accouchement, nor even with aid the birth of a living child; M. Dubois waited until the uterine contractions had expelled the trunk through the pelvic passage in order to operate on the head. The expulsion of the trunk was complete about half-past 4 p.m., but after the shoulders were through, the head remained, fixed at the brim. It became necessary to perform detruncation, and afterwards to apply the cephalotribe on the head, which remained

in the uterus above the brim ; its volume was diminished by crushing. This operation was difficult on account of its mobility and the exiguity of the pelvis ; but when the head was firmly held and crushed it was brought out with not much difficulty.

The accouchement was over at a quarter to 7 o'clock, the labour having lasted fifteen hours. The child weighed $5\frac{1}{2}$ pounds without the cerebrum.

During the whole time of the operation chloroform was administered, but its influence was only partial.

CASE XII.

Antero-Posterior Diameter of Pelvis $1\frac{1}{2}$ inch ; Vertex Presentation ; Craniotomy and Cephalotripsy ; Death of the Woman Undelivered.

R, 29 years of age, primipara and at full time entered the *salle d'accouchements* of the *Clinique*, on the 4th April, 1859, at 7 o'clock in the morning. This woman was extremely diminutive, and the deformity of the pelvis very manifest. The sacro-sub-pubic diameter measured a little more than $1\frac{1}{4}$ inch.

She had been in labour four days, under the care of a midwife and a doctor ; the latter (according to the opinion of M. Dubois) having probably mistaken the promontory of the sacrum for the head of the child, told the woman that he would deliver her with instruments, and applied the forceps several times ; but the midwife persuaded the patient to go to the hospital.

The child being dead, M. Dubois at half-past 9 proceeded to perform cephalotripsy. There was much difficulty in perforating, owing to the projection of the sacrum, and of the anterior lip of the os uteri. Perforation being effected, M. Dubois used the cephalotribe four times without success. At the fourth, pains came on, which induced him to suspend further operation in order to see whether they would bring down the head. At 4 p.m. no progress having been made, everything was prepared for the Cæsarian section ; but in this case the operation did not offer the usual advantage, as the child was dead, so M. Dubois determined to try the

cephalotribe once more. He applied the instrument three times, but could not succeed in bringing down the head.

A consultation was then held as to the best course to pursue. M. Dubois was of opinion that it was better to wait, alleging that, if the Cæsarian section were made, the patient would probably die under the hands of the operator.

She was therefore, taken back to her bed at 5 p.m., and at 9 p.m. she expired.

Autopsy.—Although the greater part of the foetal head had been completely crushed, there was a portion of the base of the cranium remaining intact, which was too large to pass through the upper pelvic strait. The diameter of this aperture, which could be now measured with precision, was not more than $1\frac{1}{4}$ inch; the diagnosis made during life by means of digital examination was thus confirmed.