

AN
E S S A Y
ON
DIFFICULT LABOURS.

PART FIRST.

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Difficult Labours.

FOUR ORDERS.

O R D E R I.

Labours rendered difficult from the inert or irregular action of the *Uterus*.

O R D E R II.

Labours rendered difficult by the rigidity of the parts requiring dilatation.

O R D E R III.

Labours rendered difficult by disproportion between the Dimensions of the *Pelvis* and the head of the child.

O R D E R IV.

Labours rendered difficult by diseases of the soft parts.

CLASS SECOND.

DIFFICULT LABOURS.

CHAPTER VII.

SECTION I.

FROM this history of a natural labour, and from the tenour of what has been advanced in the preceding chapters, it appears that parturition is a process of the constitution which generally, requires no assistance; and that when it is natural, it should be suffered to have its own course, without interruption; for the very same reasons, which render all interposition with other natural operations, unnecessary and improper. Whence then arises the necessity or expediency of establishing midwifery as an art for the relief of the human species? or in what respects has society profited by the establishment? Certainly neither on the presumption that women are by nature def-

titute of those powers, which at the time of parturition, are in all other creatures generally equal to the exigences of their situation; nor when those powers are fairly exerted, every cause producing its effect, in the order and in the manner which the parts by their construction were framed to perform and undergo; nor, when there exist no uncommon impediments, by which the effect to be produced by the operations of the natural causes, may be obstructed. But as the aid of medicine becomes necessary, when from some defective, or irregular exertion of the native powers of the constitution: or from some adventitious cause of obstruction, or from some infirmity in the constituent parts of any of the organs of the body, the functions of any part may be suppressed, impeded, or in some way rendered irregular, to the detriment of the part, or of the constitution: in like manner, the assistance of the art of midwifery may be required for the relief of irregularities or difficulties in the act of parturition.

In all creatures in which there is a difference of structure, there must be a difference in the conduct of every function of the constitution, which is at all connected with, or dependent upon such variety in structure; and a difference in the process of any function, especially if that should be rendered more complex, may become the predisposing cause

cause of such deviations from the natural course of the action, as may require the assistance of art: though the very same function, proceeding in a natural way, might be void of danger, and require no assistance whatever. The knowledge of the peculiarities of the human species, or of the specific circumstances in which women differ from all other female creatures, may therefore be considered as affording the only just and true basis on which the practice of midwifery ought to be founded. Before we proceed then, to an enquiry into the particular cases which may demand the assistance of art, or determine upon the manner in which that art can be exercised with the greatest advantage, a review of those peculiarities will be necessary and useful.

The first and most obvious circumstance in which women differ from all other female creatures, is in the erect position of the body; of the consequence of which, with regard to the *pelvis*, and some diseases to which women are particularly liable, notice has been already taken*. In the original construction of the *pelvis* in quadrupeds, with a view to parturition, there seems to be a necessity of regarding its capaciousness alone; because if even more than sufficient space were provided for the passage

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* See the Introduction, Chap. i. Sect. 5. and Chap. ii Sect. vii.

of their young, no attitude into which they put themselves, or into which they can be compelled by any accident, during utero-gestation, would subject them to danger on this account. But from the erect position of the human body, if the cavity of the *pelvis* had borne the same relative proportion to the size of the *fœtus* as in quadrupeds, women would have been liable to many and great inconveniencies; as the weight of the *ovum* and enlarged *uterus* must, in advanced pregnancy, have been occasionally sustained by the soft parts; which becoming thinner and less equal to that office, according to the advancement, premature labour would often have been brought on. For this, and perhaps several other less obvious, though equally important reasons, which it is not necessary to enumerate, there undoubtedly is a greater difference between the dimensions of the cavity of the *pelvis*, and the head of the human *fœtus* at the time of birth, than in any animal; and this difference must eventually become the cause of more painful and difficult labours.

As there is no effect throughout nature without some sufficient cause, as well as some wise end, perhaps the most satisfactory proof of the existence of this disproportion, may be drawn from the construction of the head of the human *fœtus*, which being incompletely ossified at the time of birth, is capable of having its form changed, and its size diminished,

diminished, without any injury from the compression. These effects are produced in some degree in almost all labours, but very remarkably in those which are compleated with difficulty; for in such, the sutures not only accede, but the edges of the bones will ride over each other in a very extraordinary manner. From this original and comparative relation between the cavity of the *pelvis*, and the head of the *fœtus*, women are naturally more liable to difficulties in parturition, than animals; which difficulties may be esteemed as an allay for the advantage obtained by the erect position: or because their offspring were so framed as to be capable of greater excellencies than animals; which excellencies may depend upon this construction of the head. Without this incomplete ossification, great numbers of children must have been inevitably destroyed at the time of birth, or the parents must have died undelivered. Nor is this provision only sufficient to answer the end of mitigating those evils to which women are by their structure necessarily liable; but it is generally equal to the relief of those which are occasioned by morbid alterations in the size of the cavity of the *pelvis*.

2. The intercourse between the parent and *fœtus*, while it abides in the *uterus*, though generally alike in all viviparous animals, has some variation in each class. The *ovum* is constructed for a temporary use, but in a most beautiful and perfect

perfect manner for the purposes for which it was ordained. The variations may exist either in the *uterus* or *ovum*.

In the *uterus* of the different classes of animals, the most obvious variety is in the form. Animals might, perhaps, be nearly as well arranged, and the class to which they belong as well determined by the form of the *uterus*, as by any other external or internal mark. Such as are the form and structure of the *uterus*, such will be the properties, and of course in every animal in which there is a difference in form, there will be some corresponding difference in the circumstances of parturition; so that it is probable we should not, on enquiry, find an exact likeness in the parturition of any animals which vary either in *genus* or *species*.

The *uterus* in all animals may be considered as the bed or soil in which the *fetus* is preserved and nurtured, till it arrives at a state of perfection, and by which it is ultimately expelled. For the completion of these ends, there must be a perfect coincidence between the nature of the *fetus* to be preserved and nurtured, and the properties of the *uterus*, which performs those offices. The varieties in the form of the *uteri* of different animals are progressive, from those of the lowest tribe, to the human, which when un-impregnated, is pyramidal, becoming more oviform according
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ing to the degree of its distention. On the form not only the accommodation of the *fetus* may depend, but the term of utero-gestation also; or the power which every individual *uterus* has of bearing distention only for a certain time. Yet if this were allowed, it would still remain to be enquired why an *uterus* of one form, became capable of bearing distention for a longer time than that of another.

Complicated with, or dependent on form, is the substance or thickness of the *uterus*; and on this again the power which the *uterus* is capable of exerting at the time of parturition. The *uterus* in women is of greater thickness, and of a firmer texture in the un-impregnated state, than in animals; and in these it is said to become somewhat thinner, in proportion to its distention; whereas in women it retains its thickness, or becomes rather thicker during pregnancy. It appears that by this thickness is gained the medium of that power which is exerted by the human *uterus* in the act of parturition, and without which women could not in many cases have been delivered. But if there had been occasion in animals, for the exertion of an equal degree of power, they could not have been delivered; as there is not in them a medium by which such power could have been exerted, and the form of the *uterus* would also have been unfavourable for its operation.

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This thickness of the *uterus*, notwithstanding its distention, is chiefly preserved by the enlargement of the arteries, veins and lymphatics, and their enlargement is most conspicuous about that part to which the *placenta* adheres. The quantity of blood circulating in the human *uterus* and the adjacent parts, during pregnancy, is very great; and it probably undergoes some preparatory change, before it is conveyed to the *placenta*; so that it may be presumed, that the *uterus* performs the office of a gland preparing the blood, before it is conveyed to the *placenta*, for a more perfect secretion of whatever is to be separated from it, for the use of the *fœtus*; as well as of a containing part of the *ovum*. On the quantity of blood may also depend the action of the *uterus* at the time of labour; for if the *placenta* be loosened before the child is born, and the blood has a free discharge, there is seldom any efficacious action, though the *uterus* may be, in all other respects, in a state of perfect health.

In our present enquiry, the principal part of the *ovum* which deserves attention, is the *placenta*, and of this there is an endless variety in the different kinds of animals, according to the nature and properties of each parent and the offspring. In the *belluæ*, the office of the *placenta* is performed by the whole membrane of the *uterus* being thickened,

ed, and becoming proportionably vascular; in the *pecora* it is divided into many lobules, composed of long and vascular fibres, called *cotyledons*, affixed to as many temporary eminences of the internal surface of the *uterus*; in the *feræ* it surrounds the *uterus* like an internal belt; and so on, with great variety, in the different classes of animals. But in the human species, the *placenta*, as the word implies, is in one mass, of a circular form, flattened, and becoming gradually thinner towards the edge, adheres to the *uterus* with a broad surface. When this is separated, the orifices of many of the large vessels of the *uterus* are opened, and a considerable quantity of blood is immediately discharged, far beyond what could possibly be lost in any animal, though of a much larger size; and if the *uterus* was to continue distended, the orifices remaining open, there would be a dangerous or a fatal hemorrhage. For not only the blood circulating in the *uterus* would be immediately poured out of its vessels, but all that which is contained in the body might be drained, and the patient speedily perish, if she were not relieved by art; and yet no animal ever was or could be destroyed, or brought into danger by this circumstance. For the same reason also, the uterine discharges continue a longer time, after delivery, in women than in animals; the irregularities and interruption of which may become the causes of disease, and are proofs that

that independent of fashion or custom, there is a necessity that women should, for their own safety, be separated from society for a certain time after delivery. On account also of the form of the *uterus*, and the peculiarities of its action; of the bulk of the *placenta*, and the manner of its connection, it is more likely to be retained in women than in animals; and its retention may be followed with worse consequences.

3. In the consideration of this subject, the passions of the mind are of too evident importance to escape attention. On a variety of occasions, these, in human beings, (to a certain degree, in a natural state, and much more when heightened by all the refinements and perversions of society,) are found to be capable of producing the most extraordinary effects; by suppressing or suspending for a certain time the action of any, or of all the powers of the constitution; by occasioning them to act with irregularity, and at improper times; and in some cases also by exciting them to act with too great energy and force. But animals suffer neither from the recollection of the past, or dread of the future; and acting according to their nature, the good or evil of the present moment, to them appears to be the whole of their existence. In the passions we may then discover sources of danger, and disturbance in the parturition of women, from which animals are exempt; and the observation is so

so general, that care is universally taken to prevent the communication of any intelligence to women in, or about to be in labour, which can either distress, or much agitate them. To this principle or cause, may also be referred, the many nervous affections to which women are subject in the state of childbed, and for some time after they are delivered, when the animal powers are reduced, and the sensations quickened. But it must be allowed, that the greater degrees of these evils, are not to be attributed to physical infirmities, but to moral errors.

A consideration of their unimpaired constitutions and less exquisite feelings, will likewise discover to us the reason why the lower orders of women have more easy and favourable births than those who live in affluence; the frame of whose bodies, and the sensibility of whose minds are altered, and often depraved, by the indulgence of parents, when they are infants, and by their own luxury, when they are adults. The constitutions of those who are hardy, are better able to bear the common accidents of child-bearing, and they suffer less because they have less feeling and apprehension. When the *Egyptian* midwives were charged before *Pharaoh* with disobedience to his orders, because they preserved the lives of the *Hebrew* children, they pleaded in their excuse, that the *Hebrew* women were not like the

Egyptian, " they were lively, and were delivered before they (the midwives) could come to them." The *Hebrew* women were slaves, accustomed to labour and hard living; but we may presume, that the *Egyptians* suffered all the evils arising from indolence and luxury. The same observation will also explain the reason of many of those evils which women in the higher ranks of life suffer; particularly why fewer women die in child-bed in the country than in cities, where even those of the lower class, too often plunge into gross indulgences, and therefore suffer the same or a worse fate, than the delicately luxurious.

4. We are lastly to consider, that women are by constitution and by habits of education and living, subject to diseases to which animals are not liable; which diseases become of great consequence, by creating new causes of difficulty, or by increasing natural evils, or by weakening those powers by the operation of which, difficulties should be overcome. All these diseases it is unnecessary, and perhaps impossible to enumerate; but that, which by affecting the bones in general, and those of the *pelvis* in particular, has the greatest influence on labours, is deserving of especial notice.

By the *Rachitis* is not only understood the disease of children properly so called, but the *osteo-sarcosis*, or *mollities ossium* also, this being the
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the only difference between them; that in the former, the bones, in the infantile state, are prevented from acquiring such a degree of firmness, as will enable them to sustain the weight of the incumbent body, without yielding and becoming distorted; which distortion may remain to adult age. But, in the latter, the bones having been properly ossified, become soft again, in consequence of the absorption of the ossific matter, by which the most extreme degrees and frightful kinds of deformity have been sometimes occasioned. From distortion produced by either of these causes, the cavity of the *pelvis*, which in a natural state, should measure upwards of four inches, in its narrowest limits, may be reduced to two, or even to less than one inch; by which the reciprocal proportion between it and the head of the *fœtus*, is perverted or destroyed, and it is absolutely impossible for the latter to pass through the former. This softness and consequent distortion of the bones, being peculiar to, or infinitely more frequent in the human species, occasions difficulties at the time of parturition, from which animals are almost universally free. Even if animals were liable to it, from their position, and the diminished weight which the *pelvis* in them supports, it could not produce the same kind or degree of effect. From the frequency of this disease, in cold and unwholesome climates, or in crowded

crowded cities, where the employments and manners of the human race, weaken the constitutions of the inhabitants; and from its rarity in warm and healthy situations, with rustic employments and simple manners, we may conclude, though we retain and act upon the same principles, that the events of the practice of midwifery must be different in different places, and that the authority of the best writers must in some measure be local.

On account of the originally relative smallness of the *pelvis*, of the structure of the *uterus* and *placenta*, of the passions, and of the diseases to which mankind are by nature, or by the customs of society, peculiarly liable, the causes of many difficulties and dangers which attend parturition, will be evident; and of course the necessity of establishing midwifery, as an art, for the relief of women.

But to render these observations, with others, diffused through this essay, of greater use, I shall endeavour to reduce them into propositions in the following order :

1. All viviparous animals bring forth their young with pain.

2. The degree of pain which they suffer, will depend upon the degree of their sensibility, natural or acquired, and upon the difficulty with which they bring forth their young.

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3. The difficulty with which they, in general, bring forth their young, depends upon their construction.

4. But by their construction, they are also endowed with powers capable of overcoming all the difficulties to which such construction generally renders them liable.

5. The process of parturition in animals, is therefore to be esteemed a natural process, requiring no other assistance, than the exertion of those powers which depend upon their construction.

6. The construction of the females of the human species is different from that of the females of any order of animals.

7. The construction of the females of the human species is such, as to render them unavoidably subject, in general, to greater pain and difficulty in parturition, than the females of any order of animals.

8. But by the construction of the females of the human species, and by the original formation of the head of the human *fetus*, provision is made for overcoming all the difficulties to which the peculiarities of their construction may render them generally liable.

9. With regard to the act of parturition, when natural, women are therefore to be esteemed on a similar footing with animals.

10. But

10. But as women are by their construction, and by the customs of society, subject to diseases and accidents, which increase the natural difficulties and danger attending their parturition, from which the females of every order of animals are free;

11. It will follow, that the occasions which require assistance at the time of parturition, must, of necessity, occur more frequently in women, than in the females of any order of animals.

From these premises, the expediency and necessity of establishing midwifery as an art for the relief of the human species, will appear.

S E C T I O N II.

MANY general circumstances and appearances have been mentioned, and considered as the presumptive signs of difficult labours; and though I apprehend, that much stress cannot be laid upon them with a view to practice, it will not be improper to enumerate them. If they were certain and invariable, it would be incumbent on us to understand the degree and extent of their influence, and to apply ourselves to the discovery of some means, by which we might prevent or remedy the evils we foresaw.

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The kind of labour which any particular woman will probably have, has been supposed to depend, in some degree, upon her complexion. Women with very fair or very dark complexions, have been considered to be equally subject to difficulties or inconveniencies in parturition; whilst those of the intermediate shades were supposed to have advantages in their favour. Now, as far as any particular complexion can indicate a general state of health, this observation is reasonable and true, with respect to labour; those who have the best health, usually passing through that process in the best and safest manner. But as those who are of complexions in either extreme, may have perfect health, any inference drawn from this principle, must be liable to many exceptions.

By the general size of the body, it has been conjectured that we might foresee whether an ensuing labour would be easy or difficult. This observation will stand upon the same ground with the foregoing; that is, it may hold good, as far as one certain size may be found best suited for the performance of all the functions of the body, and the purposes of life. Those who are very tall, are not often very active, (or capable of bearing much fatigue); and those who are very short, may have become deformed in consequence of ill health in the early part of their lives: Those on the con-

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trary,

trary, who are of a middle size, or rather below it, being presumed to be more generally healthy, and best adapted to the common occasions of life, may be expected to have the best labours, as they have sufficient power, and a readier disposition to act.

The habits of life, and the dispositions of patients, have been supposed to have some influence in forwarding or retarding labour. Those women who are indolent in their habits and dispositions, perform all the functions of the constitution in a slow and indolent manner, and of course may be expected to have tedious labours. But those who are of lively dispositions and active habits, being in the constant exercise of their powers, have not only these powers strengthened, but greater energy also; and the activity of the parts concerned in parturition, will partake of that of the body in general.

The regularity, together with the ease or difficulty of a labour, may, in some measure depend upon the strength or weakness of the faculties of the mind; but this must be a very general observation, and can only hold good in that extensive way in which it is admitted in other occurrences of life, in which weakness of judgment may fancy evils that do not exist, or add to the weight of those which are unavoidable.

Labours are generally affected by the climate
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in which women live. In hot climates, all natural labours are said to be more easy than in those that are cold; probably, because the disposition to relax and dilate, is more perfectly assumed. But in cold climates, from the acquired rigidity and firmness of the parts, there will be occasion for greater exertion, though there may be greater power; and if the labours are slower, perhaps the feelings are less, and they may terminate with equal safety, and without greater suffering. In the same climate there will generally be some variations in labours at different seasons; and I believe it is true, that in this country, women have easier labours in summer than in winter.

Such observations might be extended to a greater length, and discussed with more nicety; but they can hardly escape the notice of an attentive man, and he that is prudent will not esteem them of too much value.

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S E C T I O N III.

WITHOUT some accuracy of distinction, it will not be possible to acquire such a knowledge of *Difficult Labours*, as will enable us to conduct women through them safely and properly; and it is therefore necessary, in the first place, that we should define what is meant by the term. We will then say, that every labour shall be called *difficult*, in which the head of the child presents, if the labour is protracted beyond twenty-four hours*.

This definition, which is chiefly taken from time, is liable to some objections, as there may be more pain endured, and greater difficulties surmounted by one woman in six hours, than by another

* Fit partus difficilis et laboriosus, quod nec modo neque ordine debito res peragatur, aut pravis aliquibus symptomatis impediatur. HARV. *Exercit. de Partu.*

Dicitur autem partus ille difficilis, qui cum foetus vel matris periculo accidit; vel quia cum gravissimis fit symptomatibus, vel quia tardius procedit, ita ut longo tempore prematur mulier—*Roderic. a Castro Lusitan.*

Partus difficilis appellatur, qui debitas atque ordinarias naturæ leges non servat, sed longius tempus insumit, et dolores subito vehementiores, aliaque symptomata graviora comitantia habet—*Riverii Prax. Medic. De Partu difficili.*

Fœtus maturi enixus laboriosissimus, *Linnaei Nosologia.*—

other in twenty-four; but on the whole, it will be found to apply in an advantageous and unexceptionable manner in practice. It will, in particular, afford a remedy for impatience, and guard the practitioner, in some measure, from premature attempts to give assistance, without incurring the danger of those evils which might be apprehended from too long delay.

Of those labours which come under the denomination of *Difficult*, there is an almost endless variety in their causes or their degree. Some are occasioned by one cause alone, but more frequently by a combination of various causes; though one may be more obvious and important than the rest*. For the uses and purposes of practice, it is not enough to say, that all labours are rendered difficult, either from the greatness of the obstruction, or by the insufficiency or debility of the power by which the obstruction should be overcome; or, that some depend upon the mother, and others upon the child. Such distinctions are too general. The particular cause of every indi-

* As many causes concur in the production of compound effects, we are liable to mistake the predominant cause, unless we can measure the quantity of the effects produced, compare them with and distinguish them from each other, and find out the adequate cause of each single effect, and what must be the result of their joint action.

See Dr. DESAGULIER'S *Preface*.

vidual difficult labour, should be pointed out, as well as the conduct which each specific cause may require. It was before observed, that there are advantages to be gained by experience, of which no doctrine or words can convey an adequate idea; and those who are in possession of experience, seldom bend to the rules of others. But it is of the greatest consequence to those who have not yet gained experience, that they should acquire the habit of registering and arranging the particular knowledge they may have an opportunity of gaining, into regular order, or they will lose the benefit of it; as it will either be lost, or recollected with difficulty, when they want to apply an observation made in one case to the exigencies of another. To prevent these defects, we will divide all Difficult Labours into four Orders or Kinds, and then enumerate the principal causes of each Order. As the knowledge of causes, and the management or removal of effects or difficulties, should go hand in hand, the methods to be used for the relief of these, will at the same time be pointed out.

In the *First* Order will be included all those labours which are rendered difficult from the inert or irregular action of the *uterus* :

In the *Second*, those which are occasioned by the rigidity of the parts to be dilated :

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In the *Third*, those which are occasioned by disproportion between the dimensions of the *pelvis* of the mother and the head of the child :

In the *Fourth*, those which are rendered difficult by diseases of the soft parts.

Under one or other of these Orders, every Difficult Labour may be arranged.

SECTION IV.

ON THE FIRST ORDER,

O R,

Those Labours which are rendered difficult from the inert, or irregular Action of the Uterus.

THE action of the *uterus*, by which every child must be expelled, is accompanied with pain proportionate to the force and to the resistance made. But as this action may become imperfect, irregular, or insufficient for the purpose of expelling the child, we ought to be acquainted with the causes of such imperfection, irregularity, or insufficiency. Of these causes there is,

I. *The too great distention of the uterus.*

It was formerly believed, that the *uterus* was distended mechanically, by the increase of the

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ovum contained in it; and with this opinion, it might be concluded, that either from the size of the child, or the quantity of waters, the *uterus* might be brought into a state similar to that which takes place in the bladder; which, when distended beyond a certain degree, loses all power of action. But later observations have proved, that the impregnated *uterus* is not distended by its contents, but by the operation of a principle which it acquires in consequence of pregnancy; which principle ceases to act at the conclusion of the term of utero-gestation, and is succeeded by another directly contrary, that of expulsion*.

But though the *uterus* cannot be distended beyond its power of action, it was observed, from the slowness and smallness of the effect of the first pains of labour, that the power exerted by the *uterus*, is generally suited to the state of the parts, and the parts to the *uterus*, with a wonderful co-incidence. Yet as every principle in nature may alter or fail, so that of the distention of the *uterus* may prevail to such a degree, or may continue so long a time, that its possible force shall be weakened; and its energy lessened; and this seems to be proved, not only by the slackness of the pains in the beginning of all labours, especially in those cases in which

* See the Introduction, Chap. iv. Sect. xi.

which there are two or more children, but by the increase of that action, when part of its contents are evacuated. It is still to be recollected, that the *uterus* cannot be distended beyond its power of action, though when greatly distended, it is only capable of slow and feeble action, which is however preparatory to that which is stronger. Feebleness of action, from distention, is not then an object of art; and it is perhaps beyond the influence of any earthly power to give to the *uterus* its native or genuine disposition to act. Human art may put or preserve the constitution in a state fitted for such action, or it may remove any impediments to its effect; but the principle is wholly independent of the will of the patient, or the skill of the practitioner. When therefore the pains of labour are feeble in the beginning, as no harm can arise from this cause, either to the mother or child, except that the former is under the necessity of bearing them for a longer time, though on the whole, perhaps, not in an increased degree; and as the methods advised and practised for the purpose of accelerating labours rendered tedious from this cause, are either immediately injurious, or may lay the foundation of future mischief to one or both, we may with safety and propriety leave the business entirely to its own course without any interposition. Even when the labour has made con-

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fidérable progress, and there has been reason to expect that it would be concluded in a short time, there may be a suspension of the action of the *uterus* for many hours, without any mischief or hazard, as experience often shews, though the cause of such suspension may not be obvious to, or explicable by us.

Immediately on the accession of labour, it has been the custom to confine women to their beds, or to some particular position, on the presumption that it would be thereby rendered more easy than in any other. By such conduct, expectations of a speedy delivery are often raised; and when these are balked, the mind of the patient is disturbed, and then the process becomes irregular. But it will always be found more comfortable and useful to leave the patient to her own choice in these matters, and her inclination will be a better guide than any other. Time is the safest and generally the only remedy for lingering and tedious labours from this cause, and the patient will often find relief, either by walking or standing, or chusing that position which she herself prefers, because she will instinctively seek that which is proper. However in many situations of this kind, the frequent exhibition of emollient clysters is of service; and when the labour is far advanced, in some cases in which the action of the *uterus* is very feeble and slow in its returns,

returns, as if it were unwilling to come on, a clyster rendered stimulating by the addition of one ounce of culinary or cathartic salt, will often rouse the dormant powers to action, and the labour will be soon completed*.

2. *Partial action of the uterus.*

It was observed, that previous to labour, the *uterus* commonly subsided lower into the *abdomen*, and that the more perfect this subsidence was, the more kindly would the labour probably be; because the *uterus* would act with more advantage. But in some cases, the *fundus* of the *uterus* does not subside before or even in the time of labour, the patient herself being sensible of, and complaining that the child is very high in the stomach. Sometimes the patient will also complain of vehement and cramp-like pains in various parts of the *abdomen* producing no effect, and which are afterwards proved to have been occasioned by the irregular contraction of the *uterus*. This irregular and partial action, which is properly called spasmodic, is capable of throwing the *uterus* into various forms; sometimes the longitudinal, and at others the hour-glass, with all their varieties. Every change in the form of the

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* Clysteres injiciantur, quorum irritatione expultrix uteri facultas excitatur, et depleta intestina, amplio rem locum utero relinquunt.

cavity of the *uterus*, from the genuine, will be productive of inconvenience, according to the peculiarity and degree of alteration; and it is to be wished, that we had the power of altering the form when thus irregular, of suppressing the action of the *uterus* when too vehement or untimely, and of strengthening it when too feeble, according to the necessities of each case. But as these things are beyond our power, and all that we can do is, not by commanding what we chuse, but by making the best of such circumstances as do really occur, it is necessary to consider, whether by any previous management it is in our power to prevent or remedy this irregularity of action, when it is in such a degree, as to be very painful or troublesome before, or at the time of labour. When there is pain of any unusual kind in the region of the *uterus*, greater or different from that which may be considered as one of the common effects of pregnancy, there is usually an increase of that feverish disposition, which in a certain degree is natural to all women with child; and then it will be necessary to take away small quantities of blood, and to be very attentive that the regular course of the bowels is procured or preserved. This irregular, as well as the insufficient action of the *uterus*, most frequently happens to those who are naturally too irritable, or who lead inactive lives; and to such women should be pointed out the necessity

cessity of using exercise as far as their unwieldiness will allow; and even in the time of labour, if rendered tedious from this cause, in which their pains are very sharp yet ineffectual, it is of use to bear them when in an erect position, and to walk about in the interval. The chief part of what can be done further, is to impress upon her mind, the necessity of exercising that patience which we on our part ought never to want. In some cases of this kind, when the patient has suffered much and for a long time, after bleeding and the administration of a clyster, I have directed twenty drops of *Tinct. Thebaica* to be given, with the intention of suppressing the present pain which was irregular, and with the hope that when the pain returned, it would be with regularity and efficacy. But in general I have great objections to opiates on slight occasions for women in labour; being persuaded, that by disturbing the order of labour, they occasion very untoward symptoms, and make that which was in itself natural, become difficult or dangerous to the mother or child, as evidently as any other kind of interposition.

3. *Rigidity of the membranes.*

This has been mentioned by the generality of writers, as a cause of difficult labours; and I have observed, when a labour proceeds slowly, the membranes being unbroken, that their rigidity is usually assigned as the cause of the difficulty. This subject has

has been considered in the history of Natural Labours; but we cannot too often inculcate, that neither the mother nor child are ever in any danger on account of the labour, before the membranes are broken; and that there is infinitely more caution required to avoid breaking them too early, than there is difficulty in breaking them when it is necessary. The true cause also why the membranes do not break at the usual or proper time, is not in truth from the rigidity of the membranes, but from the weak action of the *uterus*; because the membranes are scarcely ever so rigid as to withstand the force of very strong pains, unless the whole *ovum* were expelled at the same time; a circumstance not unfrequent in premature labours. More than one case has occurred in my own practice, to which particular attention has been paid, for the purpose of registering the observation, in which the labour has commenced properly, and proceeded with much activity, till the *os uteri* was fully dilated, and then ceased altogether for several days: at the end of that time, the action of the *uterus* has returned, and the labour has been finished speedily, with perfect safety to the mother and child*.

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* When the head of the child is born with the membranes unbroken, it is said to be born with a caul. To this caul imaginary virtues have been attributed, and a fancied value has been set upon it. It was esteemed the requisite of the midwife,

The circumstances of labours are however sometimes such as make it not only justifiable but eligible or perhaps necessary to break the membranes artificially. But before this is done, we ought first to be assured of the state of the *os uteri*, because it will often be spread so thin over the head of the child, before it is in any degree dilated, as to resemble the membranes. But when the *os uteri* is wholly dilated, and we have determined upon the propriety of breaking the membranes, no instrument is required for that purpose. If they are confined with the end of the fore-finger upon the head of the child, during the time of a pain, they generally give way; or if this is insufficient, they may be rubbed with the end of the finger, on one particular spot, till they are worn through; or they may be scratched with the nail of the finger, cut and turned up for that purpose. I am persuaded, that no person, who is capable of judging when the membranes ought to be broken, will ever meet with any difficulty in breaking them.

4. *Dribbling of the waters.*

This circumstance is a cause, or at least a frequent attendant on Difficult Labours, especially when the membranes have been broken designedly;

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midwife, and perhaps the whole was the contrivance of some intelligent man, to prevent her from interfering with any labour, which was going on in a natural way.

or spontaneously before the *os uteri* was dilated. But if the membranes are not broken, before the complete dilatation of the *os uteri*, the whole quantity of the waters is generally discharged at once, and the head of the child advances speedily. Sometimes indeed the head of the child is so placed as to lock up a great portion of the waters, which cannot escape till the head is expelled. Should the waters be imperfectly discharged, a further small portion of them is evacuated whenever there is a pain, and the pain is not efficacious, or immediately ceases after the discharge. In this situation there are only two methods to be pursued; we must either wait till the waters are all drained away by these repeated small discharges, or we must contrive some method by which their evacuation may be hastened. If there be no reason against our waiting, it is better not to interfere, but to leave the business entirely to nature, explaining the state of the case to the patient or her friends; taking care to prevent their apprehension of danger from the delay of the labour, and not by our solicitude to raise their expectations or their fears. But when the waters dribble away in the advanced state of a labour, or there is reason for our wishing a speedy conclusion of it, either on account of the mother or child, it will be expedient to forward the discharge of the waters, by raising the head of the child

child a little higher into the *pelvis*, by the introduction of the fingers and thumb of the right hand, which may be done without prejudice to either of them, during the continuance of the pains ; or, by pressing the head towards the hollow of the *sacrum*, by which means, more room will be made for the waters to escape. However, the dribbling of the waters is not a circumstance of much importance, when it is not combined with other causes of difficulty ; and it may be again mentioned that it is generally occasioned by the artificial or premature rupture of the membranes.

5. *Shortness of the funis umbilicalis.*

The *funis umbilicalis* seems to admit of a greater variety than any other part of the *ovum*, being in one subject perhaps three or four times as long as it is found in another. It may be naturally very short, or it may be rendered so accidentally, by its circumvolution round the neck or body of the child ; and whichever of these is the case, the inconvenience produced at the time of labour is the same ; that is, the labour may be retarded ; or perhaps the *placenta* may be loosened prematurely ; or the child may be injured by the mere stretching of it, as this must necessarily lessen the diameter of the vessels. But the two latter inconveniences very seldom occur.

The shortness of the *funis* is always to be sus-

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spected when the head of the child is retracted upon the declension of every pain; and it may sometimes be discovered that it is more than once twisted round the neck of the child, long before it is born. Various methods have been recommended for preventing this retraction of the head, some of which are insufficient, and others unsafe*; and the inconvenience is usually overcome, by giving the patient more time. But if the child should not be born when we have waited as long as we believe to be consistent with its safety, or that of the parent, it will be proper to change her position, and instead of suffering her to remain in a recumbent one, to take her out of bed and raise her upright, and to permit her to bear her pains in that situation; or, according to the ancient custom of this country, to let her kneel before, and lean forwards upon the edge of the bed; or, as is now practised in many places, to set her upon the lap of one of her assistants. By any of these methods the retraction of the head of the child is not only prevented by its own gravitation, but the weight of the child is also added to the power of the pain; and it is likewise expelled upon an inclined instead of a level plane. In the course of practice, I can
recollect

* *Nocet obstetricis digitus ano immixtus, item nimia festinatio.*—RUYSCH.

recollect with infinite satisfaction, a great number of cases in which, by adverting to the benefits to be gained by an erect position, labours have not only been accelerated, but the use of instruments, which were before thought necessary, has been avoided.

When the head of the child is expelled, if the *funis* be twisted round its neck, there is sometimes a little delay and difficulty before the body can be excluded or extracted. We are, in the first place, taught that it is proper to bring this over the head forwards, lest the *placenta* should be separated, or the body of the child be hindered from advancing till it suffers detriment, or is brought into absolute danger. But it is in some cases drawn so tight round the neck, that this cannot be done, without increasing the hazard of the mischief we wish to avoid. We have then been advised to slide the *funis* over the shoulders, but this may be equally impracticable with the former method. If either of these intentions can be accomplished without violence, they are to be attempted, otherwise they must be omitted. The child will nevertheless be expelled, if we wait for the return of a few pains, which we may do very safely, and without any other inconvenience than an increased distension of the *perinæum*; the body making a shorter

bend or doubling on account of the confinement of the neck by the twisting of the *funis*.

Instances have occurred in which though the head of the child was expelled, the body has remained, and could not even be extracted for a long time, perhaps for several hours. Two things are then to be considered, first, whether the child be alive; secondly, whether it be hindered by the shortness of the *funis* merely. If the child be alive and breathes though imperfectly, we have no occasion to be in a hurry, it being only requisite that we should keep its mouth open, allow of the free access of the air, till it is expelled, or can be more readily extracted; for the internal organs will accommodate themselves to that state, and the child will possess a species of life half uterine and half breathing. But when it has remained in that situation as long as we think consistent with its safety, and it cannot be without great violence extracted, should it be hindered by the shortness of the *funis*, we have been taught* that it is advisable to divide the *funis* before the body is expelled. Previous to our doing this it will however be expedient to tie the *funis* with two ligatures, and then to divide it between them, otherwise the child will be instantly destroyed by the sudden gush of blood,

* See *Chapman*—p. 63 and 85.

blood ; as happened in a case under my own care, though it was living when I divided the *funis*.

When the child is dead, and the total exclusion of it is prevented by the tumefaction of the body, or by any other cause, by passing a napkin or handkerchief round its neck, and taking both the ends in our hands, we shall be able to exert much force, and if we pull steadily, and in a proper direction, we shall usually succeed in extracting it. But if we are yet foiled in our attempts, turning the head on one side, we must endeavour to bring down one or both arms, which being included in the handkerchief, will allow us to pull with more force, and facilitate the passage of the body. The greatest difficulty of this kind I ever saw, was in consequence of the inflation of the whole outline of the body from its putrefaction, and there was occasion for all the force I could exert ; but in other cases I have succeeded better, by availing myself of the changes produced, by waiting and giving more time, rather than by the exertion of much force.

6. *Weakness of the constitution.*

The health of women at the time of parturition is often impaired, either by some general indisposition which may have continued through pregnancy, though not altogether dependent upon it ; or, by some disease with which they are attacked, when they are perhaps in daily expectation of falling into labour. The more perfect their health is,

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is, the better fitted they are for the circumstance of child-bearing, as the process will not only go on with more regularity, but they will also recover more favourably, as is well known to those who are engaged in the practice of midwifery. Because though it be allowed that the state of child-bearing is not a state of disease, yet experience has shewn, that all diseases with which women are at that time affected, are not only apt to fall upon those parts which are left in a more irritable state, in consequence of the changes they have so lately undergone, but the progress of diseases is also then more violent, and the event more dangerous*.

But the case of which we are now speaking, is when the general health of women is reduced below its proper standard, by some previous or accompanying disease, not absolutely connected with the state of pregnancy, of which a consumption is a very fair example, as consumptive persons seem of all others to be in the most hopeless state. But though such are often in their own minds, and in the opinion

* Hence at the time of any epidemic disease, women more frequently fail in child-bed, though they are managed with equal skill and care. In the history of the different plagues in London, there are sometimes two or three hundred women who are put down as dying in child-birth in one month. *Procopius* has also told us in his account of the plague at Constantinople—*Tres saltem puerperæ convaluerunt.*

nion of their friends, not able to go through the fatigue and other unavoidable consequences of child bearing, I do not recollect an instance of any woman, in that situation, being unequal to her delivery, or having her fate hastened by it. If such women have little strength, they have little difficulty to overcome; the state of the parts which, in a common way, might require the exertion of much force, corresponding with the force which they are able to exert; and more time only is required. When this prognostic however is made, of the probable event of such labours, it is to be presumed that no particularly untoward circumstance shall occur; for if there should, it cannot be expected, that with extreme debility there should be the same power or resources, as in great strength and good spirits.

In constitutions much reduced by a consumption, or a disease of any part not immediately affected by child-bearing, there is, usually, not only sufficient strength for perfecting the business of a common labour, but the patient appears to be relieved for a certain time after her delivery; and then, if they were not dependent on pregnancy, or were incurable, they return, and make their wonted progress.

The effect of diseases seems also in many cases, to be suspended during pregnancy. Of the distinctions to be made in our opinion, of the event of
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acute diseases, during which a patient may either be delivered at her full time, or suffer abortion, we have already spoken in the Essay on Uterine Hemorrhages.

7. *Fever or local inflammation.*

On the accession of labours, there is usually some increase of heat, of the quickness of the pulse, thirst, and general feverish disposition; and these are commonly in proportion to the exertions required, or made for the completion of the labour, with respect to which they are properly speaking, merely symptomatic. But in some cases the excitement is too great, and instead of helping the action of the parts concerned in parturition, it prevents their acting with regularity or energy. Whenever the pains of labour are feeble, it is a vulgar custom, without regard to the cause, to give cordials very freely, with the view of accelerating their returns, or of strengthening them; though under many circumstances, by such proceeding * we evidently add to the evils we mean to remove. In some cases also, from the acuteness and constancy

* *Lord Bacon* had a clear idea of this, though by the manner of expression it is rendered somewhat obscure: "To procure easy travails of women, the intention is to bring down the child, whereunto they say the loadstone helpeth; but the best help is to stay the coming down too fast."

Nat. Hist. cent. x. 968.

stancy of the pain which the patient endures, and from its situation also; it may be readily distinguished from that which is occasioned by the action of the *uterus*, and gives us too much reason to suspect, that some of the contents of the *abdomen* are already in a state of inflammation.

It does not seem necessary to bleed every patient on the accession of labour, and for some it must be highly improper. But whenever the feverish symptoms become violent, it is I believe universally proper; the quantity of blood taken away being suited to the degree of fever, and to the constitution of the patient; and much service will also be done by the frequent exhibition of emollient clysters, by keeping the room cool and well aired, by giving cooling drinks and medicines, and by keeping the patient in a quiet state. When the fever is removed, the pains will come on, and perform their office with propriety and success. Independently of fever, when the exertions which the patient makes are vehement, if she be plethoric, there is on that account sometimes a necessity of taking away some blood; for during these vehement exertions, if the blood-vessels are distended, some of them may give way, and the patient be brought into the most imminent danger, before the delivery then at hand, be completed.

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§. *Want*

8. *Want of Irritability in the Constitution:*

Under many circumstances which occur in the practice of medicine, it has been observed, that when a cause of pain exists, it is found to produce an effect quite contrary to what might be expected; that is, instead of exciting the powers of any one part, or of the whole frame to action, it creates a partial or universal insensibility, and a disproportionate action. In some cases, on the accession of labour, the cause, instead of raising a disposition to act, or a power of acting with energy in the parts concerned, seems to lessen both the disposition and power to act, and in some cases to deprive them, for a certain time, of all power, as effectually as if they became paralytic. Inconveniencies of this kind are most frequently observed to take place in fat and inactive women, and such, in spite of all the means which can be safely used, will necessarily have very slow and lingering labours; and though they may at length be delivered by their pains, feeble as they are, when there is no material cause of obstruction, much time will be required for every part of the process. I have often suspected that the foundation of this imperfect action, or total inaction in the advanced state of labour, may have been laid by some error or accident in the beginning, perhaps, by exciting the
 action

action prematurely, which will, of course, cease when the artificial cause was removed*.

The circumstances attending labours are generally alike, yet in many women they are marked with some peculiarity, most frequently in the time required for their completion. When we have had an opportunity of observing the progress of labour in two or three instances, we shall be able to tell what will be the probable termination, and when it will take place; and we can no more controul the order of a labour in one woman, so as to make it correspond with or resemble that of another, than we can judge of the quantity of food which one person may require by that which is sufficient for another, or regulate any other function of the body. One woman may require twelve hours for the production of the same effects in the time of labour, that another may finish in four hours; and it would be in vain to attempt to make an alteration, because the reason exists in some essential property of the constitution.

9. *Passions of the Mind.*

As the infirmities and particular states of the body have a powerful influence upon the mind, and as the affections of the mind have, on various occasions, a reciprocal effect upon the body, it might

* See the Introduction, Chap. IV. Sect. X.

be reasonably expected, that the progress of a labour should be forwarded or hindered by the passions. It is constantly found, that the fear of a labour, or the same impression from any other cause at the time of labour, lessens the energy of all the powers of the constitution, or diminishes, or wholly suppresses the action of the parts concerned in parturition. It is also observed, that the cheerful flow of the spirits, which arises from the hope of an happy event, inspires women with an activity and resolution which are extremely useful and favourable in that situation. In the time of a labour proceeding very slowly or irregularly, doubts and fears in the mind of the patient have an evident and great influence upon the pains; and when these are removed, and her resolution confirmed, she will go on with courage, and effects will be produced which would have been impossible if she had remained in a state of depression. The intelligent practitioner will avail himself of the knowledge of these things, and by his discretion he will inspire his patient with sentiments which will enable her to go through difficulties, which to her feelings, and perhaps to his own judgment, appeared unsurmountable. It will also regulate the conduct of all her attendants and friends, and lead them step by step to co-operate in his views and intentions, which will at length terminate to the real advantage

tage of his patient, the satisfaction of her friends, and the increase of his own reputation.

10. *General Deformity.*

Many women who are gibbous or distorted in the course of the spine, have the *pelvis* well formed, and there are a few in general appearance perfectly straight, who have yet some defect in the *pelvis*. Of the ease or difficulty of labours, depending upon the capacity or form of the *pelvis*, we are to speak in another place. Those who are gibbous, are not unfrequently asthmatic, or have some infirmity which prevents their breathing freely, or the retention of their breath; and such must suffer some inconvenience at the time of labour, though the action of the *uterus* may be proper, and all the parts concerned in parturition in a natural state. For as both the instinctive and voluntary force, especially the latter, are affected by the manner of breathing, and duly exerted only when the breath is retained, and this not being under such circumstances possible, of course the progress of the labour must be retarded. Should there be any reason to suspect inflammation about the *thorax*, particular attention must be paid to it, otherwise we have only to give more time for the completion of the labour, and to wait for that effect from a repetition of feeble pains, which, without this inconvenience, would have been produced by a smaller number.

ON THE SECOND ORDER;

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Those Labours which are rendered difficult by the Rigidity of the Parts requiring Dilatation.

1. *First Child.*

EVERY woman is expected to have a more tedious labour with her first, than with subsequent children, and the difference is usually in proportion to the number which she has had. Thus if a woman were twenty-four hours in labour with her first child, she might be six with her second, and with the rest four or perhaps two; but from any general estimate of this kind there will be many deviations. It was before observed, that when women have had several children, the practitioner is often able to form a tolerably precise opinion of the kind of labour which they will be likely to have, and which may be as peculiar to their constitutions, in manner and time, as any other function of the body: and it is no more in our power to change this constitutional labour, as it may be called, than it is to alter the frame of the body, or any of the functions thereon depending.

The difficulty with which first labours are completed, not only depends upon the greater rigidity of the parts, or upon their re-action, but on the imper-

imperfection or irregularity of the action also, by which they are to be dilated ; for this is generally far less perfect and regular in the first instance, than when the same office has been frequently performed. But though with first labours there is rather a greater chance of women wanting assistance, there is no specific cause of difficulty, and they generally require only more time to be given for their completion.

2. *Advanced in Age.*

If a woman be far advanced in age at the time of having her first child, the difficulty attending her labour may be expected to be greater. At a certain time of life, every woman arrives at maturity, or that period when she may be considered as having acquired the greatest degree of perfection of which her frame is capable ; when the inconveniencies of youth are passed, and those of age are not arrived. This state of perfection, the time of which will vary in different constitutions and climates, and which we may conclude to be best fitted for the act of parturition, may continue for many years. But if a woman should be with child before or after this time of perfection, she will be liable to difficulties ; as in the one case she would be scarcely able to bear without injury the changes she must undergo ; and in the other, the firmness which all the parts have acquired, would

would lessen their disposition or capability of dilating : greater force therefore will be required, or the same degree of force must be continued for a longer time. In this country there has seldom been any reason to suspect women to be pregnant before they were able to bring forth children without any or much inconvenience ; and for the prevention of such as may attend the first act of parturition in those who are advanced in age, we have been advised to order frequent and small bleedings towards the conclusion of pregnancy, and that the patient should sit over the steam of warm water every night at bed time, and afterwards anoint the external parts with some unctuous application. Perhaps there is not authority for saying, that no advantage can be derived from the use of these means ; but certainly the impression made upon the mind of the patient by the novelty and peculiarity of the method, will, in patients of a timid disposition, raise such apprehensions of danger and difficulty, as will over-balance the good which can possibly be derived from them. It is therefore better to omit the use of any such means on this account, more especially as it does not constantly happen, that the difficulty of labour is in proportion to the age of the patient when she has her first child ; that being in many cases, as easy at forty years of age or upwards,

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as if she was only twenty-five. In the worst labours arising from this cause, there is no peculiarity in the difficulties, but merely an increase of those which are produced by the rigidity of the parts, and therefore only more time required for their completion.

3: Too early Rupture of the Membranes.

The premature rupture of the membranes, whether natural or artificial, has been often mentioned as the cause of many tedious or difficult labours. If it be allowed that the membranes containing the waters were intended to be the medium by which the *os uteri*, and other tender parts, ought to be dilated, some inconvenience must arise when these are broken and the waters discharged, the head of the child being substituted for them; which being a firmer and less accommodating body, cannot, for a long time be admitted within the circle of the *os uteri*, which will of necessity be dilated more untowardly and more painfully.

The difficulties arising from this cause, even in first labours, will be very much lessened, if the patient be confined to a recumbent position, and we defer, as far as is in our power, the coming on of the action of the *uterus*, that the most perfect disposition to dilate may be previously assumed by the parts. A longer time will certainly be required for completing labours attended with this circum-

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stance only, but they may in general be more properly called lingering or tedious, than really difficult.

4. *Oblique Position of the Os Uteri.*

The natural position of the *os uteri*, and that in which it is most conveniently distended, is at the center of the superior aperture of the *pelvis*; for when thus placed, the effect of the action of the *uterus* is most favourably produced. But the *os uteri* is seldom found exactly in this situation, and in some cases is projected on either side, and in others so far backwards, that it cannot be felt for many hours after the commencement of labour. This oblique position of the *os uteri*, to what direction-soever it may tend, has been considered not only as a frequent, but as a general cause of difficult labours; and this doctrine was, at one period of time, taught and received in all the schools of midwifery in Europe. In every enquiry after knowledge, in almost any science, opinions will be advanced, which sometimes lead to further improvement; but when experience begins, opinions should end. But if so much regard is paid to opinions as to found any certain practice upon them, and they should prove erroneous, they become the source of much mischief. The present case is a striking example of the truth of this observation; for when it was presumed that every difficult

tult labour was occasioned by the oblique position of the *os uteri*, it was supposed necessary to remedy the inconvenience thence arising by manual assistance, and to drag the *os uteri* from its oblique to a central position during the time of every pain. The opinion of the oblique position of the *os uteri* being the chief cause of difficult labours, is now fully proved to be erroneous; and though it were oblique, such position is not to be considered as a general cause of the difficulty, but as an accompaniment of some other primary cause. Thus when the *pelvis* is distorted, the *os uteri* is constantly found in an oblique situation, yet the difficulty of the labour, as well as the obliquity, are occasioned by the distortion.

It must however be allowed, that some labours are procrastinated by the oblique position of the *os uteri*, and that it is often combined with other causes of difficult labours, though, singly, it is seldom of sufficient importance to be the cause of truly difficult ones. But when it does retard a labour, or accompany a difficult labour, it does not require any manual assistance, or that we should retract it to a central position with respect to the cavity of the *pelvis*; both the thing itself and the difficulty thence arising will be obviated, without detriment or much trouble, if the patient be confined to a proper position. If, for example, the

os uteri be projected to the left side, she ought to rest as much as possible on the same side, and so, of the right; if it be projected backwards, which is always the case when we cannot reach the *os uteri* in the beginning or early part of a labour, she ought to lie upon her back. By this method the *fundus* of the *uterus*, constantly leaning or inclining to the side of the obliquity, will gradually but effectually project the *os uteri* more and more towards a central position.

Cases have been recorded, in which it was said that the *os uteri* was perfectly closed, and in which it has not only been proposed to make an artificial opening instead of the closed natural one, but the operation has actually been performed. I do not know that I should be justified in saying that such cases have never occurred, because they have not occurred in my practice; but I am persuaded that there has been an error in this account, and that what has been called a perfect closure of the *os uteri* has not been such, but that we have been unable to discover it.

5. *Extreme Rigidity of the Os Uteri.*

Difficult, as well as tedious and very painful labours are frequently occasioned by the unusually rigid state of the *os uteri*. The manner of, and the time required for its dilatation will depend upon two circumstances; first, the degree of disposition

tion to dilate which it may have previously acquired ; and secondly, the degree or force of the action exerted by the *uterus*. The former of these is, in general, far less perfect with first than with subsequent children, even presuming that it is in its most natural state ; but when it assumes from any cause a still greater indisposition to dilate, of course the labour will be both more difficult and tedious. In a first labour it not unfrequently happens, that the *os uteri* may not be dilated in less than twenty-four or even forty hours, when the rest of the labour may be completed in four, or perhaps a shorter time, yet the very same person may have the whole process with her next child completed within six hours.

We have before taken notice of the advantages arising from the changes in the state of the soft parts being perfected, before the accession of labour ; but when these are as favourable as can be wished, by the very action of the *uterus* pressing its contents upon the *os uteri*, and much more frequently by attempts to dilate it artificially, this part becomes inflamed, and the indisposition to dilate is increased according to the degree of inflammation. The inflamed state of the part is often indicated by its heat and dryness, but whenever it is extremely rigid, and there has been a long continued action of the *uterus*, with little or no advantage, the impediment

diment to the progress of the labour being clearly occasioned by the resistance made by the *os uteri*, I believe it is always right to consider that part as inflamed. If this be allowed, instead of attempting to dilate it artificially, it is the proper object of art, to recover in the first place the natural disposition to dilate, and then the pains of labour will be equal to the purpose. With this view it will be necessary to take away some blood, to give cooling medicines and drinks, to direct emollient Elysters to be frequently injected, and, instead of using any means with the intention of increasing the force of the pains, to confine the patient to a recumbent posture ; and to gain, if it were in our power, a suspension of the labour, till the inflammatory disposition be removed, when the dilatation will proceed less painfully and more speedily.

When a labour comes on prematurely, or before the parts have acquired their dilatable state, as it may be called, the position of the *os uteri* will be very different. In some cases it begins to dilate when it is high up in the *pelvis*, but in others, especially when the *pelvis* is, in comparison with the child, very large, the *os uteri* may be protruded very low down, before there is any degree of dilatation, though it be spread so thin over the head of the child, or the membranes, as to give the feel of the membranes alone. If, under these

these circumstances, the external parts should be much relaxed, and the pains at the same time strong, it is possible for the head of the child to be expelled though enveloped in the *os uteri*, and much mischief may be thereby occasioned*. For the prevention of this accident, when there is any reason to dread it, it will be proper for the patient to be confined to an horizontal position, and for the practitioner to restrain the advancement of the head, till it is cleared of the *os uteri*; or, if the case has actually happened, to use all the means we safely can, to replace it, and extract the head. When the *pelvis* is large and the head of the child, being moved from its resting place upon the *pubis*, drops by its own weight into the lower part of the cavity of the *pelvis*, the accident often becomes a cause of a *proidentia* or *prolapsis* of the *uterus*, which cannot, as far as I know, be always prevented. All that art dictates to be done at the time of labour, is to render this as slow and gradual as possible, and after delivery, to confine the patient to her bed for a longer time.

6. *Uncommon Rigidity of the external Parts.*

The state of the external, as well as of the internal parts is very different in different women, both in the, beginning and in the progress of labours.

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* *Os uteri aliquando prolabitur.*

RUSCH. *Obs. Anatom.* XXV.

Even in first labours they readily yield in some women, so as to allow the head of the child to pass through them with great facility and safety, but in others they are extremely rigid and unyielding, and withstand the action of the *uterus*, though very strong, for a very long time; and then do not dilate without great danger of a laceration. In first labours a more difficult dilatation than in others is always to be expected, and more care is required to prevent a laceration; the state of these parts is however very different, and they require some attention in every labour. There ought to be, and usually is a correspondence between the state of the parts and the power of the pains; but in some cases the external parts are rigid when the pains are feeble, whilst in others, when the parts are disposed to dilate, the pains are exceedingly strong, pushing with unabating force, the head of the child, so that the parts must either dilate or be lacerated. Of many of these circumstances we have already spoken.

In first labours the external parts may require one, or several hours continuance of the pains, before they are sufficiently dilated to allow the head of the child to pass through them without danger of laceration; but the difficulty thence arising does not seem to require, or to be relieved by our interposition, further than to prevent injury as far as that

that is in our power, by too speedy an exclusion of the head of the child, in the manner before advised. The merit of our conduct under these circumstances will be chiefly negative; for as we cannot give to the parts their disposition to dilate, and ought not to dilate them artificially, there only remains for us to wait the due time: art being more frequently exercised on such occasions in remedying the evils which art has produced, than in rectifying those which are necessary or unavoidable. It is also to be observed, when the head of the child passes through the inferior aperture of the *pelvis* with difficulty, though the external parts are pressed upon with considerable force, that the impediment to the delivery does not arise from the resistance made by these, but more properly from the elongation or bending of the spinous processes of the *ischia*, and the labour is then to be referred to the next order.

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ON

ON THE THIRD ORDER;

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The Causes of difficult Labours from the Disproportion between the Head of the Child and the Cavity of the Pelvis.

1. *Original Smallness of the Pelvis.*

THE cavity of the *pelvis* in women in general, bears a certain proportion to the common size of the heads of children; yet as they both admit of considerable variation, independent of distortion or disease, it is possible that a woman with a *pelvis* rather under the common size, may conceive a child far beyond the usual dimensions; and when this is the case, there must of course be greater difficulty at the time of parturition. When therefore the smallness of the cavity of the *pelvis*, and the largeness of the head of the child are mentioned, they are to be considered as relative and not as positive terms; because the *pelvis* of some individual woman may be so large as to suffer the largest head of a child of which we have any example, to pass through it; and the smallest head may be esteemed large, if compared with a yet smaller *pelvis*.

But though a labour may from either of these causes, separate or combined, be rendered tedious
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and painful ; as in consequence of the action of the *uterus*, the head of a child rather larger than ordinary will be compressed into a much less compass, and moulded to the form as well as the dimensions of the cavity of the *pelvis*, there is not usually occasion for the assistance of art, if the labour be in other respects natural ; but we are to wait patiently for those changes, which in due time may be reasonably expected, and scarcely ever fail to take place.

Distortion of the Pelvis.

On the causes, kinds, and degrees of distortion of the *pelvis* we have already spoken very fully*. The effects produced, or the impediments occasioned by this distortion, at the time of parturition, will somewhat depend upon the part distorted, but chiefly on the degree of change in, or diminution of the dimensions of the cavity, by which the relation between it and the size of the head of the child is perverted or destroyed. Distortion of the *pelvis* at the superior aperture creates an obstruction to the passage of the head of the child, which will be overcome with more difficulty by the powers of the constitution, and which will be more inconveniently managed by art, than an equal degree of obstruction in the lower part of the *pelvis*. The greatness of the difficulty will

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* See the Introduction, Chap. I. Sect. X.

nevertheless chiefly depend upon the degree ; and in the various degrees which are found to occur, the practitioner may see a cause of every kind of difficulty which he may meet with in practice. A small degree of distortion may occasion a difficult labour of that kind which may not be an object proper for the exercise of his art, but which is at length completed by the long continued action of the *uterus*, first moulding and reducing the form and size of the head, 'till it is adapted to that of the *pelvis*, and then forcing it through the diminished cavity. Or, the degree of distortion may be such, that notwithstanding all the reduction of the head, which can be accomplished by the efforts of the constitution, there does not remain sufficient power to expel the head ; but it may be brought into such a situation, as to afford us the hope of safely delivering the patient by art, and of preserving the life of the child. Or, the distortion may be so considerable, that it is impossible for the head of the child to be expelled without lessening it, and the child must be sacrificed to the safety of the parent. Or, lastly, the distortion may be so great, that if the head of the child were lessened, there would not be a possibility of extracting it, and we must either submit to lose the lives both of the parent and child, or attempt to save that of the latter,

ter, by the *cæsarean* section, or by some other operation equally hazardous.

In those cases in which there is a very great degree of distortion of the *pelvis*, the impossibility of the head of the child passing through it, is self-evident, and readily discovered on the first examination *per vaginam*. But in less degrees of distortion, no judgment can be formed *à priori* whether the head can pass or not; and we ought to defer any determination upon the necessity or propriety of giving assistance, till we are convinced that the difficulty cannot be overcome by the powers of the constitution; and the conviction is not satisfactory till the efforts are discontinued or cease entirely. Degrees of difficulty to our apprehension insurmountable, are often overcome by the mere force of the pains, and so long as these continue vigorous, we are not to despair of a happy event; but encouraged by experience, and supported and justified by moral as well as scientific principles, we must rely upon the advantages which time and proper conduct may afford.

The far greater part of those labours which are rendered difficult by the distortion of the *pelvis*, only require a longer time for their completion. Some however demand the assistance of art; and when that is the case, the kind of assistance must vary according to circumstances. But these will
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be more particularly stated when we come to speak of the various operations in the practice of midwifery:

3. *Head of the Child uncommonly large; or too much ossified.*

No arguments are required to prove that a small body will pass through a small space with more facility than one that is large; the size of the body being supposed to bear a relation to the capacity of the space. Of course, the larger the head of the child at the time of birth is, with the greater difficulty will it be expelled; but if the *pelvis* be not distorted and of a common size, we may always expect that the woman will be ultimately delivered by her natural pains, if there be no other cause of difficulty, though a longer time may be required for the completion of the labour.

It is not merely from the size of the head of the child that a labour may be rendered more tedious, more painful, or even truly difficult. The connection of the bones of which the head is constructed, is such as to allow of considerable diminution and change of form in its passage through the *pelvis*. The extreme degree of diminution and change which it is generally capable of undergoing, is perhaps impossible to determine; but it does not seem unreasonable to conjecture that it may be reduced to one third of its original size, without the

the destruction or even injury of the child from the compression; the alterations being so gradual. The advantages gained by this compression of the head in all cases of difficulty, occasioned by the natural smallness or less degrees of distortion, are wonderful, as was before observed. But as there is great difference in the degree of ossification in the heads of different children at the time of birth, those heads which are most perfectly ossified, must of course be capable of undergoing the least change; and the degree of change which they can undergo, must be produced with the greatest difficulty, and purchased at the expence of more severe or longer-continued pains. On this account a large head, with a very imperfect ossification is often found to pass through a *pelvis* which might be considered as relatively small, with more ease than a smaller head in which the ossification was more complete; and yet the cause of the delay may not be discovered before the birth of the child. In cases of difficult labour proceeding from these and similar causes, it not being in our power to chuse the circumstances, all that we can do is to manage such as occur in the most prudent manner; and we have commonly to wait only for those effects to be produced which may be esteemed as consequences of the efforts of the constitution fairly exerted;

exerted ; and we are never to despair so long as the efforts are properly continued.

4. *Head of the Child enlarged by Disease.*

Two diseases have been mentioned by writers as the cause of this enlargement, viz. tumours growing on the heads of the children, and the hydrocephalus, but either of these very rarely occur. With respect to the first, it is said, that when the tumour, of whatever kind it may be, is of such a size as to be an impediment to the birth of the child, it should be opened or extirpated, and that the operation is not only perfectly consistent with the safety of the mother, but frequently with that of the child also. Of the existence of these tumours the instances recorded do not leave a doubt*; nor of the possibility, when they are large, of their obstructing the delivery of the patient: but of their extirpation with safety to the child, I should very much doubt, though no human being can circumscribe possibility. As it is the duty, so it will always be the solicitous wish of every practitioner to preserve a life, when it is in his power.

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* Partus difficilis a tumoribus, è capitibus foetuum dependentibus.

The integuments of the head of the child, from long continued compression, may become so much tumefied, and altered from their natural form and state, as sometimes to give the feel of a distinct and adventitious tumour; and yet such may not require any assistance of this kind. But when there really any unnatural tumours or excrescences, the point of practice would depend upon the degree of impediment to the passage of the head which might be thereby occasioned; or upon the nature of the tumour, whether it could be extirpated, or only admitted of an opening to be made into it for the purpose of lessening its bulk; or if neither of these could be done with propriety, by acting as if no such tumour existed.

With regard to the hydrocephalus, which if of a certain size, would certainly be a great obstacle to the delivery, this is not readily to be distinguished in the early part of a labour; because the membranes of the *ovum* are in some cases, as thick as the integuments of the head in others. But if we were assured that an hydrocephalus did exist, there would not always be occasion for us to act; as it is far more eligible to wait so long as to give time for the expulsion of the head of the child by the natural efforts, if they are equal to that effect. Should the head be so much enlarged by the quantity

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tity of fluid contained in it, that it was too large to pass, even in that case the integuments will generally burst by the force of the pains. But when the fact is ascertained, and the labour is rendered extremely tedious and lingering from this cause, it does not seem reasonable to allow the patient to undergo such long continued pains as when we have any hope of saving the life of the child. When we have determined upon the necessity or propriety of delivering the patient, all that generally is necessary to be done, is merely to perforate the integuments of the head, immediately after which the water flowing away, the head is speedily expelled, and the birth soon and easily completed.

5. *Face inclined towards the PUBES.*

On a former occasion we have mentioned that there are four varieties in the position of the head of the child at the time of birth. The first when the *vertex* or hindhead is turned towards the *pubes*: the second when the face is turned towards the *pubes*: the third, when the head presents with one or both arms: the fourth when the face presents. The first of these may be considered as the standard position, because it is not only the most common, but the most easy also; the head of the child being so constructed as to admit, in
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that position, of the greatest and most ready compression and adaptation to the *pelvis*. But the other positions are not to be considered as constituting labours of any other class, but as varieties of the natural position, though they must of necessity occasion delay in all labours in which they happen; either because a portion of that space which should be wholly devoted to the head of the child, is occupied by some other part, or because the bones of the *cranium* more slowly and imperfectly conform to the size or shape of the *pelvis*. When the face of the child is inclined towards the *pubes*, the peculiarity of the position is not usually discovered in the early part of the labour, nor even when the first stage is completed, the practitioner being generally satisfied with knowing that it is a presentation of the head. But when there is any unusual delay, perhaps without any very obvious cause, it then becomes a duty to investigate and explore the cause, and it is not a very unfrequent thing to find the face turned towards the *pubes*. This position is most readily known by our being able to feel the greater fontanelle in a common examination, though it is also proved by other circumstances relating to various parts which it is unnecessary to point out. When this position is found, it does not follow that any thing ought to be done; but we

are to wait a longer time ; because as experience has proved that the head in this position will be ultimately expelled by the natural efforts, so long as these are continued, no artificial help should be given or attempted. But when the pains cease, or when we are fully convinced that they are unequal to the exigencies of the case, such assistance must be given as the situation of the parent may allow and require.

With this position of the head, besides the greater length of time which may be required for moulding and expelling it, there will also be a greater distention of the external parts, because the hindhead cannot be cleared of the *perinæum* before the chin has descended as low as the inferior edge of the *symphysis* of the *ossa pubis*; by which an inconvenience is produced equal to what an increased depth of the cavity of the *pelvis* would occasion, or a deficiency of the arch of the *pubes*. There are also some peculiarities in the operation when we deliver with the *forceps* or *vectis*; but of these we shall speak when we come to the directions for the use of those instruments.

6. *Presentation of the Face.*

The presentation of the face is discovered by the general inequalities of the presenting part, or by the distinction of the particular parts, as the eyes,
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the nose, mouth, or chin. In this presentation the child will generally be expelled by the natural efforts, but a much greater length of time will be required for the completion of the labour, for the reasons mentioned under the last cause, which are in this perhaps increased. But the child may be born without any injury, though the face will sometimes be swelled in an astonishing manner, and the external parts of the mother being infinitely more distended than in a natural position, greater care is necessary to prevent their laceration.

If after the long continuance of the labour we are convinced that extraordinary assistance is required, then the same observation may be made with regard to the use of the *forceps* or *vestis* as in the preceding article; but of the peculiar conduct which it may be necessary to pursue, we shall speak hereafter.

7. *Head presenting with one or both Arms.*

Though the head should present with one or both arms, experience hath fully proved that a woman may be delivered by the natural efforts with safety to herself, and without prejudice to her child, if the *pelvis* be well formed. But as a part of the cavity which should be appropriated to the head will be filled by the additional bulk of the arms, there will be an evil similar to what
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would be produced by a small, or by a somewhat distorted *pelvis*; and if the *pelvis* be barely of sufficient dimensions to allow the head of the child to pass through it, then the additional bulk of the arms may render the passage of the head impossible; or the labour may be so much retarded as to make it what is properly called difficult.

In the beginning or in the course of a labour of this kind, the practitioner will often be able to return the presenting arm or arms beyond the head, without any detriment; but he must be very careful not to solicit the descent of the arm before the head, lest he should change the whole situation of the child, and convert that which would have been only a variety of a natural into a preternatural labour.

In some cases we are enabled to feel the head, a foot and an arm at the same time, and it will then be expedient to grasp and bring down the foot, and to deliver in that manner. But it behoveth us to distinguish very cautiously between a hand and a foot, because the mistake would lead us to the necessity of turning the child, an operation which would otherwise not have been required.

In presentations of the head together with one or both arms, unless there should be any particular reason for our wishing to turn the child, the propriety of which must rest upon the
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the judgment of the practitioner, we are to be prepared, and wait with patience for the expulsion of the child by the natural efforts; or when we are convinced by their failure or cessation, that these are not equal to the effect, to give such assistance as the nature of the case may require; and whatever the instruments which it may be necessary to use, are, their action will be nearly the same, as if the arms had not been in the *pelvis*.

Whether these cases are completed by the natural efforts, or by the assistance of instruments, the arms of the child will be very much tumefied or bruised, and the child is for a certain time as unable to use them as if they were paralytic. But by the help of fomentations and poultices, and by moderate motion and gentle friction, their natural appearance and use are recovered in the course of a few days; at least I have not seen an instance of any permanent mischief from this cause.

When the extremities present at the time of birth, there is often a doubt whether the child be living or not, unless it can be perceived to move. Now the fact may be ascertained by the consequences of any violence, as no part of a dead child can either tumefy or change its colour, however compressed it may be, and only shews one kind of violence, that of solution of continuity.

ON THE THIRD ORDER,

O R,

The Diseases of the soft Parts which occasion difficult Labours.

I. *Suppression of Urine.*

THE various affections of the urinary bladder during pregnancy, have been already mentioned. On the commencement of labour, it was said that an involuntary discharge of the urine might be occasioned; but there is more frequently a difficulty in voiding it, and sometimes there is a total suppression. The inconveniencies thence arising will be according to the quantity of urine retained, and to the length of time that the bladder may continue distended. The first will hinder the proper action of the *uterus*, and will be an impediment to the passage of the head of the child, which will not only have a less space to pass through, but be projected also out of its proper direction; and by the latter the bladder itself may be injured, in consequence of the pressure which it undergoes from the repeated actions of the *uterus*, by which it may become inflamed; and in some cases in which relief was not given, it has even been ruptured, the patient being thereby destroyed*.

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* See Chapman, page 143, see also Medical Observations and Inquiries, vol. 4.

In the beginning and course of labours, especially of those which are tedious or difficult, great attention is therefore to be paid to the state of the bladder ; the patient is to be frequently admonished to void the urine ; and in all cases of doubt we are not to confide in any representation, but are to be satisfied only with seeing the quantity of urine which has been discharged ; error being often committed by confounding the waters of the *ovum* with the urine. By the application of the hand to the *abdomen* of the patient, it is often an easy matter to distinguish between the tumour of the *uterus*, and the flattened but circumscribed tumour of the bladder, which lyes below and before that formed by the *uterus* : the patient herself is frequently capable also of distinguishing that pain which is the consequence of the action of the *uterus*, from that which is occasioned by the pressure upon the distended bladder.

To remove that obstacle to the passage of the child, which may be produced by the distention of the bladder ; and to prevent any injury to the bladder itself, it is necessary to draw off the urine with the catheter, whenever it is retained beyond a certain time or degree. In slighter cases the common catheter will answer the purpose ; but when the head has been long wedged in the *pelvis*, there is not sufficient room for that to pass, even though

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the head be elevated or pressed towards the hollow of the *sacrum*. But in such cases the flattened catheter contrived by my very worthy and ingenious friend Dr. *Christopher Kelly*, will often pass with ease and convenience. But whatever catheter it may be found expedient to use, or however necessary it may be to draw off the urine, we are to take care not to introduce the instrument with much force, because we may do as much positive mischief with the instrument, as we aim or wish to avoid. In some cases, though we are assured that there is a great quantity of urine in the bladder, the head of the child is so immovably locked in the *pelvis*, that we cannot possibly introduce any catheter, and are therefore obliged to submit to the inconveniencies which may follow the distention of the bladder. But if care was taken in the beginning of labour, this does not often happen; nor is it always attended with the evils we might dread, the head of the child being at length pressed so low as to allow the urine to escape, though very slowly. But in all such cases it will be prudent and necessary to introduce the catheter before or soon after the expulsion of the *placenta*, that we may prevent the mischief which might be expected to follow the distention of the bladder, if that was to remain many hours after the delivery.

2. *Stone*

2. *Stone in the Bladder.*

If a woman should have a stone in the bladder, there would be no reason why she should not be with child, and proceed through her pregnancy without molestation. Nor, if it was of a small size, would it be any impediment to her delivery; though if it was large, the head of the child could not pass through the *pelvis*, or not without much trouble and inconvenience. Of this case I have never met with an instance in practice, and may therefore be allowed to consider it as very rare, though there does not appear to be any reason for judging it impossible. I have reflected upon the case, and upon the conduct which it might be necessary to pursue, if it had occurred to me; and though it behoves me to speak with reserve, and to be satisfied if little confidence be placed in what I advance, it is better on the whole to give my opinion, than to leave the matter without making mention of it, or considering it.

In the beginning of labour, supposing there is a stone of a large size in the bladder, one of these consequences must follow; the head of the child must advance before the stone, or the stone must be protruded before the head of the child. If the former should be the case, we might presume that the labour would proceed in a natural way, as if the stone did not exist; there would, at least, be

no demand for the assistance of art, and no room to exercise it. But if the stone should be protruded before the head of the child, our conduct must be regulated by the circumstances. It seems reasonable that we should first attempt to raise the head in such a manner, and to such a degree as to allow us to return the stone beyond the head. But if that should be found impracticable, either because the head of the child was too far advanced, or firmly locked in the *pelvis*, we must then weigh the evils to be apprehended, from the compression of the soft parts, that is, of the anterior part of the *vagina*, and the posterior part of the bladder, between the head of the child, and the stone in the bladder ; besides the distraction of the parts which must be necessarily occasioned. Whatever conduct we might pursue must be attended with some evils, and as it is only in our power to choose the least of these, it seems better even in the time of labour, to suffer the evils which might follow the performance of the operation for extracting the stone, than to suffer those which may be occasioned by the compression. With regard to the operation, there is both less difficulty and danger in women than in men, though these will in some measure depend upon the size of the stone. In some cases also in which the stone is contained

tained in a distinct cell of the bladder, and could not therefore be grasped or extracted by the *forceps* when introduced; it has been proposed to make an incision through the anterior part of the *vagina*, directly upon the stone. This operation, which may in some cases be eligible, has been performed twice, by two surgeons of great ability and eminence in the country, and as I was informed, without occasioning the effect to be apprehended; that of leaving a fistulous opening by which the urine would have been voided for the remainder of the patient's life.

3. *Excrescences of the Os Uteri.*

Excrescences of the *os uteri* are usually combined with some degree of scirrhus disposition of that part. It was before observed that excrescences do not prevent conception, or disturb pregnancy; but according to their size and situation, they must necessarily be obstacles at the time of labour. The following case, which was curious in the circumstances attending, as well as the nature of the complaint, I may be permitted to transcribe, as it was an example of an excrescence of the largest size I have ever seen.

In June 1770, I was desired to see a patient in the eighth month of her pregnancy, who in the preceding night had a profuse hemorrhage. Her countenance shewed the effects of the great loss of
blood

blood she had sustained; and from the representation of the case given me by the gentleman who was first called in, I concluded that the *placenta* was fixed over the *os uteri*. On examination I felt a very large fleshy tumour at the extremity of the *vagina*, representing and nearly equalling in size the *placenta*, which I judged it to be. Had this been the case, there could not be a doubt of the propriety and necessity of delivering the patient speedily; and with that intention I passed my finger round the tumour, to discover the state of the *os uteri*; but this I could not find: and on a more accurate examination, I was convinced that this tumour was an excrescence growing from the *os uteri*, with a very extended and broad basis. I then concluded that the patient was not with child, notwithstanding the distention of the *abdomen*, but that she laboured under some disease which resembled pregnancy; and that the hemorrhage was the consequence of the disease. A motion which was very evidently perceived when I applied my hand to the *abdomen*, did not prevail with me to alter this opinion.

It was of all others a case in which a consultation was desirable, both to decide upon the disease, and the measures which it might be necessary to pursue; and several gentlemen of eminence were called in. That she was actually pregnant, was proved to the satisfaction of every one; and it was then concluded,

concluded, that such means should be used as might prevent or lessen the hemorrhage, and that we should wait and see what efforts might be naturally made for accomplishing the delivery.

No very urgent symptom occurred till the latter end of July, when the hemorrhage returned in a very alarming way, and it was thought necessary that the patient should be delivered. There was not a possibility of extirpating the tumour, and yet it was of such a size as to prevent the child from being born in any other way than by lessening the head. This was performed; but after many attempts to extract the child, the patient was so exhausted, that it became necessary to leave her to her repose, and very soon after our leaving her, she expired.

We were permitted to examine the body. There was no appearance of disease in any of the abdominal *viscera*, or on the external surface of the *uterus*, which was of its regular form; and when a large oval piece was taken out of the anterior part, the child, which had no marks of putrefaction, was found in a natural position. An incision was made on each side of the *cervix* to the *vagina*, and then a large cauliflower excrescence was found growing to the whole anterior part of the *os uteri*. The *placenta* adhered with its whole surface; so that the blood which she had lost must have been discharged from the tumour.

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The propriety or advantage of a practice by which the life of neither the parent or child was preserved, ought to be considered; but such cases occur so rarely, that there is always room for animadversion, when they are concluded. Yet the general principle of its being ever our duty to preserve both their lives, if possible; or to preserve that of the parent; or, if she cannot be preserved, then to save the child, if it is in our power; would have been a better guide on this occasion, than that which was followed.

Exercences of a smaller size are not unfrequently met with in practice; and as even these are usually accompanied with some degree of scirrhous disposition of the *os uteri*, more time is required for the completion of the labours. It is also to be remarked, that in cases of this kind, there is often a long continuance of the pains without any sensible effect; but all at once, the rigid *os uteri* yields and dilates speedily and unexpectedly, or perhaps in some instances is lacerated. During labours of this kind, and after delivery also, the great object is to guard against all causes of inflammation, at first perhaps local, but afterwards extending to other parts, connected or readily consenting with the *uterus*; and more immediately necessary for the functions of life.

4. *Cicatrices*

4. *Cicatrices in the Vagina.*

From diseases of the soft parts, especially from violence sustained in former hard labours; the *vagina* may have become ulcerated; and when care was not taken to prevent the surfaces from abiding in contact with each other, the opposite sides might adhere in different degrees, according to the depth and extent of the ulceration. When the ulceration is slight, and the inflammation is not so great as to bring the tumefied parts into contact, after a certain time they heal; but cicatrices being formed, the diameter of the passage is lessened, and the part is left with a disinclination to yield on any future occasion. In some cases a superficial slough has been thrown off from the whole internal surface of the *vagina*, and cicatrices of an irregular kind formed from the *os uteri* to the external orifice. In other cases there has been a cicatrice only at one part, and if this should happen near the external orifice, the contraction is such as to mimic an unruptured *hymen*.

Amidst a great variety of cases of cicatrices in the *vagina*, I have not met with one example in which they were able to withstand the pressure of the head of the child, if the pains were of the customary strength. The labours have indeed been retarded, but they have terminated favourably. But when the difficulty arising from this cause

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has been combined with other causes, it must of course have added to the trouble which the patient would otherwise have undergone. Or, if the pains should cease before the labour is completed, then such assistance must be given as the case may require; being on our guard that we do not offer assistance before there are proofs of the necessity, and we are assured that the difficulty cannot be overcome by the natural efforts.

5. *Adhesions of the Vagina.*

Adhesions of the *vagina* are occasioned by an increased degree of the same causes as those which occasion cicatrices. There may be an adhesion in women who were never pregnant, or it may be the consequence of a slough thrown off after a former labour, with or without the use of instruments*. Cases of adhesions of this kind are commonly mentioned as of very easy management, nothing more being required, it is said, than to separate the united surfaces with a knife, and to prevent their re-union by the introduction of a tent or canula for that purpose. It is true, when the adhesion has taken place near the external orifice, that it is
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* I have been informed of the case of a patient who was in the hands of a very skilful practitioner, in whom, after her delivery, which was not attended with any circumstances of peculiar difficulty, the whole internal surface of the *vagina*, and all the external parts entirely sloughed away.

in general managed without difficulty; but when the parts adhere high up in the *vagina*, then it appears from the structure that there is need of the greatest circumspection, lest on the one hand we perforate the bladder, or, on the other, the *rectum*, all these parts being drawn close together. When therefore an adhesion of this kind takes place after the age of menstruation, it is better to suffer the menstruous discharge to be collected; and after a certain time, the part where the incision ought to be made, will be pointed out.

It is possible for an adhesion to take place after a woman is become pregnant; of course when labour came on, the contents of the gravid *uterus* would be impelled against the adhering part, which would either separate or resist the exclusion of the child. In the former case nothing would be required to be done; but in the latter, it would be necessary to divide the united parts by an incision, with great care, and to a certain degree, leaving the full separation to be made by the membranes containing the waters, or by the head of the child.

6. *Steatomatose Tumours.*

Of this cause of difficult labours I have never met with an instance in my own practice; but the following case was communicated to me by a gentleman whose authority is unexceptionable.

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A lady

A lady, after the birth of her eighth child, fell into a state of bad health, with many painful and troublesome symptoms, but no marked disease. These were by some physicians considered as nervous, by others as scorbutic, and by others as rheumatic, or of a gouty nature. A variety of medicines were given, and means tried for her relief, but without any good effect. At the expiration of two years she became again pregnant. All her former labours had been very easy and natural; but when Dr. ——— was called at the commencement of this, he found an obstruction at the superior aperture of the *pelvis*, which he believed could only be occasioned by the projection of the lowest lumbar *vertebra*, or the upper part of the *facrum*. It was then supposed that she had the *osteosarcofis*, of which her complaints had been the symptoms. It was impossible for her to be delivered in any other way than by lessening the head of the child. She died on the fourth day after her delivery. Leave was given to open the body, and when the *pelvis* was examined, the tumour which was imagined to be a projection of the bones, was found to be an excrescence of a firm, fatty substance, springing from one side of the upper part of the *facrum*, and passing across so as to fill up the greater part of the superior aperture of the *pelvis*.

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It is probable that the complaints of this lady were occasioned by the pressure of this tumour upon the *uterus*; and had the real state of the case been known before the time of labour, or even during her labour, it does not appear to have been proper, or within the bounds of the art, to have attempted or afforded her any other assistance.

7. *Enlargement of the Ovaria.*

Diseases of the *ovaria*, both of the scirrhus and dropsical kind, especially the latter, are very frequent. Either of these must generally prevent conception; but as one of the *ovaria* may be very much diseased, when the other is in a perfectly healthy state, instances sometimes occur of women becoming pregnant under such circumstances, and then the enlarged *ovarium* may produce inconveniences during pregnancy, or become an obstacle to the progress of labour.

With the history of two cases of this kind, I was many years ago favoured by Dr. *John Ford*, a gentleman of great skill and experience. In the former he was surprised to find a large and firm tumour lying between the *rectum* and *vagina*, and filling up all the concavity of the *sacrum*, and a considerable share of the cavity of the *pelvis*. Being convinced of the impossibility of the child passing by this tumour, which did not yield or diminish by the force of the pains, it was determined that

that the patient ought to be delivered by lessening the head of the child. The operation was performed with great care, but the patient died at the end of three weeks. When the body was opened, the tumour was found to be an encysted dropfy of the *ovarium*, in which there was a considerable quantity of hair.

In the latter case, which in all its circumstances resembled the former, instead of lessening the head of the child, a trocar was passed through the posterior part of the *vagina*, directly into the tumour. A large quantity of water was immediately discharged, the tumour subsided, and a living child was born without any further assistance. This patient recovered from her lying-in, but some time after becoming hectic, she died at the end of about six months, though from the symptoms it did not appear that the fever was occasioned either by the disease or the operation.

Having related these two cases, I have said all which I had to advance on the subject, except that I have met with more than one instance of a circumscribed tumour on one side of the *pelvis*, which I at first suspected to be a diseased *ovarium*. But as these tumours have always given way to the pressure of the head of the child, the passage of which they have only retarded for a short time, I have concluded they were formed either by some soft fatty substance,

substance, or were cysts containing lymph casually effused, and forming to itself a cyst of the cellular membrane. But on taking an examination after delivery, the tumours were found to have again acquired their primitive form and size.

8. Rupture of the Uterus.

The human *uterus* is found to retain its original thickness during the time of pregnancy, notwithstanding its distention; or to become somewhat thicker than it was in the unimpregnated state. This thickness, we have therefore reason to think, is consequent to some principle acquired, and coeval with conception. But if the whole, or any part of the *uterus*, should be deprived of this principle, or affected with any disease destructive of its operation, then the whole, or the part so affected, would be mechanically distended, and become thinner in proportion to its distention; and at the time of labour, when the action exerted might be greater than the unthickened part of the *uterus* was able to bear, the *uterus* would be of course ruptured. Or if the *uterus* which had acquired its proper thickness, became affected with any disease, weakening its power, and speedy in its progress, the texture of some part so affected might be destroyed, and the *uterus* ruptured by its own action in the time of labour. The *uterus* may also be ruptured by attempts to pass the hand for the purpose of turning a child, if

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it was strongly contracted; but in this last case a rupture could only happen when the force with which the hand was introduced, was combined with the proper action of the *uterus*; for no person has the power to force his hand through an healthy and unacting *uterus*.

Some of the causes of the rupture of the *uterus*, are unavoidable; for it is not within the sphere of human abilities, to give to any part the principle by which it has the disposition to perform any function; though art may excite it to action if dormant, or repress it when too vehement. But the two other causes, that which is preceded by inflammation, or that which may be occasioned by attempts to turn the child, may be corrected or avoided, by abstaining from the use of all such means as are likely to act as causes of inflammation; or from making such attempts as may be necessary for the purpose of turning a child, when the action of the *uterus* is strong.

The rupture of the *uterus* is usually accompanied with a sense of something giving way internally, with an instant vomiting of brown humour, and a total cessation of the pains. After these symptoms, by the application of the hand to the *abdomen*, the limbs of the child are so easily distinguished through the integuments, as to leave no room to doubt of the accident; and if the head of the child

child be not locked in the *pelvis*, it immediately recedes, or even goes out of the reach of a common examination.

When a rupture of the *uterus* has happened, there is little chance of the patient surviving it; and it might be doubted, whether it would be more eligible to suffer the patient to die without giving her further trouble, or whether it was our duty, hopeless as the case must be, to pass the hand into the *uterus*, to turn and deliver the child by the feet, or with the *forceps*, or in any way the case would allow. Whatever were the sentiments of practitioners formerly, is not to us very material; but besides some others of which I have been informed, a case has occurred to my very worthy, able, and experienced friend Dr. *Andrew Douglas*, in which though the *uterus* was ruptured, he turned the child, and the patient recovered. If no other case had ever occurred, I apprehend that this would be of sufficient authority, to render it in future the indispensable duty of every practitioner to act in a similar manner; and bad as the chance of the patient is, to be strenuous in using all the means which art dictates, to extricate her, if possible, from her danger. But for further information on this head, I refer the reader to the *Essay on the rupture of the uterus*, published by Dr. *Douglas*.

S E C T I O N.

THESE causes of difficult labours I have enumerated in this order, with the hope of pointing out a more useful method of arranging the knowledge we possess, and of removing some part of that obscurity in which the practice of midwifery has been involved, and by which its further improvement hath been hindered. Two things appear in the general result; first, that the evils attending parturition are more frequently adventitious, than necessary and unavoidable; and secondly, that the native powers of the constitution, when not interrupted, are not only superior to the common obstructions of the process, but in general, to every kind and degree of deviation from the natural course of labours. Yet with every prudential regard to our own conduct, and the most judicious regulation of that of our patient, we shall in practice certainly meet with cases in which, either from the debility of those powers which usually exist, and which ought to be exerted; or, from the greatness or stubbornness of the obstructing cause, we shall be compelled by necessity to give artificial assistance, or the mother, or child, or both will be lost.

Before

Before we proceed to the consideration of the various means which have been contrived for the relief of women in cases of difficult parturition, it may be again observed, that the causes of difficulty are generally combined; and as there are very few instances of a disease, according to the simple definition of it, in nosological writers, so there are few examples of difficult labours produced by one single cause. Together with the dribbling of the waters, there will often be a retraction of the head of the child from the shortness of the *funis*; and with great rigidity of the parts, or a small *pelvis*, there may be a weak action of the *uterus*, and so on to an almost endless variety. One cause will however predominate, and of course become the principal object of our attention. But when by time, or art, that cause is removed, we must apply ourselves to the removal of that which is important in the next degree; and sometimes the same means may be properly used for the removal of difficulties proceeding from several different causes.

But besides the causes already mentioned, there is one much more frequent than the rest, which is the derangement of the order of the labour by an officious interposition, or by improper management. Upon this subject it would be unpardonable to make an assertion which is not supported by experience; but I am fully convinced that the far

greater number of really difficult labours to which I have been called, and I must not conceal the truth on this occasion, some of those which have been originally under my own care, were not of that denomination from any unavoidable necessity, but were rendered such by improper management. Nor does the disturbance of the order of a labour, depend upon the practitioner alone; for the intractability of the patient herself*, or of her friends and attendants, which though it may be generally founded in compassion to her sufferings, may also arise from many other motives, are not rarely productive of the same effect.

On the part of the practitioner there is not only required much previous knowledge and present judgment, to distinguish in cases of great difficulty, which of them may demand the assistance of art, and which may be resigned to the efforts of nature; but there is no situation, in which there is occasion for greater address to procure the confidence and co-operation of all the parties concerned; or for more firmness in the pursuit of the negative conduct,

* De la part de la mere c'est quelquefois sa mauvaise humeur, son impatience, son indocilité, la violence et la irrégularité des mouvements.

conduct, which it is absolutely necessary to follow. Whatever may be the resolution of particular women, and whatever may be the general estimation of natural labours, every woman is impressed with the opinion, and the opinion is often well founded, that in difficult ones, her life must be preserved by the skill and judgment of the practitioner, under whose care she is placed. If therefore her confidence is secured, the delay to give assistance will be construed into a proof that none is required, and of freedom from danger.

The distress and pain which women often endure while they are struggling through a difficult labour, is beyond all description, and seems to be more than human nature is able to bear under any other circumstances. The great principle of all their patience and resolution, is perhaps that deep-rooted affection of the parent to the offspring, implanted in the female mind. But the principle of self-preservation, though varying in its operation, will recur, and demand its share of regard. In long and continued labours it is therefore proper by frequent allusions to the child, to encourage and strengthen the former principle, for its power is lessened or overcome by the weight of their present distress; their love for their child is conquered; and the prospect of distant pleasure is not

not able to stand in competition with the evils of the present moment. With the firmest determination to do what is right, they persuade themselves that the child is dead; that the object for which they should persevere, no longer exists; and the practitioner in opposition to his own feelings, and against the solicitation of those who confide in him, is often the only advocate for the child. But his decision to act in cases in which the life of a child is concerned, must stand upon a better principle than conformity to the inclinations of others; and though he might avoid present censure, or even gain present credit, by giving artificial assistance unnecessarily, when the case comes to be reviewed, and it always is reviewed, the blame of acting precipitately in cases which do not terminate fortunately, will be cast upon him, and their satisfaction will be established by the discovery of some cause of blame in his conduct. In the exercise of the most hazardous part of a profession, perhaps in general more subject to censure than any other, it behoves us to be particularly circumspect: and though events are often beyond the power of human controul, we may always act with intelligence, with prudence, and firmness; and no man's character can long be supported, if he is not governed by the determination to do what is right, to the best of his judgment and power.

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But however averse the practitioner may be to the use of such means as may be dangerous to, or even destructive of the child, cases must occur in which the assistance of art will be absolutely needful, and the use of instruments justified. As correct a judgment must also be exercised, and equal care taken that he does not delay that assistance which may be necessary, so long, that it cannot answer the end for which it was given; or while he is endeavouring to preserve the life of the child, he may lose that of the mother also, which certainly is of more value.

The intentions in the use of instruments may be of three kinds. First, to preserve the life both of the parent and child: secondly, to preserve the life of the parent; and thirdly, to preserve the life of the child. The instruments contrived to answer the the first intention, are the *fillet*, the *forceps*, and the *rectis*. Of each of these, together with all the collateral circumstances which demand our regard, we shall speak in their turn, and then proceed to the consideration of the other intentions.

AN
E S S A Y
ON
D I F F I C U L T L A B O U R S .

PART SECOND.

By *T H O M A S D E N M A N , M . D .*
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CLASS SECOND.

D I F F I C U L T L A B O U R S .

PART SECOND.

C H A P. VIII.

S E C T. I.

ON THE FILLET, FORCEPS, AND VECTIS.

WHEN men, first collected into societies, had provided for their subsistence, they would endeavour to amend their state, by removing such evils and inconveniencies as were most urgent, either from their importance or frequency. Next to those arts by which the means of support were acquired, that of medicine would be of principal consideration, as from the nature of their employments, hunting, fishing, pastoral or agricultural, men must have been liable to diseases and to injuries,

which by accident or trial, they would learn some method of relieving; and he that should have acquired the greatest collection of knowledge, or the most dexterous method of applying it to useful purposes, would have become a physician. But the origin and progress of that branch of medicine of which we are treating, would be somewhat different. When the customs and manners of life were simple, and not much disposed to produce diseases, difficulty or danger in the parturition of women would seldom occur; and notwithstanding the distress with which they might sometimes be accompanied, the general termination of labours would be easy and safe. In the very few cases which might require more than ordinary assistance, there were none to afford it; and those women who could not bring forth their children by their own efforts, were suffered to die without any attempts being made to relieve them, according to the relations which are given of the people of some countries, even at this day.

As mankind advanced in civilization, the evils attending parturition would probably increase, though ignorance or inability to give relief might long continue; but the supplications

tions for assistance, and the affections of men, would not permit them to remain unconcerned spectators of the misery of those, to whom they were indebted for the chief part of their happiness. They gave such aid as their information or ingenuity enabled them to devise, and this, in the first instance, consisted of ceremonies and amulets, or medicines, to which some mysterious properties were attributed, as the skins and some other parts of serpents, the eagle stone, the blood-stone, the stony substance found in the head of a shark, with many others of the like kind; and such things might succour the minds of women, strongly impressed with a sense of their utility, overwhelmed at the same time with extreme pain and apprehension. In times more enlightened, for every kind of distress religion offered its consolations, by soothing the mind, by teaching mankind, when oppressed with difficulties, to use their own endeavours, the necessity of submitting to evils which could not be prevented or avoided, and by encouraging with the hope of happy events. After the discovery of the mechanic arts, these were applied to the exigencies of every occasion; and when the suf-

ferings of women in child-birth could no longer be endured, attempts were made to relieve them by extracting, without regard to its safety, the head of a child which could not be expelled by the efforts of the mother; and for this purpose the first kind of *forceps* was invented and used. The same motives of compassion or affection which led to the wish of relieving women, would readily extend to children; and, to combine the interests of both, fillets and the *forceps*, now in common use, were contrived. When the head of a child was found to be too large to pass through a very small or a distorted *pelvis* with the help of such contrivances, there was no relief to be obtained except the head of the child was lessened, and for this purpose, perforators and crotchets of various kinds were invented. The intrepidity of some man seeing no other way of giving relief, or the desperate resolution of some woman frantic with her sufferings, might lead to a more summary way of obtaining it; and, with a determination to free her from the cause of her misery, or to put an end to her existence, a child might have been extracted through a wound made into the part which contained it,

it, and the manner of performing the Cæſarean operation would be ſhewn.

In ſome times and countries in which the *forceps* and other instruments of that kind were not known, or their uſe not fully underſtood, and afterward, in ſome caſes not thought ſuitable for their uſe, it became a cuſtom in many difficult labours, by whatever cauſe produced, to return the preſenting head, to paſs the hand into the *uterus*, to turn and deliver the child by the feet. But this operation of turning could only be performed under very limited circumſtances; for if the head of the child was very low in the *pelvis*, or the *uterus* ſtrongly contracted round its body, it could not be done, or not without defeating the very purpoſe for which the operation was performed, producing at the ſame time great danger to the parent. Yet caſes may occur in which by turning the child, the chance of ſaving its life is greater than can be gained by the uſe of any instrument, of which the following is an example.

Many years ago I attended a patient in two labours, in both of which there was a neceſſity of delivering with instruments, on account of the ſmallneſs and diſtortion of the *pelvis*,

and neither of the children could be preserved. In her next pregnancy I made a proposal to bring on premature labour, to which she and her friends would not consent, and I was dismissed from my attendance. In the course of twelve or fourteen years she had five more children, not one of which was born living. In the forty-sixth year of her age she proved with child, and again applied to me. When her labour came on, the first stage was suffered to proceed without interruption, but when the membranes broke, I without delay passed my hand into the *uterus*, and easily brought down the feet and body of the child; but the head being stopped by the narrowness of the superior aperture of the *pelvis*, I was obliged to exert, and to continue, much force before it could be extracted. The child was born with very little appearance of life; but by the strenuous use of the common means it was recovered. On the left parietal bone there was a depression of considerable extent, and to my apprehension of full one inch in depth; but the depressed part gradually rose, in the course of a few months the bone regained its natural form, and the child was for several years in good health.

The woman recovered without any untoward circumstance.

But the success of such attempts to preserve the life of a child is very precarious; and the operation of turning a child under the circumstances before stated, is rather to be considered among those things of which an experienced man may sometimes avail himself in critical situations, than as submitting to the ordinary rules of practice.

SECTION II.

ON FILLETS.

THE fillet used in the practice of midwifery is a single band, intended to be fixed upon the head of a child detained in its passage through the *pelvis*, for the purpose of extracting the head.

It has been supposed that fillets were used in the practice of midwifery as early as the time of *Hippocrates*; but whenever they were invented, they have undergone a variety of changes,

changes, by which it was intended to gain some advantage, or to avoid some inconvenience. Fillets were constructed of silk, cotton, linen, or leather of divers kinds, strengthened or rendered more commodious by the addition of cane, whalebone, wire, or very thin and narrow plates of iron, variously braided and worked together according to the opinion or judgment of the contriver.

The manner of applying the fillet was, by conducting it to some fixed point, or round the circumference of the head of a child, as high up in the *pelvis* as could be reached; then, after twisting the two ends together to acquire a firm hold, we were taught to extract, in a proper direction, with all the force the fillet enabled us to use, or the necessity of the case might require.

The peculiar advantages expected to be derived from fillets were these. They were supposed to be applicable with great facility in every direction of the head, or when this was too high to allow of the use of any other instrument recommended with the same intention; to supply us with sufficient power to extract the head when detained an unreasonable time, by any cause,

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to the hazard of the mother or child ; and to do less injury to either, on account of the softness and pliability of the materials of which they were composed.

But experience has fully proved that a fillet of any kind could not be applied without much difficulty and trouble ; that when applied it was very apt to slip ; that when it remained fixed, it was often inadequate to the purpose of extracting the head ; that it created new difficulties, or added to those which before existed, by changing the position of the head ; and that the injury done to the mother or child was not in proportion to the hardness of the materials of which instruments were constructed, but according to the violence with which they were used.

For these reasons fillets of every kind gradually declined in estimation, and they are now wholly neglected. They may be considered among the first attempts of art to give relief, which have been superseded by other contrivances, equally safe and more efficacious.

SECTION III.

ON THE FORCEPS.

THE *forceps* used in the practice of midwifery, is an instrument composed of two equal parts, each part consisting of a blade and handle, so formed that, when applied separately upon the head of a child obstructed in its passage through the *pelvis*, they may be connected together, and used as two alternate or conjoined levers, for the purpose of extracting it.

Forceps have been made of wood or silver, but generally of iron properly tempered, and when used, should be covered with smooth and thin leather, which without any significant increase of bulk, renders their introduction more easy, and takes off, both in appearance and reality, the asperity of the instrument. Each blade must be introduced separately, but in such directions, that when introduced they may be antagonists to each other; and there have been different contrivances to keep them fixed together.

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It would be difficult to determine the time when *forceps* were first used, but we have very early accounts of two kinds, with one of which it was intended to extract the child, without regard to the injury which might be done to it, and with the other to extract and preserve its life. The first was armed with teeth or sharp protuberances on the internal surface which grasped the head; but those of the second kind had no protuberances, and when used, were clothed with linen or some soft material, to prevent their doing any injury to the child. The first are never used at the present time, and would have been forgotten, except for the patterns which are preserved in the collections of those who have taught the art. Of the latter kind there is an endless variety, but every variety regards one or other of these conditions; their length, their strength, or their different degrees, or kinds of curvature.

From the length of the *forceps* formerly made, we may conclude that it was usual to apply them before, or as soon as the head of the child had entered the superior aperture of the *pelvis*; and from their strength, that it was thought necessary to provide for the exertion

exertion of great force. The common curvature was varied according to the opinion entertained of the form and dimensions of the head of a child at the time of birth ; but the lateral curvature was given for the accommodation of the instrument to the form of the *pelvis*, or for lessening the pressure upon, and of course the danger of lacerating, the external parts, when the child was extracted. As the *forceps*, though well applied, sometimes slipped from the head when brought into action, a groove, with a slight eminence on each side, was proposed to be made on that part of the internal surface which embraced the head, to prevent that accident, and to allow of a change in the manner of acting, by admitting some degree of rotation.

Forceps have also been contrived in such a manner that one blade received the other, and these were called male and female. They have also been made with hinges or joints between the handle and blade of each, answering no other purpose than that of concealing them, that there might be an opportunity of performing the operation with them in a clandestine manner. But as the reasons for using the *forceps* will justify the operation to
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the most severe examiner; and as these may be explained without adding to the terror or distress either of the patient or her friends, there never can be occasion for concealment; which, in these cases, ought to raise a suspicion of the judgment or integrity of those who should attempt to practise it. There is, in truth, more frequently a necessity of resisting the solicitations both of patients and friends, urging us to the use of instruments, than of persuading them to comply with our proposals when we think them needful.

Besides the different kinds of *forceps* which consist of two blades, others have been contrived with three. By those who supposed labours to be chiefly obstructed or rendered difficult by the inflexion of the *os coccygis*, a third blade was added for the purpose of raising the head of the child over that part. But those who supposed difficulties to be occasioned by the *sacrum* jetting, and of course projecting the head of the child over the *symphysis* of the *ossa pubis*, added a third blade for the purpose of bringing back the head thus projected, into a right line with the cavity of the *pelvis*, before any attempt was made to extract

tract it with the other two blades. Whatever credit may be due to the authors of these contrivances for their ingenuity, the third blade has certainly been added on erroneous principles; and *forceps* thus constructed, would not only be embarrassing in practice, but in every case, as far as can be judged, useless or injurious.

It is remarkable that *forceps* were made of an unnecessary length, when we were forbid to apply them before the head of a child had descended very low into the *pelvis*; and they were made very strong, when it was well understood that far less force than they enabled us to use, could be exerted with propriety or safety. They were however by degrees made shorter and less cumbersome, and about the year 1748, Dr. *William Smellie*, who was eminent in practice, and as a teacher of midwifery in *London*, altered them, and brought into general usage a kind of *forceps*, more convenient than any before contrived. These before they are curved do not measure more than twelve inches from the end of the handle to the extremity of the blade; and, when properly curved, little more than eleven inches, of which the handle measures near five inches.

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The widest part of the blade measures about one inch and five eighths, and this gradually declines towards the handle, preserving at the same time the flatness of the blade till it meets the handle. Being simple in their construction, applicable without difficulty, and equal to the management of every case in which the *forceps* ought to be used, I have adapted the following rules to them. But if *forceps* of any other kind should be preferred, though the principles will hold good, the rules must be varied, according to the discretion of the person who may perform the operation.

SECTION IV.

GENERAL OBSERVATIONS.

It has been long established as a general rule in this country, that the use of instruments of any kind ought not to be allowed in the practice of midwifery from any motives of eligibility. But when, from any cause, the parent becomes unequal to the expulsion of the child, the assistance of art,

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by whatever means it can be afforded, is justifiable by necessity; because without such assistance the parent would die undelivered, and with her life, that of the child would also be inevitably lost. Yet it behoveth every person who may use instruments in the practice of midwifery, to be well convinced of this necessity before they are used, and to be extremely careful in their use; that he does not create new evils, or aggravate those which might be existing. But though it be our duty to avoid the use even of those instruments which are intended to be employed without injury either to the mother or child, it would, on the other hand, be absurd to defer their use till the child were dead, and the mother reduced to a state, not of apprehended, but of real danger; or, which is worse, that if she should survive, her life would be rendered miserable from the consequences of mischief done before the instruments were used.

When it is proposed to deliver women with the *forceps*, the intention is, to supply, by their means, the total want, or deficiency of the natural pains of labour; in other words, to extract the head of a child which cannot
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be expelled by the efforts of the mother. But so long as these efforts continue with any degree of vigour, there is always reason to hope that they will ultimately accomplish the effect of expelling the child without any artificial assistance. We are moreover to recollect, that in labours of long continuance there will often be a temporary cessation of the pains, without any apparent reason or alarming symptoms; but that cessation of the pains which is the consequence of long continued, fruitless action, and of great debility, is to be considered as the only justification of the use of the *forceps*.

Before the completion of the first stage of a labour, that is, before the *os uteri* be completely dilated, and the membranes broken, the use of the *forceps* can never come under contemplation. Because the difficulties before occurring, may depend upon causes which do not require their use; or, if required, they could not be applied with safety or propriety before those changes were made.

There is infinitely greater difficulty in deciding upon the proper case and time when the *forceps* ought to be applied, than in applying or using them; but it is universally

agreed, that the lower the head of the child has descended into the *pelvis*, the easier will their application be, and the operation with them more certain and successful. With a view to this observation, a practical rule has been formed, that the head of a child shall have rested for six hours, as low as the *perineum*, that is in a situation which would allow of their application, before the *forceps* are applied, though the pains should have ceased during that time. This, with other rules, was intended to prevent the rash or unnecessary use of the *forceps*, and certainly time is, in these cases, a very good corrector of practice.

The *forceps* ought to be applied over the ears of the child, because when thus placed, there is the least likelihood of doing injury to the child, and they enable us to act with the greatest advantage and safety to the mother. It must therefore be improper to attempt to apply them before an ear can be felt, either because the head is too high to allow us to reach that part, or because it is so closely locked in the *pelvis*, that there is not sufficient room to pass the finger for that purpose between the head of the child and the *pelvis*. If an ear of the child can be felt, the
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case is always manageable with the *forceps*; but when the question, whether they ought to be applied, comes under consideration, the ears are not turned to the sides of the *pelvis*, but that ear which is to guide us will be found towards the *pubes*. However we are always to remember that the *forceps* are not to be applied because we have the power of using them, but because the necessity of the case is such as to require their use. But cases sometimes occur in practice in which we may despair of the ability of the mother to expel the child; and which, though not such as have been stated as suitable for the use of the *forceps*, become suitable, merely by waiting a certain number of hours, and a repetition of the slight efforts of the parent. In that desponding state with which every tedious and difficult labour is accompanied, I have also found the patient very much encouraged by having some distant time held up to her when she should be assisted, if the labour were not before concluded: as this encourages her, by giving to her imagination a period to her suffering.

Every change in the position of the head, and every alteration in the construction of the

forceps from those already stated, will require some difference in the manner of applying and using them. But the preference, which ought in reason to be given, of one kind of *forceps* to another, is merely because one instrument may be more handy and convenient than another: for an intelligent and skilful man would be able to apply and use those of any form or size, in such a manner that they should answer his purpose; as an expert surgeon would be able to amputate a limb with a knife of any kind. No consideration of advantage to be gained by instruments of any particular structure ought to lessen our attention, as the success of every operation must necessarily depend upon the justness of the idea entertained of it, in the mind of the person who may perform it, and the dexterity with which the instrument may be guided by his hands.

When we have determined on using the *forceps* according to the preceding observations, corrected by our own judgment; and when we have represented our opinion, and explained the reasons for it to the friends of the patient, as is customary in all other operations, we must prepare for this in the following

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ing manner:—The patient is to be placed upon her left side, across the bed on which she is laid, with her knees drawn up to the *abdomen*, and a pillow placed between them, and very near to the edge of the bed; that we may be able to reach the patient with all convenience, and possess the free and uninterrupted use of our own hands. The instruments, being warmed in water, and smeared with some unctuous application, are to be so placed that they can be readily taken hold of by ourselves, or handed to us by an assistant.

SECTION V.

ON THE APPLICATION OF THE FORCEPS.

THE first part of the operation consists in passing the fore-finger of the right hand between the *ossa pubis* and the head of the child to the ear; then taking the part of the *forceps* to be first introduced, by the handle, in the left hand, the point of the blade is to be slowly conducted between the head of the child and the finger, till the instrument touches the ear.

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There can be no difficulty or hazard in carrying the instrument thus far, because it will be guided, and in some measure shielded, by the finger. But the farther introduction must be made with a slow semi-rotatory motion, keeping the point of the blade close to the head of the child, by raising the handle towards the *pubes*. In this manner the blade must be carried along the head till the lock reaches the external parts near the anterior angle of the *pubendum*.

The point of the blade, while introducing, sometimes hitches upon the ear of the child, and then it requires a little elevation, which is given by raising the handle; but when it has passed the ear, and is beyond the guidance of the finger, should there be any check to the introduction either of this or the other blade, it should be withdrawn a little, to give us an opportunity of discovering the cause of the obstacle, which we must never strive to overcome with violence. When the first blade is properly introduced, it must be held steadily in its place by pressing the handle towards the *pubes*, and it will be a guide in the introduction and application of the second blade.

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Let the second blade be introduced in this manner. Keep the blade first introduced in its place, with the two lesser fingers of the left hand, and carry the fore-finger of the same hand, between the *perinæum* and head of the child, as high as you can reach. Then take the second blade of the *forceps* by the handle, in the right hand, and, conveying the point between the finger placed within the *perinæum*, and the head of the child, conduct the instrument with the precautions before mentioned, so far that the lock shall touch the anterior edge of the *perinæum*, or even press it a little backwards. In order to fix the two blades thus introduced, that which was placed towards the *pubes* must be slowly withdrawn, and carried so far backwards, that it can be locked with the second blade retained in its first position: and care must be taken that nothing be entangled in the lock by passing the finger round it. When the *forceps* are locked, it will be found convenient to tie the handles together, with sufficient firmness to prevent them from sliding or changing their position, when they are not held in the hand, but not in such a manner

as

as to increase the compression upon the head of the child.

Should the blades of the *forceps* be introduced so as not to be opposite to each other, they could not be locked; or if when applied the handles should come close together, or be at a great distance from each other, they would probably slip, or there would be a failure of some kind in the operation, as the bulk of the head would not be included, or they would be fixed on some improper part of the head; though allowance is to be made for the difference in the size of the heads of children. But if a case be proper for the *forceps*, if they be well applied, and we were to act slowly with them, there would not be much risk of failure or disappointment.

The difficulty of applying the *forceps* is usually occasioned by attempting to apply them too soon, or by passing them in a wrong direction; or by entangling the soft parts of the mother between the instrument and the head of the child.

SECTION

SECTION VI.

ON THE ACTION WITH THE FORCEPS
WHEN APPLIED.

It was before observed that the *forceps* when applied and fixed upon the head of a child, might be considered as a compound instrument which allowed of a separate action with either of the parts of which it was composed; or of a conjunct action, as if the two parts formed one instrument. The separate action with either part will be on the principle of the lever; but that with both the blades will be simple traction. Yet in practice we shall find very few cases in which it will not be necessary to exercise or to combine both these kinds of action.

As it is the intention, when the *forceps* are used, to supply with them the total want or insufficiency of the natural pains of labour, the whole power or force which the instrument enables us to use, ought not to be exerted in the first instance, but such a degree as any individual case may require; first trying a moderate degree of force, and increasing it slowly and deliberately, according to the exigence

exigence of each case. Because the impediment may not be great, and the point of obstruction may exist only at one part; and that being surmounted by one, or a few actions with the instrument, there would be no cause for acting any more. In some cases also, though the pains had entirely ceased, they will return with force sufficient to expel the child, from the irritation made by the mere application of the instrument. But when the *forceps* have been applied, they should not be removed before the head is expelled, lest the pains should cease, and we should be obliged to apply them again.

The effects of the *forceps*, or the consequences which result from their action, are these; compression of the head, descent of the head, inclination of the face to the hollow of the *sacrum*, extraction of the head. As the descent of the head precedes the inclination of the face to the hollow of the *sacrum*, it would be improper to attempt to change the position of the head before it has descended, and it is afterwards unnecessary; because if the action with the *forceps* be slow, and, according to the direction of the handles, the position of the head becomes altered in proportion to its descent, without
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any aim on the part of the operator, and without his guidance.

When the *forceps* are first locked, they are placed far backwards, with the lock close to, or just within the internal surface of the *perinæum*; and they can have no support backwards, except the little which is afforded by the soft parts. The first action with them should therefore be made by bringing the handles, grasped firmly in one or both hands to prevent the instrument from playing upon the head of the child, slowly, towards the *pubes*, till they come to a full rest. Having waited a short interval with them in that situation, the handles must be carried back in the same slow but steady manner to the *perinæum*, exerting, as they are carried back, a certain degree of extracting force; and after waiting another interval, they are again to be carried towards the *pubes*, according to the direction of the handles. Throughout the operation, especially the first part, the action of that blade of the *forceps* originally applied towards the *pubes*, must be stronger and more extensive than the action with the other blade, this having no *fulcrum* to support it, and chiefly answering the purpose of regulating the action

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with the other blade. If there were any labour pains when the operation was begun, or should they come on in the course of it, the *forceps* should only be acted with during the continuance of the pains; the intention being not only to supply the want or insufficiency of the pains, but to imitate also the manner in which they return.

By a few repetitions of this alternate action and rest before described, we shall soon be sensible of the descent of the head; and it will be proper to examine very frequently, to know the progress made, that we may not use more force than needful, nor go on with more haste than may be expedient or safe. In every case we ought to proceed slowly and circumspectly, not forgetting that a small degree of force, continued for a long time, will in general be equivalent to a greater force hastily exerted, and with infinitely less detriment either to the mother or child. But after some time, should we not perceive the head to descend, the force hitherto used must be increased, till it be sufficient to overcome the obstacles to the delivery of the patient.

It was before observed, as the head of the child descended, that the face would be accordingly

cordingly turned towards the hollow of the *sacrum*, without any aim or assistance on our part. Of course the position of the handles of the *forceps*, and the direction in which we ought to act with them should alter; for they becoming first more diagonal or oblique, with respect to the *pelvis*, and then lateral, every change in their position will require a differently directed action, because the handles should ever be antagonists to each other. In proportion also to the descent of the head, the handles of the *forceps* should approach nearer to the *pubes*; so that in the beginning of the operation, though we acted in the direction of the cavity of the *pelvis*, towards the conclusion we should act in that of the *vagina*. When we feel that we have the command of the head by its being cleared of the *pelvis*, and the external parts begin to be distended, we ought to act yet more slowly, especially in the case of a first child, or there would be great danger of a laceration of the soft parts; and this can only be prevented by acting very deliberately, and in the direction of the *vagina*; by giving the parts time to distend; by duly supporting the *perinæum*, which is the part chiefly in danger, with the palm of the hand; by

by soothing and moderating the hurry and efforts of the patient ; and, in some cases, by absolutely resisting for a certain time the passage of the head through the external parts. When the head of the child is born the *forceps* are to be removed, the delivery being completed as far as their assistance was required, and the remaining circumstances are to be managed as if the labour had been natural.

On the whole it appears that necessity, and not any sense of eligibility or expediency, will justify the use of the *forceps*; that when such necessity exists, their use is not only justifiable but highly advantageous; that with care they may be safely applied; that slowness and steadiness in our action with them will effectually secure both the parent and child against untoward accidents ; but that no skill or knowledge can prevent mischief or disappointment, if the operation with them be performed with hurry or violence.

SECTION VII.

ON THE APPLICATION OF THE FORCEPS,
UNDER VARIOUS CIRCUMSTANCES.

WE have before considered the manner of applying and using the *forceps*, when the head of the child presented in the most natural way, that is, with the face inclining towards the *sacrum*. But they may be equally necessary in other positions of the head, that especially which is in the next place most frequent, when the face is inclined towards the *pubes*. This position is discoverable by the readiness with which we can feel the greater fontanel in a common examination, by the direction of the ear, and often by feeling distinctly the features of the face tending towards the *symphysis*.

It was before observed, that this position of the head only constituted a variety of natural labours, as far as position was concerned in the definition. We are not, therefore, to be guided in our opinion of the propriety of using the *forceps* by any position of the head

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of the child, but by the necessity of any case, proved by the absolute inability of the mother to expel the child. Should such necessity exist with this position of the head, the *forceps* are to be applied, in the manner before described, over the ears of the child. But when they are applied we must act with them with the greatest caution; for, having a different and less perfect hold of the head, they are apt to slip, and, acting with less advantage, the operation, in this position of the head, must be more precarious. But if we succeed, when the head, thus situated, is brought so low as to distend the external parts, there will of course be greater danger of a laceration, if we are ever so much upon our guard; because, in extracting the head, the chin of the child should be cleared of the *ossa pubis*, before the hind head is suffered to slide over the *perinæum*, which will very much increase the distention, and produce the same effect as if the arch of the *ossa pubis* was too small to receive the head of the child.

The same observations are also generally true when the face of the child presents; or when, together with the head, there are one or both arms. For though in such cases there might
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be a necessity for, and a propriety in, using the *forceps*, the operation with them would neither be so certain or easy as in the position of the head first stated.

In labours attended with convulsions, or dangerous hemorrhage; or when from any other urgent cause it may be necessary to hasten the delivery of the patient, to free her from immediate danger, should the *forceps* be used, the general rules will be sufficient to guide us, varying and suiting our conduct to the exigence of any particular case.

Lastly, when there are signs of imminent danger, however averse we may be to the use of instruments, we may be induced to try the *forceps*, though a case might not be altogether such as we might choose for their application; merely to take an indifferent chance of saving the life of a child, which must otherwise be inevitably lost. In such cases, we must advert to the general principle, and make our attempts in a manner consistent with the safety of the parent; and, from motives of prudence, prepare the friends for that disappointment which it may not be in our power to prevent.

SECTION VIII.

ON THE VECTIS.

THE *vectis* used in the practice of midwifery is an instrument consisting of one blade, slightly curved, and a handle, similar in form to one of the blades of the *forceps*.

The true origin of this instrument, or time when it was first discovered, is not known; but before any accounts of the *vectis* were published, some difficult cases were recorded, in which women had been delivered with one blade of the *forceps*, which might then be well considered as a *vectis*, though not called by that name. But when only one blade of the *forceps* had been used, the operation was mentioned as something extraordinary, to shew perhaps the judgment or skill of the person who performed it, and not as leading to a rule of practice. It is probable that the instrument used by the *Chamberlens* in the last century was the *vectis*; but this is conjecture, for, after much inquiry, I have not been able to discover that any of them

them left either a pattern or description of the instrument which they used. In the second volume of *Heister's Surgery* there is a delineation of a true *vectis*, recommended to him by *Palsyn*, a surgeon of eminence at *Ghent*; but neither this instrument nor its description engaged much attention, nor was the *vectis* generally known before the year 1750. For though it had been used before that time by *Rhonbuysen*, a surgeon at *Amsterdam*, after whose name it has been since called, it was reserved by him with great secrecy, to his own credit and advantage; and, after his death, it became the property of his only daughter, from whom it was purchased by *De Bruyn*, an eminent surgeon of the same place. It appears that *De Bruyn* concealed the secret with as much caution as *Rhonbuysen*; or that he instructed students in the use of the *vectis* at a considerable price, and with an obligation not to divulge to others what he taught them. The names of other gentlemen who changed or improved the instrument soon became known; and, annexed to a paper written on this subject by the celebrated professor *Camper*, in the fifteenth volume of the *Memoirs of the Royal Academy*

of Surgery, is a plate representing the *veclis* used by *Rhonbuysen*, *Boom*, and *Titfing*.

The advantages arising from the use of the *veclis* in the hands of *De Bruyn*, ostentatiously urged, appearing to be very great, *Vischer* and *Vander Pöl*, two physicians at *Amsterdam*, from motives of pure benevolence, purchased the secret from *De Bruyn*, in the year 1753, and immediately published a description of the instrument, with directions for using it; but none of the papers printed on this subject in the Dutch language have ever been translated into our own. While the *veclis* remained a secret, the reports of the benefits obtained by it were probably much exaggerated, especially those of *De Bruyn*, though *Van Swieten* says he was an honest man; but, when it was divulged, and the positive and comparative merits of the *veclis* strictly examined, it retained its credit and estimation, in the opinion of many competent judges, in different parts of Europe.

When the *veclis* was very much used, and highly esteemed, at *Amsterdam*, as an invaluable improvement in the practice of midwifery, the *forceps* was the favourite instrument in this coun-

try, especially as altered by *Smellie*, who was then the principal teacher of the art in *London*. But the chief practice in this city was successively in the hands of *Dr. Bamber, Middleton, Nesbit, Cole, and Griffith*, some, if not all of whom, preferred the *vectis* to the *forceps*. To those gentlemen succeeded *Dr. John Wathen*, a man of great ingenuity and most pleasing manners, who reduced the size of the *vectis*, and frequently used it with a dexterity that has astonished me. In the year 1757, that most excellent charity for delivering poor women at their own habitations was established, and *Dr. John Ford* was the first physician appointed to conduct it. On every occasion which required instruments of this kind *Dr. Ford* used the *vectis*; and his coadjutors and successors, *Drs. Cooper, Cogan, Douglas, Sims, Dennison, and Squire*, with many others, have followed his example. From the deserved reputation of these gentlemen, who have at all times expressed their approbation of the *vectis* in preference to the *forceps*, many have been induced to try it, and the general opinion of its utility has increased. At the present time, all who are engaged in the practice of midwifery would

consider themselves as deficient, if they were not acquainted with the structure and manner of using the *vectis*; and some who, from education or habit, continue to use the *forceps*, are very willing to allow the equal, if not superior, value of the *vectis*.

SECTION IX.

ON THE DIFFERENT KINDS OF VECTES.

THE first *vectis* of which we had any knowledge was that of *Palfyn* before mentioned. The instrument purchased by *Vischer* and *Vander Pol* was made public in a pamphlet written in the Dutch language. In the account given by *Camper*, there appears to be some difference in the form, length, manner, and degree of curvature of the *vectes* used by *De Bruyn*, *Boom*, and *Titsing*. But if the power of the instrument was preserved, and the general principle of using it followed, it is probable that all those who used the *vectis* thought themselves at liberty to alter its form or to vary its dimensions.

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When the *vectis* was first known in this country, that described by *Heister* was preferred to those recommended by the surgeons at *Amsterdam*. The *vectis* used by *Dr. Cole* was, like one blade of the *forceps*, somewhat lengthened and enlarged. That of *Dr. Griffith* was of the same kind, with a hinge between the handle and blade; and that of *Dr. Watben* was like *Palfyn's*, but with a flat handle, and a hook at the extremity of the handle, which prevented its slipping through the hand, and might be occasionally used as a crotchet. Many other changes have been made in the construction of the instrument, but the *vectis* used by the gentlemen of the charity before mentioned is of the following dimensions:

The whole length of the instrument, before it is curved, is twelve inches and a half.

The length of the blade, before it is curved, is seven inches and a half.

The length of the blade, when curved, is six inches and a half.

The widest part of the blade is one inch and three quarters.

The weight of the *vectis* is six ounces and a half.

The handle is fixed in wood.

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From this description, any person acquainted with the *forceps* could find no difficulty in forming a just idea of the *veclis*, or an artist in making it. It appears also that a single blade of the *forceps* might, in many cases, be used not inconveniently, instead of any other *veclis*, and would generally answer the purpose without the trouble of introducing the second blade, as I have often experienced.

With respect to the part of the blade of the *veclis* which ought to be curved, and the degree of curvature, there has been some difference of opinion; but this must relate either to the ease of introducing, or the advantage of acting. With a small degree of curvature, diffused through the blade, the instrument may be most easily introduced, nor can the degree of curvature required, on any principle, be very great. But if, together with the power of the lever, we aim at acquiring much extracting force, the curvature should be somewhat increased; because the two centres, on which the force used would rest, would be at those parts of the head on which the instrument might bear, and the part on which it would rest, whether the sides of the *pelvis* or the hand of the operator.

For

For rendering the introduction of the instrument more easy, and for preventing all the inconveniences which might arise from the difference of curvature, Dr. *Aitken*, of *Edinburgh*, contrived a *vectis*, which he has fancifully called the *living lever*. When this is at rest it is quite straight; but while it is introducing, by turning a screw in the handle, the blade is made in such a manner as to bend gradually forwards as the instrument is advanced, so that the extremity of the blade is always kept close to the head of the child, of whatever dimensions that may be. There is infinite ingenuity in the contrivance; but of the effect in practice I cannot speak, having never tried this instrument. But a gentleman informed me that, in a trial he made, the chain, on which the mechanism chiefly depends, broke, and he was obliged to finish the operation with a common *vectis*.

To lessen the pressure made by the instrument, when in action, upon the parts of the mother, on which it might bear, some person contrived two holes on a part of the blade, near the handle, through which a strong ribband or tape was to be passed, which being afterwards tied and pulled firmly, when the instrument

instrument was acted with, was supposed to confine it firmly to the head of the child, and prevent or lessen the pressure which might otherwise be made upon the parts of the mother; but it appears that the same end may be answered better by the dexterous management of the instrument than by this contrivance.

SECTION X.

ON THE COMPARISON OF THE VECTIS
WITH THE FORCEPS.

THE general principle of practice, that the use of no instrument is to be allowed, except in cases of absolute necessity, ought not to be infringed, because we entertain a high opinion of any instrument, or because we may have acquired dexterity in using it. That principle, founded in common sense as well as medical knowledge, and confirmed by daily experience, must be held inviolable. The real value of any instrument will be shewn by its efficacy to answer the purpose for which it may be used, and by the convenience with
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which it can be managed, when its use is required.

There has been much verbal dispute among those who vindicated the superiority of the *vectis* to the *forceps*, and those who maintained the long established credit of the *forceps* against the encroachments of the *vectis*: but the comparison between the two instruments has never been brought fairly to an issue, which might have been done by a discussion of the two following questions.

Is it possible to deliver a woman, safely, with the *forceps*, in any case not manageable with the *vectis*?

Is it possible to deliver a woman, safely, with the *vectis*, in any case not manageable with the *forceps*?

We may take it for granted, that many cases occur in practice, in which either of these instruments may be used indiscriminately, with equal safety, advantage, and ease, allowing for the dexterity which may be acquired by the habit of using either instrument. But I do not recollect that those who have preferred the *forceps* have asserted that they could deliver a woman, in any case of difficulty not manageable with the *vectis*; and, as far as my experience enables me to judge, such

such a claim in favour of the *forceps* could not be supported. The debate on this point of the question has not turned upon the superior efficacy, but upon the greater safety and facility with which the *forceps* might be used. I have not heard of any case in which, after being foiled with the *vectis*, the operator was able to succeed with the *forceps*; though it is worthy of notice, that those who are accustomed to the use of the *forceps* only, think themselves at liberty to depreciate the *vectis*; and those who do not use them, speak of the *forceps* in terms bordering on contempt.

With respect to the second question, we will take the facts, and relinquish the arguments, used by those who have preferred the *vectis* to the *forceps*; which I allow sometimes to have been extravagant. If any confidence is to be placed in medical reports, it appears that many cases have occurred in which, after the introduction of the first blade of the *forceps*, it has been extremely difficult, or impossible, without the hazard of mischief, to introduce the second blade, and the operation has been performed with the single blade, used as a *vectis*. Of this I have known and been informed of several instances. It appears
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also, that before the head of the child has been so low down as was stated to be eligible for using the *forceps*, that the *vectis* has sometimes been readily applied, and safely and effectually used, when the necessity of some particular case required it. When the head of a child has been locked in the *pelvis*, the same necessity existing, when there was not space sufficient to admit the two blades, or more force perhaps been required than the *forceps* enabled us to exert, and we should otherwise have been compelled to lessen the head, it has been feasible to apply the *vectis*, and the patient has been safely delivered, with a probable chance of preserving the life of the child. Moreover, in all the deviations from that position of the head, which is most natural, as when it is turned with the face towards the *pubes*, or when the face presents, in which it is allowed that the *forceps* cannot be used with advantage or certainty; in all such cases, the *vectis* may be applied and used both with safety and efficacy. From this statement it may be presumed, that the *vectis*, prudently used, is, in every case, an equally safe and efficacious instrument with the *forceps*, and a better adapted instrument in
many

many cases which occur in practice. It is with this persuasion that several teachers of the art of midwifery in London, at the present time, never use the *forceps*, or speak of them in their lectures.

SECTION XI.

ON THE MANNER OF USING THE VECTIS.

By the first accounts it appears that the *vectis* was recommended, not only in such cases as were thought fit and suitable for the *forceps*, but to supersede the necessity of lessening the head of the child; it was, in short, asserted, that no other assistance could, in any case, be required, beyond that which we were enabled to give with the *vectis*. But if those accounts were allowed to be true, they would prove the miserable state of the principles and practice of midwifery at the time, and in the country in which they were written, in much stronger terms than they would describe the excellence of the instrument.

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The general condition and circumstances of labours before stated, as requiring the use of the *forceps*, will hold good, and with equal propriety, when the *vectis* is intended to be used; and the rules already given for the *forceps* will shorten what we have occasion to say respecting the manner of using the *vectis*. For though this instrument might be used when the head of the child was high in the *pelvis*, or even when that was firmly locked in the *pelvis*, in cases of great emergency, success in the management of such cases depending upon much previous knowledge and experience with the instrument, I dare not attempt to form a precise rule for the extent of our conduct with the *vectis*. But when, without regard to the facility with which the *vectis* may be introduced, or any other consideration except the necessity of the case, under the circumstances before stated, we have determined upon using this instrument, the patient being placed in the same situation, and every thing prepared as when the *forceps* are to be used, the operation is to be performed in the following manner:

Pass two fingers, or the fore finger of the right hand, to the ear of the child, and, introducing the *vectis* between the fingers and

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the head of the child, conduct it slowly forwards till the point of the *vestis* reaches the ear, wherever that may be. Then advancing the instrument as if it was a blade of the *forceps*, carry it on till, according to your judgment, the extremity of the blade may reach as far, or a very little beyond, the chin of the child; when the line of the head, on which the instrument rests, will be in a straight direction from the *vertex*, over the ear, to the chin of the child; and this is the most favourable position in which it can be placed. Then grasping the handle of the instrument firmly in the right hand, wait for the accession of a pain, during the continuance of which, raise the handle of the instrument gently towards the *pubes*, at the same time exerting a small degree of extracting force. When the pain ceases let the instrument rest, and when it returns repeat the same kind of action; and every time of acting endeavour to lessen the pressure on the soft parts of the mother, with the two fingers of the left hand placed in such a manner as to form, in some sort, a cushion on which the instrument may play. By a repetition of this action during the continuance of the pains, the head of the child will soon

soon be perceived to descend, and the face to turn gradually towards the hollow of the *sacrum*. But should the very moderate force we have recommended be found insufficient to bring down the head of the child, that must be gradually and cautiously increased, till it is sufficient to answer the purpose; and this may be done consistently with the safety both of the mother and child. When the *vertex* begins to fill and protrude the external parts, it is probable there may be no farther occasion to act with the instrument; or, if further action be required, it must be extremely gentle, taking all possible care, by turning the handle towards the *pubes*, by supporting the *perinæum*, and by slow proceeding, to guard against a laceration of the parts.

During the operation, the *vetlis* being confined to that part of the head where it was originally placed, must, as the head descends, necessarily change its relative situation to the mother, and be gradually turned from the *pubes* to the side of the *pelvis*, as was before remarked of the handles of the *forceps*.

It is also to be observed, though from the name of the *vetlis* it might be supposed we had the power of acting with it as a *lever* only,

that it will be found to possess a considerable degree of extracting force even when the curvature is but small ; and that we are able, at the time of using it, to direct with convenience, and in various ways, the head of the child as it descends.

In using the *veclis* some have directed us to apply it towards the hollow of the *sacrum* ; but I have persuaded myself that the opinion which could lead to this practice was erroneous, that the instrument would then be worked with less efficacy, and there would be a greater hazard of doing mischief to the mother and child.

It may lastly be observed, that some gentlemen have, by frequent practice, acquired such wonderful dexterity in the use of the *veclis*, as to finish the operation of extracting the head of a child with one single stroke of the instrument. But as I only pretend to describe a method of using the instrument with safety and efficacy, I may be excused from commenting upon all that has been affectedly or ostentatiously advanced upon this subject.

CHAP.

C H A P. IX.

S E C T. I.

ON LESSENING THE HEAD OF THE CHILD.

HAVING finished all the observations we had to make on the use of those instruments which have been contrived to answer the first intention in practice, that of preserving the lives of both the mother and child, we come to consider an operation yet more important, though the necessity of performing it far less frequently occurs. In this operation, being convinced that under certain circumstances it is impossible that both their lives shall be preserved, we feel ourselves justified in acting as if the child were already dead, as the only measure by which the life of the mother can be preserved.

This operation has ever been esteemed of the utmost consequence with regard to its principle and practice. The right or equity

of taking away one life for the preservation of another being doubted, the question was referred to divines, as the most competent judges of the case; and by them it was decided to be unlawful to take away one life, on any account, for the preservation of another. The reference of the question may perhaps be considered as a proof that this operation had been performed too frequently, and the decision seemed actually to forbid it altogether; but, as far as the general determination could be supposed to relate to this operation, there was sophistry in the statement of the question, if not in the reply. For by the first it was presumed that the child was always living when this operation was to be performed, though that could seldom be the case; and by the latter it was allowed, that the authority of the decision might be suspended, if there was reason to believe that the child was already dead. It was for this cause that all the symptoms of a dead child, certain and equivocal, were collected and distinguished by authors with great assiduity and circumspection.

In cases of dangerous parturition the prerogative of deciding upon the life or death of the mother or child, was supposed by some to be

be inherent in the husband. This opinion is contrary to the rights and interests of society, and never could have satisfied the mind, or justified the conduct of any person who should have submitted to be governed by it; nor do these cases admit of such election, for if the husband had preferred the child, his wish of preserving it at the expense of the life of the mother, could not have been gratified; he at least could be no competent judge of the necessity of the case, and could claim no peculiar dominion over the lives of either of them.

True religion and the common sense of mankind appear to have nothing contradictory. The doctrine they teach of its being our duty to do all the good in our power, and to avoid all the mischief we can, is applicable to the exigencies of every state, and we may be easily reconciled to it on the present occasion. In some cases of difficult parturition it is not possible that the lives both of the mother and child should be preserved. Of the life or death of the mother we can, under all circumstances, be assured; of the life or death of the child there is often reason to doubt when we are called upon to decide

and to act. The destruction of the mother would not, in the generality of cases, which may bring the operation of which we are speaking under contemplation, contribute to the preservation of the child; but the treatment of the child as if it were already dead, with as much certainty of success as is found in other operations, secures the life of the parent. It then becomes our duty, and is agreeable to our reason, to pursue that conduct which will give us the most probable chance of doing good; that is, of saving one life when two lives cannot possibly be preserved.

I forbear to inquire into the comparative value of the lives of an adult and a child unborn, because that does not seem to me to be the present question; and the subject has been in that view well considered*. But there is another argument to be drawn from the circumstances which sometimes occur in cases of laborious parturition, which applies with greater force towards justifying this operation in preference to any other, which might prove more hazardous to the mother, than

* See Dr. Osborn's Essay on Laborious Parturition.

any

any abstract reasoning. In all difficult labours, properly so called, especially such as are occasioned by disproportion between the head of the child and a small or distorted *pelvis*, one of the first effects of long-continued and strong pains, is the death of the child. The head of a dead child collapsing and admitting of pressure into a form more suitable to the dimensions of the *pelvis*, than a living one, will frequently be expelled through a space too small to allow that of a living child to pass. But after this change, which follows the death of the child, should the head remain too large, putrefaction advancing, the integuments of the head begin to decay, and the bones to loosen from each other. By the continuance of the action of the *uterus* upon the child the integuments of the head at length burst, and the bones being separated, the brain of the child may be evacuated through the opening. The bulk of the head thus lessened may be excluded by the force of the pains, and the body, impaired by an equal degree of putrefaction, may readily follow, and the labour terminate without the assistance of art. All these changes may be, and sometimes have been gone through with perfect safety to the

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the mother; so that the artificial opening of the head of a child is, in fact, no more than an imitation in one case of what happens spontaneously in another, and such imitation is the true ground on which the whole practice of surgery has been founded. It may also be observed that the resources of nature, in every thing which relates to parturition, are infinite and constantly exerted for the preservation of both the parent and child; yet when the two objects are incompatible, the life of the child is almost uniformly yielded to that of the parent.

From the number of signs of a dead child given by authors, and by the context of their writings, it appears to have been the practice, whenever the death of a child was ascertained, to use the means of extracting it; or to have given medicines to excite and aid the constitution for expelling it, without any reason drawn from the present state of the mother, but to prevent remote danger. This practice corresponded with the theory of the ancients, that a living child was born by its own efforts, but a dead child, being destitute of all power, must be excluded by art. But no fact is more clearly proved than that of a
 dead

dead child remaining in the *uterus*, inoffensively, for several weeks before the accession of labour, and being then expelled in a manner perfectly natural. No injurious absorption takes place, nor does the *uterus* suffer by being in contact with it. The certainty of the death of the child would not therefore indicate the necessity of the operation we are considering; but the reasons for, and justification of, it must be deduced from the state of the mother; and that state must be such as to prove her absolute inability to expel the child, and the impossibility of extracting it by any of those means which have been contrived for the purpose of delivering women, giving at the same time a chance of preserving the lives of children; together with the danger of delay. But as the signs of a dead child, if decisive, would, on many occasions, have their influence on practice, and might at least induce the most cautious and prudent man to hasten the time of performing this operation, which he might otherwise defer; and as the knowledge of these signs will lead to a more full investigation of the subject, it is proper to enumerate them; and to inquire at the same time how far each of them may be allowed

allowed to determine the fact which they are adduced to prove.

SECTION II.

ON THE SIGNS OF A DEAD CHILD.

I. RECESSION OF THE MILK, AND FLACCIDITY OF THE BREASTS.

SHOULD the child die when a woman is far advanced in her pregnancy, and before the commencement of labour, these signs are seldom wanting. But if they were to be offered as proofs of the death of a child destroyed by the severity of a labour, it would have been needful to have compared the state of the breasts at two specific times; first, on the accession of labour, when the child was living and they might be turgid; and, secondly, in the advanced state of labour when the child was dead, and they might have become flaccid. But as it is not customary to inquire into the state of the breasts before some suspicion is entertained of the death of the child, and as those of no two women, under any circumstances,

cumstances, exactly resemble each other, all indications taken from the state of the breasts must be uncertain, and any judgment, founded upon such indications, extremely liable to error.

2. COLDNESS OF THE ABDOMEN.

When children die towards the conclusion of pregnancy, women not unfrequently complain of coldness of the *abdomen*, and, at the instant of its death, there is usually one violent shivering. But when women in labour speak of this coldness, there is not actually external coldness, but a sense of it felt by the patient. A supposition that a dead child is colder than a living one, is the principle which gives to this sign its chief importance. But whether a child has been dead for a short or a long time, it is generally found to be of the same degree of heat with the *uterus* in which it was contained, and it is even hotter than the *uterus* while it is in the act of putrefying. The principle being fallacious, the inferences must often mislead, and a child is often born living, though the mother, before her delivery, complained of this coldness; which

which may be produced by some contingent circumstance, as the great heat of the room when she is in a profuse perspiration, or the sudden admission of cold air under the bed-clothes in winter. Little stress is to be placed on this sign alone, but, when accompanied with others, it may increase our suspicions of the state of the child.

3. MECHANICAL WEIGHT OF THE UTERUS.

If a woman in labour, or in the latter end of pregnancy, should feel the *uterus* fall with a sense of increased or unresisted weight, when she turns from one side to the other or changes her position, it is often surmised that the child is dead; all that resiliion observed to exist in every living body being lost. But this sense or effect may be explained in a more satisfactory manner from other causes, especially when a woman is in labour. Should the waters of the *ovum* be suddenly discharged, the *uterus* will contract till it comes into contact with the body of the child. But the integuments of the *abdomen*, not contracting with equal celerity, and the *uterus* wanting that support which they afforded when
it

it was fully distended, must of course fall to whichever side the woman may turn. Should the waters be discharged slowly, or should the head of the child drop into the *pelvis* immediately after their discharge, there would not be this sense of unsupported weight whether the child were living or dead; because in one case the *uterus* would be held firm by the general contraction, and in the other, the child would be prevented from that kind of motion by its position.

When a child dies in the latter part of pregnancy the flaccidity and subsidence of the *abdomen* are considerable; but it is from a very great degree of these one is led to suspect either the death or wasting of the child, such subsidence being one of the natural changes which precede labours.

4. WANT OF MOTION OF THE CHILD.

The kind and degree of motion which may be caused by the child varies in different women, and at different periods of pregnancy. By some the child is scarcely ever perceived, and with others it is scarcely ever at rest, but it is often quiet a few days before,
and

and in the time of labour. By the motion of the child its living state is ascertained; but the want of motion does not prove that it is dead, nor would it, for that reason, be justifiable to perform any operation which might be injurious to it, if living.

Some pregnant women have never been able to perceive the motion of the child through the whole time of pregnancy. Others have thought that they have felt the motion of the child, though the event has proved that they were not pregnant. Others have not doubted of the life of the child, though, after its birth, there were certain marks of its having been long dead. In long and very severe labours natural affection may be overcome by present suffering and distress, and women might conceal their knowledge of the motion of the child from the hope of a more speedy delivery. Every allowance must be made and every consideration had for human nature, humbled by infirmities and misery. The fears and affection of friends will also warp their judgment; but our greatest tenderness and the propriety of our conduct will be shewn, not by a compliance with requests and solicitations,

tions, but by following the dictates of our own reason and judgment, for we are not to be governed or alarmed with apprehensions of danger, but with its actual existence.

5. FOETOR IN THE APARTMENT OF THE PATIENT.

The putrefaction of the child would be an indubitable mark of its death, and might create a very offensive smell in the apartment in which the patient was confined; but every putrid child does not yield an offensive smell, and such smell may be occasioned by several other circumstances. If a child should die in the *uterus* from external injury, or any internal cause, and become putrid before the membranes of the *ovum* were broken, it would have a peculiarity of smell, but not that *fætor* which every animal substance emits, while it is in the act of putrefying under the influence of the open air. The *fætor* to which we now allude, can only appertain to a child which was living in the beginning of labour, and died in the course of it, after the discharge of the waters; and in such cases, when putrefaction does begin, it is commonly

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very rapid in its progress. The general smell of putridity in the apartment of a person in labour, is to be admitted with very great caution as a sign of a dead child; for if the room be small, or crowded with company, or kept hot and uncleanly, or the common offices of life are performed in it, as is usually the case among people of the lower class, a similar effect will be produced as when the child is dead and become putrid.

6. FOETOR AND ILL APPEARANCE OF THE DISCHARGES.

The *foetor* here meant is also supposed to arise from the putrefaction of the child, and the ill appearance to proceed from a mixture of *meconium*, sanious, or other matter which might be supposed to flow from a putrefying child, with the common uterine discharges. But the appearance of those discharges naturally varies in different women, according to their constitution, and to the qualities of the waters of the *ovum*. They become altered likewise by contingent circumstances as the casual retention of the discharge, or slight inflammation of the parts, which in
 8 some

some cases gives a strong scent to them, hardly to be distinguished from putrid *fætor*. With every appearance of the uterine discharges, children have been born living and healthy; and when they have been long dead, those have in many instances been so little changed, as not to raise suspicion in the minds of very experienced men; so that it appears that the proposal of any operation which would be injurious to the child, if living, would not be justifiable, merely on account of the smell or appearance of the discharges.

7. EVACUATION OF THE MECONIUM, WHEN THE HEAD OF THE CHILD PRESENTS.

Should a child present with the breech or inferior extremities, the evacuation of the *meconium*, which is an absurd name given to the excrements of the child at the time of its birth, is one of the proofs of such presentation. But when the head presents, if the labour be very severe or tedious, the waters will be tinged of a greenish colour, or pure *meconium* may be forced away, and, with such appearances, the child is often supposed to be

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dead;

dead; from a presumption, that if it was living, the *sphincter* of the *anus* would act with power sufficient to prevent any discharge. But by experience it is fully and frequently proved that a child may be born living, though the *meconium* should come away when the head presents, its evacuation proving no more than the weakness of the child, or the degree of compression it has undergone. The discharge of the *meconium* may also depend upon the quantity contained in the bowels, or some casual pressure upon the *abdomen*. We may however, in general, conclude, when the *meconium* comes away in a natural presentation, that the state of the child is not void of danger; and for many years I never saw a child born living, when the *meconium* had come away more than seven hours before its birth. But at length, I met with a case, in which the *meconium* was discharged for more than thirty hours, at the end of which time, though the woman was delivered with the *forceps*, the child was born healthy and strong.

EMPHY-

8. EMPHYSEMATOSE, EDEMATOSE, OR
OTHER PECULIAR FEEL OF THE HEAD
OF THE CHILD.

In many cases in surgery, information may be gained and the judgment assisted by what is called the *tactus eruditus*, or that faculty which enables us to perceive and discriminate by the touch, with greater accuracy than by any evident marks. It has also been said that we may decide in many doubtful cases, by the feel of the head, whether a child be living or dead. But as we know that in surgery, the most expert in this faculty are often mistaken, when they desert common evidences, so opinions, formed on such ground, would not authorize an operation to which they might be supposed to lead, in the question on which we are now speaking. For the integuments of the head of a child often become edematose to a considerable degree, from pressure in its passage through the *pelvis*; and emphysematose from a continuance or increase of the same pressure, when the child may, in all other respects, be perfectly well. If the integuments are squeezed

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into

into a smooth, round form, that is said to be unfavourable; but when they are corrugated, the tumefaction, though equally great, is thought to be of less consequence; the former being supposed to prove the absolute detachment of them from the *cranium*. The original connexion of the bones of the head is such, as to allow of their being pressed close to, or over, each other with safety to the child; yet when this has been long dead, and their natural connexion destroyed, they may be perceived to be loose and distinct. The state of the bones is frequently such as to leave no doubt of the death of the child, as well as the abrasion of the cuticle or the falling off of the hair; but proofs of things self-evident are not wanted in practice, but such as will guide us in doubtful cases. Probably I have before observed, that whenever children die in the *uterus*, the greater the degree of putrefaction in which they are expelled, the more favourable is the indication to the mother; shewing, I suppose, that the health and vigour of her constitution in general, and of the *uterus* in particular, are not impaired. But if a child should remain dead in the *uterus*, for any length of time, without becoming putrid, this circum-

circumstance might be considered as a proof that the powers of action in the mother were reduced to a state of dangerous weakness, as food remaining unchanged in the stomach would be a proof of the debility of that part.

Many signs of a dead child have been mentioned by authors, under the denomination of equivocal, as the livid paleness of the countenance of the mother, the offensive smell of her breath, and several others. But if it appears that those signs which have been called certain are in fact doubtful, it will follow, that very little reliance ought to be placed in those which are acknowledged to be equivocal. If, however, the propriety of performing this operation ought not to be decided by the certain knowledge of the death of the child, but by the circumstances of the mother absolutely requiring it for her preservation; then, the consideration of the life or death of the child becomes of less importance. Because if the operation, when really necessary, were not to be performed, the life of the child would not be saved, and that of the parent would be inevitably lost.

SECTION III.

ON THE CAUSES OF THE DEATH OF THE
CHILD,

THE death of a child in the *uterus* may be occasioned by various causes independent of the mother, as by local inflammation or other disease of some part essentially necessary to its life; by some original imperfection in its structure which may prevent its acquiring more than a certain size, or existing beyond a certain time; by the smallness or morbid state of the *placenta*, hindering the proper communication between the child and the *uterus*; by a partial or total separation of the *placenta*; or, by the rupture of some of the large vessels which run upon its surface: by the vessels of the *funis umbilicalis* becoming impervious; by the circulation through them being obstructed by the casual tying of a knot; by untoward pressure of the body of the child upon the *funis*; or
by

by its becoming dropfical or otherwise difeafed.

The child may alfo be destroyed by affections or difeafes of the mother, as by the fudden and violent impreffion of fear, joy, or other tumultuous paffion; by the irregularity of the parent's life; by fever; by improper or unwholefome diet; by any caufe capable of depriving the child of a proper quantity of nutriment, or depraving the quality of that with which it may be fupplied; or by accidents which produce fome pofitive injury upon the body of the child, through the integuments and parts with which it is invefted and naturally defended. Some of thefe are beyond the power of art to prevent or remedy, though others might by proper care and management be obviated or relieved; but at prefent we want only to difcover thofe caufes, of the death of a child, which may occur in the time of labour.

To the inconveniencies and danger which may arife in the courfe of a labour from the difproportion between the fize of the head of a child and the dimensions of the *pelvis*, we muft fubmit; as no judgment or fkill can do
more

more than teach us to wait patiently for the effect to be derived from the efforts of the mother, and the accommodating construction of the head of the child. And, though the degree of compression which this may undergo in a very tedious or difficult labour might be judged inconsistent with the safety of children, they will often be born healthy and vigorous, and the parents recover more speedily and perfectly, after such labours, than after those which were natural and easy. The same observation will also hold good of the resistance made by the soft parts to the passage of the child through the *pelvis*, unless their rigidity should proceed from local inflammation. But should the natural efforts be interrupted or subdued by fever, debility, or any other adventitious cause, or should there be local disease, the state of the patient would require the assistance of medicine or of art, according to the circumstances which might supervene. Yet it cannot have escaped observation, that far the greater number of those labours which have been considered as difficult, and which really were such towards the conclusion, were not in fact occasioned
by

by the absolute state of the patient, but by interposition, and the desire of accelerating labours, which in their nature required a certain time for their completion. This interposition has chiefly consisted of two points of practice, both extremely reprehensible; the artificial dilatation of the *os uteri*, and the premature rupture of the membranes. By such practice the order of the labour becomes disarranged, and there often follow occasions to exercise art, for the relief of those evils which were originally caused by the improper use of art, to the great hazard of the parent or child. So long therefore as labours proceed naturally, they may be proper objects of our reason and judgment, but cannot be considered as the objects of art. But when they are proved to be beyond the efforts of nature to accomplish, the assistance of art becomes justifiable because it is necessary, and we may be reconciled to the fate of the child, if the life of the mother cannot possibly be preserved by any means consistent with its safety.

SECTION

SECTION IV.

ON THE INSTRUMENTS USED IN THIS
OPERATION,

THE instruments with which this operation was antiently performed, do not appear to have been well calculated to answer the intention of the operator, effectually or safely. They consisted chiefly of hooks, differing in form and length, which were fixed upon any part of the head with the view of extracting it forcibly. It being sometimes found impracticable to fix a hook upon the head, other instruments were invented and used to make an opening in which a hook might be fixed, but without any intention of lessening the head. All these instruments it would be useless and tiresome even to enumerate; but it is remarkable that *Mauriceau*, a man of great experience and ability in his profession, should complain of difficulties in this operation which he could not surmount, from the want of proper instruments.

Perhaps

Perhaps there is no operation in surgery which admits of a more precise distinction, than this of lessening the head. It consists of three parts; perforating the cranium; evacuating the brain and *cerebellum*; extracting the head; and three instruments were commonly used for these purposes. The first was the scissars used by *La Motte*, altered and improved by *Smellie*; the second was in the form of a large spoon with ferrated edges; the third was a hook or crotchet, straight or curved, to be used singly, or in pairs like the *forceps*.

Many years ago, *Savigny* the instrument maker, at my request, prepared two instruments which I supposed to be fully sufficient for this operation, the evacuation of the brain not requiring a separate instrument. The first was a *perforator* in the form of *Smellie's* scissars, the blade being slightly curved in the manner of the scissars used for extirpating the tonsils, but without any cutting edge, which is somewhat dangerous and altogether useless; the second was a crotchet with a little degree of curvature and a very small hook. The *perforator* measures about nine inches in length, and has a stop on each blade one inch
and

and a quarter from the point. The crotchet, which has a wooden handle and a flat stem, should, when properly curved, be of an equal length with the *perforator*. These instruments, which are now almost in general use, are found to be very convenient and fully adequate to every purpose in the performance of this operation; and as the intention is well understood, and the instruments simplified, both the difficulty and danger of the operation are infinitely lessened.

Since these papers were sent to the press, an account of the invention and use of the *velis*, by Dr. Bland, has been published in the *Medical Communications*. It is, perhaps, unnecessary for me to observe, that I have not yet read that account; so that whatever difference may be found in the two accounts may be ascribed to the opinions which, from experience, we have considered ourselves authorized to adopt.

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AN
E S S A Y
ON
D I F F I C U L T L A B O U R S .

PART THIRD, AND LAST,
ON PUERPERAL CONVULSIONS,
AND
ON THE DESCENT OF THE FUNIS.

By THOMAS DENMAN, M. D.
LICENTIATE IN MIDWIFERY
OF THE COLLEGE OF PHYSICIANS, LONDON;
AND HONORARY MEMBER OF THE ROYAL MEDICAL SOCIETY,
AT EDINBURGH.

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D I F F I C U L T L A B O U R S :

P A R T T H I R D .

S E C T I O N V .

O N T H E M A N N E R O F P E R F O R M I N G T H E O P E R A T I O N .

MUCH consideration is required before we determine to perform this operation; but when we have decided upon the necessity of its being done, together with circumspection in the manner of doing it, there is occasion for our being resolute and persevering in our attempts to accomplish it; even when the difficulties to be surmounted appear to be too great for any degree of skill, or any force we have the power of using. One common error formerly prevailed in this and many other operations, founded on an
B opinion,

opinion, that it was needful to perform it speedily; but it is now proved by experience, and generally acknowledged, that the more calmly and slowly we proceed, the less chance there will be of failing, or doing mischief. As the sole aim of this operation is to preserve the life of the mother, without regard to the child, whatever its state might be, it will be our duty to be extremely careful to guard against every accident which might prove injurious or hazardous to the mother. But, as by following the distinctions specified in the last section we shall be able to mark and explain all the circumstances of the operation as they occur, we will abide by those distinctions in describing the manner of performing it.

SECTION VI.

ON THE PERFORATION OF THE HEAD.

THE ease or difficulty attending this and every other part of the operation, will depend upon the distance the head may be from us ;
 whether,

whether, for instance, it be descended and locked in the *pelvis*, or be lying at the superior aperture; and upon the degree of distortion of the *pelvis*, which may be only so much as just to prevent the passage of the head, or so great as to render the use of the instruments both troublesome and dangerous. Some inconvenience may also be produced by the *os uteri*, should not this be dilated; but this may rather be esteemed a reason for extraordinary care than as a cause of difficulty.

Without regard to the part of the head we mean to perforate, but deciding upon that which is most obvious and easy of access, as the most proper, the left hand flattened is to be introduced into the *vagina*, and the fore finger of the same hand is to be directed upon that part of the head where we mean to fix the point of the instrument. The *perforator*, held in the right hand, is to be conducted with the convex part towards the palm of the left hand, and with the point kept close to the fore finger, till it reaches the part we mean to perforate. The fore finger of the left hand is then to be passed round the point of the instrument, that we

may be assured none of the soft parts of the mother are in the way of being hurt. With the instrument held firmly in the right hand, we must then press through the integuments of the head; and, the point being fixed upon the bones of the *cranium*, begin to perforate, by turning with a semirotatory motion the handle of the instrument. This motion of the instrument, taking care to confine the point to the place where it was originally fixed, is to be continued till we judge the bone to be actually perforated; trying occasionally, by advancing the instrument, whether the bone be perforated. When the bone is perforated, the instrument being pressed forwards will penetrate the head, and go on till it reaches the stops formed upon the blades. Then, fixing the finger and thumb of the right hand in the bows of the handle, or pressing the thick part of the hand between the stems, or calling for the help of an assistant, let the handles of the instrument be separated to such a distance as to make a slit or opening of sufficient length in the *cranium*; judging of, and in some measure guiding, the effect produced upon the blades by the separation of the handles, by the finger of the

the left hand retained in its primitive position. Then, closing the handles, the instrument must be turned in a transverse direction, and they are again to be separated in the same cautious manner, by which means a crucial opening of a proper size will be made in the *cranium*. The *perforator* is then to be closed and withdrawn in the manner it was introduced.

In this part of the operation the principal things which demand our attention are, first, that the instrument be carefully introduced; second, that we be not alarmed at the discharge which follows the perforation of the integuments of the head, as that is to be expected; third, that the point of the instrument does not slip while we are perforating; fourth, that the opening in the *cranium* be sufficiently large.

SECTION VII.

ON THE EVACUATION OF THE CONTENTS
OF THE HEAD.

A VERY large opening of the *cranium* has been generally reputed necessary for the well performance of this operation ; but this is not absolutely required in any point of view, nor can it always be made with safety. It must, however, be sufficient for the purpose of suffering the contents of the head to pass through it ; and for the evacuation of these, it was before mentioned, that various instruments had been contrived. But these, especially the ferrated spoon, appear to be unnecessary and dangerous ; unnecessary, because the texture of the brain and *cerebellum* being broken down, their evacuation will follow of course, as the head is propelled or extracted ; dangerous, because an instrument with many sharp points could not be frequently introduced and withdrawn, without the hazard of being caught on the soft parts of the mother. Any smooth instrument of a proper size and length, such as the handle of
a silver

a silver spoon, or a blade of the *forceps*, will answer the purpose of breaking down and evacuating the contents of the head safely and effectually. But I have generally introduced the crotchet into the opening in the *cranium*; and, turning it round frequently, in various directions, especially near the basis of the scull, have completed this part of the operation without difficulty. With all the care which can be taken, it is not always possible to do this on the first trial; but, if in the course of the operation it should be found that any part of the contents of the head had escaped the action of the instrument, the same method may at any time be repeated, without delaying the operation.

SECTION VIII.

ON THE EXTRACTION OF THE HEAD.

It was formerly a rule of practice, whenever the head of the child was opened, that the efforts to extract it should immediately

B 4 commence,

commence, and be continued till the purpose was accomplished. With all the cautions which have been given for ascertaining the necessity of the operation before it was performed, it was strongly inculcated, that we should be on our guard not to defer it till the strength of the patient was too much exhausted; because by such delay we should altogether lose the advantage that might result from the natural efforts; and, when the child was extracted, the mother would remain in a state of the greatest danger from mere debility. Our conduct with regard to the extraction of the head must then depend upon the state of the patient; whether that state will permit us to wait for the advantages to be derived from the putrefaction and compression of the head, or whether the head should be speedily extracted by art. If, from the great distortion of the *pelvis*, it should have been found necessary to lessen the head in the beginning, or early part of labour, the head when lessened may be left for many hours, to undergo those changes which putrefaction occasions, to the diminution of its bulk by compression, to its gradual descent into the *pelvis*, when it
 may

may be readily extracted, or to the chance of its final expulsion without assistance, as the reason and nature of the case may indicate or require. Under such circumstances the late Dr. *Christopher Kelly** informed me, and I believe the practice originated with him, that he had left the head of a child, after the evacuation of its contents, for more

* The papers of my late worthy friend Dr. *Kelly* are in the hands of my son-in-law Mr. *Croft*, who found among them the following account of the individual case, probably, of which the Doctor had informed me.

“ March 11, 1763. — has a *pelvis* extremely narrow, and, by the measure I took, do firmly believe the distance between the *os pubis* and projection of the *sacrum* is not more than two inches, therefore I knew it was in vain to hope to bring the child alive by any means whatever: therefore, for her safety, I opened the head freely, and emptied the *cranium*, in about sixteen hours after being first called to her, and then left it to settle into the *pelvis* twenty-four hours (as in the case of Mr. *Ford*'s patient), before I delivered her, which I did with tolerable ease, by means of the blunt hook only. She recovered as well as possible. This was her first child. She was so ricketty when a child as not to be able to walk till nine years of age, and is now very short. Her name is ———.”

The *pelvis* of this woman came at length into my hands, and in some parts of the superior aperture does not measure more than one inch and a quarter. D.

than

than twenty-four hours, without making any artificial attempts to extract it; and that the operation was, by this delay, rendered more safe, and infinitely more easy. The late Dr. *Mackenzie* also informed me, that he had in the latter part of his life followed this practice with success. But the matter has been more fully discussed, with great ingenuity, and as much precision as the question admits, by Dr. *Osborn**, who, in a case of which I was a witness, left the head of a child more than thirty-six hours after it had been lessened, and then extracted it; the woman recovering without any untoward symptom. When the head of the child has been lessened, the length of time during which the patient may therefore be trusted in expectation of favourable changes, must be left to the judgment that may be formed of every individual case which may be the object of practice. In some cases, from the precarious state of the mother, there will exist a necessity of extracting the head as speedily as we can with safety; yet the general principle to be established is, that the

* *Essay on Laborious Parturition.*

longer

longer we do wait the more easily will the head be extracted. But the patient is to be carefully watched that we do not wait too long, lest unfavourable symptoms should come on, and the end for which the operation was performed be defeated.

Sooner or later then, according to the state of the mother, it will be necessary that we should begin to make our efforts to extract the head of the child; and taking care, in the first place, to remove cautiously any loosened or sharp pieces of bone, I have been accustomed to avoid using the crotchet, or any kind of instrument, till I have tried what advantage was to be gained with my fingers. With this view, introducing the fore finger of my right hand, armed with my glove, or some such contrivance, into the opening in the head, and then bending it in the shape of a hook, I have pulled it with all the force it enabled me to exert, repeating my attempts at intervals when the natural efforts of the mother returned.

Should the head of the child be so high in, or above, the superior aperture of the *pelvis*, or this be so much distorted as not to admit of my giving this kind of assistance,

or

or should it be unequal to the purpose, I carefully introduce the crotchet, guided by my left hand into the opening in the head; and, fixing the point of the hook as far from the edge of the bone as it will allow, I begin to pull moderately by the handle held in my right hand, guarding at the same time the hook of the crotchet with the fingers of the left, if it should happen to tear away the bone,

If on trial the crotchet be found firmly fixed, but the head be too much impacted in the *pelvis* to be brought down with the force first used; that is, supposing the force required to extract the head be equal to 10, and the force exerted by the crotchet not to exceed 5; no other purpose can be answered by striving too earnestly with the force which cannot be made to exceed 5, except tearing away the piece of bone in which the crotchet may be fixed, which does not facilitate the operation. We are to be satisfied with the steady exertion of the force 5, which, being continued, will at length be found sufficient to our purpose, the resistance gradually diminishing, and the force 5 remaining. In the repetition of
our

our attempts to extract the head, which must be made at intervals, should the bone in which the instrument was fixed be loosened and come away, wholly or in part, the crotchet must be again introduced and fixed in another place, and the same method of proceeding followed; remembering also when we extract, to pull with some variation in the direction, but always in the line of the cavity of the *pelvis*. In almost every case of difficulty the obstacle or cause of the difficulty is at one particular part of the *pelvis*, and when the head has passed that part there is no farther occasion for using force. We are afterwards to proceed very circumspectly, that there may be no laceration of, or injury done to, the parts of the mother, internal or external. The principle I wish to impress on the minds of those who may be embarrassed with difficulties of this kind is, that time is equivalent to force, and that no advantage will be obtained by pulling away small pieces of bone, except such as were loose and likely to injure the soft parts of the mother. On the contrary, when the instrument is once firmly fixed in a part of a bone which affords a good hold, I have been cautious not

to tear it away by pulling rashly, considering that as something like breaking the instrument with which I was performing the operation.

In a case of very great difficulty it is however possible that all the bones of the *cranium* might be brought away successively, and nothing of the head remain but the basis of the scull, with the integuments. It then has happened oddly enough, that I have succeeded in bringing down the remainder of the head, merely by grasping the integuments firmly in a mass, or even in distinct parts, and pulling by them in a proper direction. But, if these should be found insufficient, the crotchet is to be introduced again, and fixed upon the basis of the scull on any part where we can get a firm hold, and this assuming a more convenient direction will be readily brought down. I have not found, in cases of this kind, that I have acted from a preference for fixing the instrument in this or that part, or in this or that manner; but, giving myself time to reflect, the exigence of the case has dictated what I ought to do, so that I am not solicitous about any particular method. Some have thought that it was of
great

great importance to fix the crotchet on the out side of the head, and others have insisted on the propriety and superior advantage of fixing it on the inside ; but I am persuaded that such things are of little consequence, and that in the course of a difficult operation it may be found necessary and useful to fix it in either way.

When the disproportion between the cavity of the *pelvis* and the head of the child is very great, it is possible that all the bones of the *cranium*, together with the basis of the scull, may be brought away, yet the body of the child may remain above the superior aperture of the *pelvis*. This circumstance may require different methods of treatment. If the space between the projecting bones of the *pelvis* would allow the flattened hand to be passed into the *uterus*, it might be most expedient to turn the child and deliver by the feet, which, thus situated, I have more than once done. But, if the distortion of the *pelvis* will not allow the hand to pass into the *uterus*, the crotchet must be again introduced, and fixed upon the chest of the child, where it may probably meet with some part that will bear a sufficient degree of force for extracting

tracting it. Should this not be the case, the crotchet must be repeatedly tried, by which the contents of the *thorax* and *abdomen* may be evacuated, and the general bulk of the child's body very much lessened. Then, trying to fix the hook of the instrument on some part of the spine, or bringing down the arms, we shall at length succeed and extract the body of the child, whole or in parts, though we may have been frequently baffled. In an operation difficult as that now described, disagreeable as it may appear, and really is, having only occasion to attend to the extraction of the child, in any manner, without doing mischief to the mother, the mind of the operator may be at ease, and he will then avail himself of every advantage which shall offer towards answering his purpose. On the whole, I have never known a case attended with so much difficulty that it could not be surmounted by steady and slow proceeding; and, after all his difficulties, if he has acted cautiously, the operator may be repaid by seeing his patient recover, as well, or better, than after the most easy labour.

SECTION

SECTION IX.

ON THE SUBSEQUENT TREATMENT.

WHEN a child has been extracted in the manner before described the *placenta* will commonly be expelled in a natural way ; but should any difficulty arise, that must be managed according to the rules before given in the Essay on Hemorrhages.

Women in general recover well after this operation, provided it was not delayed till some irreparable injury was done to the parts of the mother, and was performed with care. Besides the treatment which may be proper for all women in childbed, it will be incumbent upon us to be particularly careful in these cases that the urine be voided ; and, if the patient should not be able to do it, by her own efforts, that it be drawn off with the catheter, within a short time after her delivery. The use of the catheter is also to be continued twice in the course of twenty-four hours, till she may become able to expel the urine ; lest there should be inflammation,

on any part of the bladder or *meatus urinaris*, and a flough be cast off, which would be followed by an involuntary discharge of urine ever afterwards; which I consider as one of the most deplorable accidents in the practice of midwifery.

SECTION X.

ON THE PROPRIETY OF BRINGING ON PREMATURE LABOUR, AND THE ADVANTAGES TO BE DERIVED FROM IT.

WE have before alluded to this operation as a method of preserving the lives of children, without adding to the danger of women; if in any case the *pelvis* were so much distorted, or so small, as absolutely to prevent the passage of the head of a full grown child, and yet not so far reduced in its dimensions as to prevent the head of a child of a much less size from passing through it. Melancholy are the reflections when a woman has a very much distorted *pelvis*, and such women have usually a wonderful aptitude to
conceive,

conceive, that there should be so little chance of preserving the lives of her children; and yet, in the course of practice, I have in several instances been called to the same woman, in five or six successive labours, merely to give a sanction to an operation by which the children were to be destroyed. It is to the credit of the profession that every method, by which the lives of parents and children might be preserved, has been devised and tried; and, though frequent occasions for using some of these methods cannot possibly occur in any one person's practice, it is right that all should be acquainted with what has been proposed and done in every case, with or without success.

The first account of this method of bringing on premature labour was given to me by Dr. *C. Kelly*. He informed me, that about the year 1756 there was a consultation of the most eminent men in *London* at that time, to consider of the moral rectitude of, and advantages which might be expected from, the practice, which met with their general approbation. The first case in which it was deemed necessary and proper fell under the care of the late Dr. *Macaulay*, and

it terminated successfully *. Dr. *Kelly* informed me that he himself had practised it, and, among other instances, mentioned that the operation had been performed three times upon the same woman, and twice the children had been born living. The thing has often been the subject of conversation, and proposed by writers, but some have doubted the morality of the practice; and the circumstances which may render the operation needful and proper have not been stated with any degree of precision.

With regard to the morality of the practice, the principle being commendable (that of making an attempt to preserve the life of a child which must otherwise be lost), and nothing being done in the operation which can be injurious to the mother, I apprehend, if there be a reasonable prospect of success, no argument can be adduced against it which will not apply with equal force against inoculation, against medicine in general, and, in fact, against the interposition of human reason and faculties in all the affairs of life. Such an argument would lead us back

* The patient was the wife of a linen-draper in the *Strand*.

to the absurd doctrine of predestination, if, with justifiable intentions, and without producing any present evil, we may not use our endeavours to extricate our fellow-creatures from evils which threaten them, or under which they may be actually oppressed.

If the morality be justified, we are next to consider the safety and utility of the practice.

As to its safety, having reasoned upon the structure of the parts concerned in the operation, and having carefully attended to all the circumstances which have occurred when it had been performed, in eight cases, in which I have either performed it, or it has been done by my advice and persuasion, I have not known one untoward or hazardous accident that could be imputed to it. I therefore feel authorized to say, as far as my reason or experience enables me to judge, that the operation of bringing on premature labour is perfectly safe to the person on whom it may be performed.

But respecting the utility of the operation, the statement first made of the intention or purpose with which it may be done; that is, to try whether the head of a small child

will not pass through a *pelvis* too much narrowed in its dimensions to allow one of a common size to pass; will shew that the objects of the operation are circumscribed within certain limits. Should the cavity of the *pelvis* be of its natural size this operation is out of the question, and never can be required. If the cavity of the *pelvis*, though reduced in its dimensions, would permit the head of a child to be squeezed through it by the force of strong and long continued pains, this operation is not required, and ought not to be performed. If the *pelvis* be so far reduced in its dimensions as not to allow the head of a child of such a size as to give hope of its living, to pass through it, the operation cannot be attended with success. It is in those cases only in which there is a reduction of the dimensions of the *pelvis* to a certain degree, and not beyond that degree, that this operation ought to be proposed or can succeed.

It would be highly satisfactory to state with precision the exact dimensions of the cavity of the *pelvis* of the person on whom it might be needful to perform this operation, and on whom it might be performed with

success. But, as all the instruments contrived for measuring the *pelvis* in the living woman, too imperfectly answer this purpose to enable us by them to form a guide of practice, the determination must be left to opinion; and those who are experienced will not commit any great mistake in their conjectures. Under circumstances and in situations just preventing the successful use of the *vectis* or *forceps*, and just compelling us to the fatal measure of lessening the head of the child, it may become a duty to propose, on a future occasion, the bringing on premature labour; at seven months, or any later time, according to our sense of the disproportion between the head of a child and the cavity of any particular *pelvis*. It can hardly be doubted but that the casual events of practice first inspired the notion of this method in the mind of some person who, adverting to the fortunate termination of premature labours coming on spontaneously, in cases of distortion of the *pelvis*, endeavoured to imitate by art what not unfrequently happens naturally.

There is another situation in which I have proposed, and tried with success, the method

of bringing on premature labour. Some women, who readily conceive, proceed regularly in their pregnancy till they approach the full period, when, without any apparently adequate cause, they are in the habit of being seized with a rigor, and the child instantly dies; though it may not be expelled for some weeks afterwards. In two cases of this kind I have proposed to bring on premature labour, when I was certain the child was living, and have succeeded in preserving the children without hazard to the mothers. There is always something of doubt in these cases, whether the child might not have been preserved without the operation; but, as such cases often come under consideration, and as I am disclosing all that my experience has taught me, it seemed necessary to mention this circumstance.

I may be allowed to conclude this subject without entering into a detail of the manner in which premature labour may be brought on; because no person qualified to decide on the propriety of this operation can be ignorant of the manner of performing it. I must however observe, when the membranes of the *ovum* are punctured or ruptured, and the
water

water discharged, that the time when the action of the *uterus* may come on will be very different; this happening in some instances in twelve hours, and in others, being withheld, for twelve or fifteen days. During this interval we have only to wait patiently for the event, and when the pains come on, the labour, if natural, is to be suffered to proceed without interruption; or, if irregular, such assistance is to be given as the peculiarity of the case may require.

C H A P. X.

S E C T I O N I.

O N T H E C E S A R E A N O P E R A T I O N .

THIS operation is to be performed by making an incision first through the integuments of the *abdomen*, and then into the *uterus*, for the purpose of extracting a child therein contained. In cases of extra-uterine children, an incision, for the purpose of extracting a child contained in the cavity of the *abdomen*, under various circumstances, has been called the *Cesarean* operation; but in the importance and consequence of these two operations there is an evident and very great difference.

It has been supposed by some writers that a name was given to this operation from a circumstance common to it and every other in surgery where a knife was used*; by others, that it had its name from the extraordinary courage of the person on whom, or

* *A caso matris uterq.*

by

by whom, it was performed : but it was more generally explained by the imagined qualities and rank of the persons whose lives are said to have been preserved by it. These, and their descendants, according to *Pliny*, were called *Cæsars*, as those born with the feet foremost were called *Agrippæ* ; or when there were twins, and only one was born living, *Vopisci*. Men who in the course of their lives proved extraordinary, were not supposed to come into the world in a common way *. But it is well known that the name of *Cæsar* was not conferred on that great man, or the family who bore it, from the manner of his birth, but was derived from quite another source. Nor do any of the ancient writers in medicine take notice of this operation, and we cannot suspect they were so negligent as to have omitted the description of it, or so ignorant as to be unacquainted with it, when, in all probability, had it been performed, they would have

* *Auspiciatus, enecta parente, gignuntur, sicut Scipio Africanus prior natus, primusque Cæsarum a cæso matris utero dictus.*

PLIN. *Histor. Nat. lib. vii. cap. ix.*

The mother of *Cæsar* was living at the time of her son's expedition to *Gaul*,

been

been the very persons consulted and employed to perform it.

*Pliny**, who lived in the time of *Vespasian*, is the first author who mentions this operation; but he speaks of it with reference to those who lived before his time, and his account does not give much satisfaction. *Roussel*†, who was a strong advocate for the operation, wrote professedly on the subject in the year 1581. But the records of this operation have been imperfectly preserved even in modern times. For, from the context of the cases recorded, it appears that some have been misrepresented; that some are fictitious, and were alleged to answer other purposes, as was the supposed one of lady

* *Plin. loco citato.*

† *Baubin*, in the appendix to *Roussel*, dated 1588, gives the following case:—*Eliz. Alepachen* had this operation performed upon her by her husband, who was a Gelder of Cattle at *Siergenhausen* in *Germany*, in the beginning of the sixteenth century. She had several children born afterwards in the natural way.

Parè and *Guillemeau* wrote against the operation.

M. Simon wrote two papers on this subject in the first volume of the memoirs of the *Royal Academy*.

Heister and many others have written on the subject; but *Weideman* of *Dussendorp*, in his *Thesis*, has given an account of all the cases of this operation that were extant, and the event of them.

Jane

Jane Seymour, to stamp the character of greater cruelty on *Henry the Eighth*; and that others are related with a change of circumstances, so as to appear different, though they were in fact the same. From a detestation of the apparent cruelty of this operation, from a doubt of its necessity or propriety, from the destructive event which was to be expected, or from some other cause, it was never performed in this country till within these few years. But at present we have well authenticated accounts of nine cases in which the operation was performed, under the direction of, and by, men of unexceptionable abilities; and these may be esteemed sufficient to enable us to form a judgment of the advantages to be derived from the operation, as well as of the manner in which it ought to be performed.

SECTION II.

By the first writers on this subject many circumstances are recited which were supposed

posed to render this operation necessary, some respecting the parent, others the child. Of the first kind were the smallness or distortion of the *pelvis*, the straitness or closure of the natural passages, from *cicatrices*, the rigidity of the parts from old age, or their imperfection from youth; almost every cause of a difficult labour, when extreme in its degree, has been mentioned as a possible reason for this operation. Those which respected the child, not only related to its comparative size, but its position also; and on this occasion twins, and even monsters, which there was no wish to preserve, have been mentioned. But, whatever was the existing cause, it appears that there must have been a full conviction on the mind of the person who proposed this operation, of the impossibility of delivering the patient by any other means. Some writers have indeed spoken of this operation, not with a view to its absolute necessity, but its eligibility, or as deserving preference to other methods of delivery which might be practicable. Such writers have not met with general approbation, but their influence has been too great; for, in the histories of the cases recorded, we find

find in several of them some circumstance which proves that the operation was not necessary, or that the grounds on which it ought to be performed were not well understood. The ideal glory of the operation has perhaps had its influence in *France*, and some other parts of the *Continent*. I am not willing to accept any other principle but necessity as a justification of this operation; that is, whenever it is proposed, there shall be no other way or method, by which the life, either of the mother or child, can possibly be preserved; and the impossibility shall be confirmed, not by the opinion of one, but as many competent judges as can be procured. I then consider this operation justified by every principle of religion, and the laws of civil society, by as decisive and satisfactory evidence as any other operation, which we never hesitate to propose, or to perform.

SECTION III.

THREE general situations have been stated in which it has been presumed the Cesarean operation might be necessary.

1. When

1. When the parent was dead, and the child living.

2. When the child was dead, and the parent living.

3. When both the parent and child were living.

With respect to the first situation, when the parent is dead, and the child living, there cannot be any debate; because, without giving pain, or incurring any one inconvenience, an attempt is made by this operation to preserve the life of a child, which, if it be not performed, must soon and inevitably perish.

With respect to the second situation, as, in every case in which the operation has been performed in this country, the parent has died, but the lives of many of the children have been preserved, the operation holds forth as its principal advantage, the hope of preserving the life of the child; the chance of preserving the parent being little improved by an operation so full of danger. It will therefore, I think, be generally acknowledged, that the operation ought not to be performed upon a living mother, when there
is

is proof, or good reason, for believing that the child is dead.

The third is the statement attended with any difficulty, and being the only case which, strictly speaking, constitutes the Cæsarean operation; it might lead to a comparative estimation between the life of the child and that of the parent. But the common sense of mankind, agreeing in the general principles adopted throughout this work, of its ever being our duty, in the first place, to preserve the lives of both the parent and child; in the second, to preserve the life of the parent; and in the third, that of the child, which have been on various occasions inculcated and applied, will point out the general line of conduct we ought to pursue, according to the exigence of every case which may occur in practice.

Without regard to the state of the child, this operation has also been proposed for our consideration under circumstances which relate to the mother alone.

1. When she was living.
2. When she was dead.

Some have been of opinion, that this operation ought never to be performed on the
 D living

living subject. Perhaps, impressed with the dread of the operation, they did not distinguish between necessity and eligibility, and therefore wished to abolish it altogether. But if it were to be performed only when the patient was dead, more particularly if we were to wait for her death, as the only proper time of performing it, it would in general be fruitless. For I do not find any instance of a living child extracted by this operation after the death of the mother, unless the child escaped by the same stroke as that which proved fatal to the mother, of which the accounts seem to be almost fabulous, or merely accidental. But as, in cases of women dying in convulsions, rupture of the *uterus*, or other rapid diseases, at different periods of pregnancy, or of a labour, it is possible for a living child to be extracted after the death of the mother, by speedily performing this operation; and as no harm can possibly result from the operation, supposing ourselves disappointed, no reasonable objections can be made to our performing it under such circumstances. In some countries the laws forbid a woman dying, when pregnant, to be interred before the child shall
be

be taken away. A prohibition to bury the living with the dead is the spirit of such laws.

SECTION IV.

If it be admitted that necessity alone can justify the Cesarean operation, we are next to enquire into the causes and proofs of such necessity.

Many of the causes which have been specified by writers, as producing a necessity of performing this operation, are certainly unequal to so great an effect. The size of a child, however large, unless the *pelvis* be at the same time very much distorted; nor any untoward position of the child; nor twins; nor monsters; nor the closing or straitness of the soft parts, can ever compel us to the necessity of performing this operation; because we know, by experience, that difficulties arising from such causes admit of relief by less desperate means. It may be asserted in general terms, that there is only one cause which can justify our proposing or

performing this operation on the living subject, and that is, such an extreme degree of distortion of the *pelvis* as renders the extraction of the child, in its present state, when diminished in its bulk, or even reduced into small pieces, absolutely impracticable. It is true, if any other cause could be proved to exist which produced the same impracticability, then the operation would be equally requisite and justifiable.

To make a precise statement of that degree of distortion, or consequent diminution of the cavity of the *pelvis*, as might require this operation, is not perhaps possible in the living subject. The natural space of the cavity of a well formed *pelvis*, from the *os pubis* to the *sacrum*, is about four inches and a half, and in some subjects rather more; and the heads of children at the time of birth bear a general relative proportion to this space. But living children have been born, frequently, by the natural efforts, when the space was presumed to be less than four inches; and, if the children were small, when it did not exceed three inches: and we may judge that the head of a child is capable of being reduced by compression one third of its

its natural bulk, without destruction of parts, or any permanent injury. But should the capacity of the *pelvis* be reduced under three inches, we have not much reason to expect a living child to pass through it, either naturally, or by the assistance of art; though the head of one that is dead, especially if it be putrified, may be pressed through a *pelvis* of about those dimensions, even without artificial assistance. Should the capacity of a *pelvis* not exceed, according to our judgment, two inches and a half, then the head of a child, unless the contents be evacuated, could not pass or be extracted through it. But if the cavity be so far closed, that it should not exceed one inch, we might then presume that the head of a child, though reduced to the least possible size, could not be extracted through it; and the necessity and propriety of the Cesarean operation might be admitted, if we had reason to conclude that the child was living.

These general positions every person engaged in practice will bear in his mind, in cases of difficulty arising from distortion of the *pelvis*. But he must also recollect, that the remaining space of the cavity of the *pelvis*, in cases

of distortion, will be differently estimated by different persons, and cannot be ascertained with precision by any one, during the life of the patient. He will also remember, that the kinds of distortion are as various as the degrees, and that the cavity, though much diminished in one part, may be far less altered in another; and that even one side of the *pelvis* may measure two inches, when the other is scarcely equal to one, which consideration may make a change in our judgment of the kind of operation required widely different. It should also be remembered that the size of children at the time of birth, and the firmness of the bones, together with the compactness of their union with each other, are very different, and might add to, or lessen, the difficulty of a birth, whether natural or artificial. After a mature consideration of the whole matter, I am however of opinion, that no rule of sufficient authority to guide us in any particular case can be formed from such calculations, and that our conduct is not to be governed wholly by them; but by the reflections of common sense working in a reasonable mind, stored with the knowledge of such calculations, and of many other

other collateral circumstances, which it is impossible to enumerate or describe, so as to render them applicable and useful.

I cannot however relinquish the subject without mentioning another statement of this question, which has often employed my mind, especially when the subject has been actually passing before me. Suppose, for instance, a woman married, who was so unfortunately framed, that she could not have a living child. The first time of her being in labour, no reasonable person could hesitate to afford relief at the expence of her child; even a second and a third trial might be justifiable to ascertain the fact of the impossibility. But it might be doubted in morals, whether children should be begotten under such circumstances, or whether, after a determination that she cannot bear a living child, a woman be entitled to have a *number* of children destroyed for the purpose of saving her life; or whether, after many trials, she ought not to submit to the Cesarean operation, as the means of preserving the child at the risk of her own life. This thing ought to be considered. Moreover, when it has been ascertained, that women could not possibly bear living children,

and one great end of marriage has been frustrated, some have determined on a voluntary separation from their husbands, from a sense of the moral turpitude of conceiving children without the chance of bringing them living into the world. But the law of the land has afforded no remedy for the case, though, as this fact admits of unquestionable proof, it would not be difficult to form terms of separation between a husband and wife thus circumstanced, so cautiously, that they should not be abused, yet without the imputation of criminality to either party; and many evils might be thereby prevented.

SECTION V.

IN every case in which the Cæsarean operation has been performed in this country the patients have died. It may be of use to enquire, whether their death was occasioned by any disease with which they were afflicted before the time of labour; or was the consequence of the state to which they were reduced from the occurrences of labour, before the

the operation was performed; or was the inevitable consequence of the operation. In cases of death occasioned by wounds, the following order in which the danger is produced may be observed: first, from convulsions, or hemorrhage; secondly, from inflammation; thirdly, from gangrene; fourthly, from supuration. Though all the patients on whom this operation has been performed died, their death happened at different periods; but not one died, either while the operation was performing, or immediately after it. No convulsions were brought on by the incisions, nor does it appear that any of them sink through the loss of blood accompanying or succeeding the operation. Some died within twelve, others at the end of twenty-four hours, and a few died on the third day after the operation. If we may judge of the cause of the patient's death by the time of her dying, it might be said, that the death of those who failed within twenty-four hours, was probably owing, not to the operation alone, but to the violence of this, combined with that of previous disease; but when they survived twenty-four or forty-eight hours, then their death might be attributed

to the succeeding inflammation, in a body before disposed to disease. If we had the liberty of selecting a patient on whom to try the merits of this operation, we certainly should not choose one who was either very much distorted, or who had the *mollities ossium*, or who had been several days in labour; because the event must very much depend upon her state at the time when the operation was performed.

It is not my intention by this kind of investigation to lessen the general aversion from this operation when it can be avoided; but I believe we cannot fall into error by conforming to such conclusions as these. Every woman on whom the Cæsarean operation shall be performed will probably die, and should any one survive, her recovery might rather be considered as an escape than as a recovery to be expected; but as such an escape may happen in any case, in which the operation might be performed, we may esteem every case which can come before us, as the individual case in which a happy event is to be expected. These conclusions will lead us to the principle of necessity as the sole justification
of

of this operation, and inspire us, when we do perform it, with every motive to exert all our judgment and skill for the service of the patient, as if we were certain she would survive,

SECTION VI.

HAVING never performed the Cæsarean operation, nor seen it performed, I offer the description of the case related in the fourth volume of the *Medical Observations and Inquiries*, as the best example which has been recorded; the operation was performed by Mr. *Thomson*, one of the surgeons of the *London Hospital**.

“ A table being prepared, the patient was placed upon it, lying on her back, her head being supported by pillows, and her legs hanging down. The belly appeared promi-

* It is remarkable that the oldest physician or surgeon in *London*, could not recollect a case of this operation, or had heard it spoken of by their predecessors; yet that two cases, in the same street, should have occurred to one gentleman, within a very short space of time.

gent

ment chiefly on the right side, the protuberance of the *uterus* extending but about two or three fingers breadth on the left of the *linea alba*. There was no difficulty therefore to determine where the incision was to be made.

“ Accordingly, about a hand’s breadth from the navel on the right side, I began the incision in a longitudinal direction, and continued it about six inches in length, the middle of which was nearly opposite to the navel; the skin and adipose membrane being cut through on the outer edge of the *rectus* muscle. I carefully made an incision through the tendinous expansion of the abdominal muscles and the *peritonæum*, sufficient to introduce the forefinger of my left hand, when, with a curved knife conducted on my finger, an opening was made into the cavity of the *abdomen*, and the *uterus* exposed.

“ The *uterus* appearing very solid to the touch, it was apprehended by some gentlemen, that the *placenta* might perhaps adhere to that part of the *uterus* which lay bare, and which might considerably obstruct the removal of the child, or endanger an hemorrhage. With precaution, therefore, an aperture

ture

ture was made in the centre of the *uterus* sufficient to admit my finger, with which conducting the curved knife, I dilated the wound in the *uterus*, upwards and downwards, to the full extent of the outward wound.

“ The *placenta*, which actually adhered to this part of the *uterus*, easily gave way, and receded as my finger advanced in making the opening.

“ The *placenta* and membranes immediately began to protrude. Dr. Ford at this juncture slipping his hand into the *uterus*, while the sides were kept asunder, brought forth the child by the feet, and immediately afterwards the *placenta* and membranes were extracted with the greatest ease. Dr. Ford took upon himself the management of the child and separation of the umbilical chord, and in a few minutes the child cried strongly.

“ The *uterus* being disburthened of its contents, and contracting amazingly fast, the *omentum* and bowels began to protrude; Mr. John Hunter was so obliging as to assist me in retaining them within the belly, whilst I cleansed away the grumous blood (which
was

was small in quantity) and made the *gashirô-rapby* or future of the belly.

“ I made four futures at nearly equal distances from each other, and about one inch and half from the edge of the lips of the wound.

“ The ligatures being double, pieces of linen spread with common plaister, and rolled up in the form of bolsters, or compresses, were applied between them, after the manner of the quilled future, and the wound was thereby brought into and retained in close contact; and lint and a common pledget being applied, finished the operation.” This woman died about five hours after the operation.

ANOMALOUS,

ANOMALOUS, or COMPLEX LABOURS.

ORDER SECOND.

LABOURS ATTENDED WITH CONVULSIONS.

SECTION FIRST.

THE rules given by different writers for the management of labours attended with convulsions, seem to have been founded on less certain principles, and to have been less confirmed by experience, than those which have been given for almost any other cases which occur. These rules have nevertheless led to two methods of practice, offered with sufficient confidence, though diametrically opposite to each other. According to the first*, which has been most generally approved

* La convulsion est un autre accident qui fait souvent perir la mere et l'enfant, aussi bien que la perte de sang, si
la

approved and followed, it was deemed indispensably necessary to deliver the patient by art, as expeditiously as possible, to free her from the cause of the impending danger. But according to the second*, it being presumed that the convulsions appertained to the labour as symptoms, this, if natural, was to be suffered to go on without interposition, as if there were no convulsions; while we were engaged in using the means of preventing their return, or of lessening the effect which might be produced by them. Whatever has been done or omitted, has occasionally been blamed or regretted, and, in consultations on cases of this kind, I have generally observed, that the person who advanced his opinion in the boldest manner, prevailed on the rest to acquiesce in his sentiments; the records of experience having been thought insufficient, or not so duly weighed as to justify our forming an irrefragable rule of practice.

la femme n'est tres promptement secourue par l'accouchement, qui est le meilleur remede qu'on puisse apporter a l'une et a l'autre. *Mauriceau, vol: i. cap. 28.*

* Naturæ, partus quoad cætera sanus, relinqui potest.

Roeslerer, Element. Art. Obstetric. Aphorism. 697:

The

The true puerperal convulsions have not been accurately described, yet there are some peculiarities in the symptoms preceding their appearance, and in the convulsions or the manner of their return, which distinguish them from every kind of hysteric symptom, and from convulsions proceeding from other causes. Together with the symptoms of the epilepsy*, which they very much resemble, there is not unfrequently a *stertor*, which has been considered as peculiar to the apoplexy, or the patients are obstinately comatose. With the foaming at the mouth there is also a sharp hisping noise produced by fixing the teeth, and by the sudden motion of the under lip, as if attempts were made to retract the *saliva* back into the mouth; and by this noise I have generally been able to discover the state of the patient, though she was in another room. The in-

* Epilepsia—Agitatio convulsiva universalis, chronica, cum oppressione sensoriorum, exituque spumæ ex ore. VOGELIUS.

Epilepsia—Musculorum convulsio cum sopore. CULLEN.

Convulsio—Musculorum contractio, clonica, abnormis ultra soporem. CULLEN.

Spec. 2. 1. Idiopathica.

2. Symptomatica.

E

tervals

tervals between the convulsions, which are of shorter or longer duration according to the advancement of labour, evidently depend upon the action of the *uterus*, and in them the patients sometimes seem as if they were awakened by surprize, and soon recover the use of their faculties; and, at others, lie in an insensible state as if they were truly apoplectic, which they are not; though there have been instances of patients dying in the first attack, when there was no token of labour, as far as could be judged by the state of the *os uteri**. By the degree of derangement

* In the examination of many women who have died in convulsions, I have never seen an instance of effusion of blood in the brain, though the vessels were extremely turgid; but it is remarkable, that in all, the heart was found unusually flaccid, and without a single drop of blood in the auricles or ventricles; and in several there instantly appeared many large livid spots on the extremities and surface of the body. They all died immediately after the *diastole* of the heart.

A woman in labour was put to bed, and made an effort to change her situation. She died instantly in the act of moving.

Another was in such a situation that the child was expected to be born the next pain. She threw herself back, and died instantly.

Another

ment in the intervals between the convulsions, the danger of the patient is to be estimated, as well as by the violence of the fits, or by the symptoms which preceded them.

It will be convenient to arrange what I have to say farther on this subject, in the following order: first, to enumerate the reputed causes of convulsions; secondly, the symptoms which precede their appearance; thirdly, the means of preventing them; fourthly, the treatment which may be requisite when the patient is actually in convulsions; and, fifthly, on the delivery by art.

Another raised herself in bed to take nourishment, about half an hour after delivery. She fell back, and died immediately. She was opened by Mr. Jenner.

There was no effusion of blood in the brain, or any other part in any of these; but the heart was found flaccid, perhaps somewhat enlarged, and not a drop of blood in either the auricles or ventricles. Yet the late Mr. Hewson informed me of a case of convulsions in which, on examination after death, he had found an effusion of blood, in a small quantity, on the *surface* of the brain.

SECTION II.

ON THE REPUTED CAUSES OF CONVULSIONS.

It is remarkable that puerperal convulsions occur so rarely in the country, that I have not been able to make some very intelligent men, of great experience, comprehend them. The very few cases of which I have been informed, out of this city, have happened in large towns, or among those who might be reckoned in the higher ranks of life. We may therefore conclude, that a remote cause of these convulsions is to be sought for in the particular influence of the air, or in some change made in the constitution, by the customs and manner of living in cities and large towns; though there are immediate causes capable of producing these convulsions in any situation. It has also been observed, that women are far more liable to convulsions in certain years and seasons than in others.

The female constitution becomes infinitely more irritable in consequence of the changes made in the *uterus* during pregnancy, every part of the body readily participating with the state of the *uterus*. This increased
irritability,

irritability, when not excessive, and only affecting parts not essential to the economy of the constitution at large, is so far from being injurious, that it proves eventually salutary either to the parent or child. But we may conclude, that in a constitution become unusually irritable from one cause, any additional cause of morbid irritation will produce different and more violent effects, than if that constitution had been at rest, before the application of the second cause. It is therefore reasonable to believe, that the constitution which a delicate mode of education can scarce fail to give, still farther augmented by habits of indulgence, and the eager pursuit of pleasure in advanced age, renders such women at all times, and in all situations, more liable to every kind of nervous affection; that the state of pregnancy still makes them more disposed to the same affections, and from slighter causes to convulsions, than those women are who, by educations and habits of living, are seasoned, as it were, against impressions which might affect either their minds or constitutions; for it is to both these we are to look for the causes of convulsions.

That the state of the mind does very often dispose women to puerperal convulsions, and other dangerous nervous affections, there are numerous proofs to be drawn from practice*. This has been more particularly observed among those women whose unfortunate situations render pregnancy an evil instead of a blessing; for, from their seclusion from society, their sense of present ill, or apprehension of future distress, such women are especially subject to convulsions at the time of labour, and to become maniacal after their delivery. It has also been observed that, from violent and sudden impressions on the mind, more generally from terror than any other, pregnant women have either immediately had convulsions, or fallen into a state which shewed a great propensity to them, though they did not appear before the accession of labour. In some cases however, from a state of apparently perfect health, the first ten-

* There is a most interesting history of this in the Bible, *1 Samuel, chapter iv.* and three remarkable circumstances are mentioned; first, the cause, the violent agitation of her mind; second, her state of insensibility; third, that the child was born living, though the mother died immediately after his birth.

dency to labour has produced convulsions, which have continued till the child was born, or afterwards, or the patient died; though in other cases the convulsions have been removed, and the labour has proceeded with great regularity. But there is often reason to suspect, that when convulsions have once appeared, they make to themselves new causes of their return, as they have continued for many hours, or even days, after delivery. There is likewise reason to think that causes, seemingly too trifling to produce convulsions, have sometimes been equal to the effect; as I recollect two instances of women who had convulsions at the time of labour, preceded by violent headaches, brought on, as it appeared, by the use of some mercurial preparation mixed with the powder used for their hair.

But it is not only in weak and very nervous habits that convulsions occur, as they sometimes happen in plethoric constitutions, and are accompanied with a strong action of the vascular system in general, or of some particular part of the body; though I have never seen a case which could be attributed solely to this cause. With such different

constitutions and indications, some with all the symptoms of debility and depression, and others of plethora and fever, the method of treatment must of course vary; and great judgment will be required to suit the proper method, if it can be discovered, both in the degree and the extent to which it ought to be carried, to the state of every individual patient.

Besides the general affections of the body, which may be supposed to give a disposition to convulsions, affections of different parts, as of the intestinal canal or bladder, if they should be too much loaded or distended, may have the same power*. But in the female constitution the *uterus* is the great source of irritability, and of course every cause capable of disturbing that part beyond a certain degree, or in an unnatural manner, may affect the whole frame, according to the kind and degree of the original affection. Yet all the parts of the *uterus* do not appear equally

* Ad spasmodica, quæ ex uteri vitio proveniunt, pathemata concitanda, non opus semper erit, ut materia corrupta et vitiosa, utero inhærens, proximè et immediate id efficiat.

Hoffman, de Mal. Hysteric.

liable

liable to be disturbed, for the *os uteri* is evidently the most irritable part, even in a natural state, as well as when disturbed by any morbid or adventitious cause*. Hence it appears in pregnant women, on the first tendency to labour, that the changes which that part undergoes occasion a variety of nervous symptoms; and that these may be brought on, increased, or continued, if they before existed, by artificial or imprudent dilatation of the part in the course of labour, when it is unusually rigid; or with an increased degree of irritability occasioned by inflammation †.

It has been presumed, that the pressure made by the expanded *uterus* upon the de-

* In a case of this kind, which was published twenty-three years ago, I observed, "When the *os internum* began to dilate, I gently assisted during every fit; but being soon convinced that this endeavour brought on, continued, or increased the convulsions, I desisted, and left the work to Nature."

† A woman, whose case was communicated to me by Dr. *Mackenzie*, though the convulsions ceased after delivery, died on the fifth day of the puerperal fever. In almost every case of convulsions that I have seen, there was evidently, after delivery, a greater or less degree of abdominal inflammation.

scending

ascending blood vessels, causing a regurgitation of the blood to the superior parts of the body, to the head in particular, by overloading the vessels of the brain, produced convulsions. This opinion applies to a cause very general indeed, and, if true, must have had its effect so frequently as not to remain in doubt. But it was before observed, that plethoric habits were universally less subject to convulsions of this kind than the feeble and irritable ones, and that they sometimes continued with equal violence after the birth of the child, when this cause was removed.

Women are far more liable to convulsions in first than in subsequent labours; and then, it is said, more frequently when the child is dead than when it is living. But when women have convulsions, the death of the children ought generally to be esteemed rather an effect than a cause, as they have often been delivered of living children when they were in convulsions; or of dead and even putrid children, without any signs of convulsions. Some women have also had convulsions in several successive labours; but, having had them in one, they generally, by the precautions taken, or some natural change, escape them

them in future. Lastly, I was for many years persuaded that convulsions only happened when the head presented; but experience has proved that they sometimes occur in preternatural presentations of the child.

SECTION III.

ON THE SIGNS WHICH PRECEDE CONVULSIONS.

PUERPERAL convulsions are often preceded for many hours, or for several days, by a vacillation of the mind, joined with a slight delirium.

Swimming in the head, and other vertiginous complaints, in the later part of pregnancy, or in women in labour, not unfrequently forebode convulsions.

Violent or piercing pain of the head, preceding or recurring with the pains of labour, with similar signs of a disturbance of the functions of the brain, often denote convulsions*.

When

* The lady of Captain C. who was at the full period of uterogestation, after complaining about twelve hours of
of

When women in labour frequently complain of blindness, they are in danger of convulsions.

Convulsions are often preceded by violent pain or cramp at the stomach.

Convulsions preceded by violent pain or cramp at the stomach, are usually more dangerous than those which are preceded by affections of the brain only; and they sometimes cause sudden death by stopping the action of the heart.

Women who have a rigor on the returns of the pains of labour, are in some danger of falling into convulsions*.

Women in labour, who have great swelling or fulness of the neck, joined with an enlargement of the features of the face, and a staring or protrusion of the eyes, often fall into convulsions,

of the excruciating pain in her head, coming on at intervals, fell down dead as she was walking across the room.

* All rigors may be considered as a degree of convulsions; but these happen in labours frequently, though not always, without any ill consequences. I saw a feeble woman seized immediately after her delivery with a rigor, which, in spite of all the means which could be used, continued for twenty-five minutes, and then she died. Her labour had been very slow, but was perfectly natural.

I have

I have not known any woman, who had frequent vomitings in the time of labour, fall into convulsions; nor do they often happen in difficult labours.

The danger of cases attended with convulsions is not increased by their frequent return; as these depend upon the frequency of the action of the *uterus*, and not upon an increase of the cause of the convulsions.

SECTION IV.

ON THE MEANS OF PREVENTING CONVULSIONS.

FOR the prevention of common accidents it appears reasonable and proper, that women far advanced in pregnancy should avoid all irregularities in their manner of living, and every situation where they may be under restraint; or they will be liable to many complaints and inconveniencies*. At the

* Gregarious animals, when pregnant or giving suck, choose a place in the herd, different from what they take at other times.

time

time of labour it is a rule generally observed, that their minds should be kept composed, their apprehensions quieted, their present sufferings soothed by the tenderness of their friends and attendants; that they should be encouraged with the hope of a happy event, and that the knowledge of every thing which might agitate or distress them should be concealed. But when any symptoms of disease appear, besides these precautions, such means as the consideration of any particular case may indicate to be necessary are to be used; and no symptoms can require more attention than those which have been recited as threatening convulsions.

Bleeding is known to lessen, in a most effectual manner, all the complaints in pregnancy which arise from uterine irritation, and to a certain degree, in pregnant women, from all other causes. It is therefore, I may say, universally recommended in all cases, when these convulsions are apprehended. The quantity of blood to be taken away, and the repetition of the operation, must depend upon the strength of the patient and the violence of the symptoms. But as, in some cases of this kind, there are also tokens of general debility,

debility, and a great dread of the operation, it will then be preferable to use local bleedings, by scarification and cupping at the nape of the neck, by the free and frequent application of leeches, or sometimes by cutting the temporal artery; a thing so easily done as not to deter us from the practice, and often so efficacious as to invite our doing it on many other occasions.

When these symptoms are accompanied with others which denote much disturbance of, or the lodgment of any offensive matter in, the stomach, emetics may be given with safety and advantage*. In many affections of the brain it has been thought that emetics afforded singular benefit; and when these convulsions have been threatened, after the

* A very short time ago, a lady had many severe attacks of this violent pain in the head, in the later part of her pregnancy; this was constantly relieved by the application of leeches to her temples. When she fell into labour she became blind, and had one convulsion. Having great sickness at her stomach, without vomiting, I urged her to irritate her throat with her finger, by which means she vomited five or six times, and had no fit afterwards; the blindness remained in some measure for several days after her delivery. The child had been dead about a fortnight.

operation

operation of an emetic, patients have been sometimes wonderfully relieved. Care is also to be taken to regulate the state of the bowels, whether they be too much relaxed or constipated.

Towards the conclusion of pregnancy some women are subject to violent cramps in various parts of the *abdomen*, or inferior extremities, together with complaints in the head or stomach. Should not these be relieved by the customary means, the warm bath may be advised, and from its daily use they will often find much benefit.

Objections have been made to the frequent or habitual use of opiates for slight complaints in pregnant women; and there is much reason to suspect that they often prove injurious to the child. But these objections do not apply to their occasional use when they are really necessary. Yet as, in very large doses, opiates have been known to produce convulsions, it seems better to give them in small quantities often repeated, than in a large dose at one time*.

Nervous

* The late Dr. *Hunter* informed me of the case of a patient who had convulsions, preceded by the violent
pain

Nervous medicines of every kind are usually given on these occasions, rather with the intention of procuring temporary relief than permanent advantage; yet they ought not to be neglected. But, on the whole, it appears that in bleeding, and keeping the stomach and bowels in a healthy state, in giving opiates, and in the occasional use of the warm bath, we have the principal means, as far as can be judged either by reason or experience, of preventing puerperal convulsions, of insuring, in general, an undisturbed labour, and an uninterrupted recovery.

SECTION V.

ON THE TREATMENT OF CONVULSIONS.

FROM the attack of convulsions without any previous symptoms, or from the want of

pain at the stomach; on the approach of her next labour she was attacked with the same kind of pain. She was immediately bled largely, and took thirty drops of *Tinct. Opii*, by which the pain was removed. She was delivered after an easy and natural labour.

F

attention

attention to those symptoms, we have much more frequently an opportunity of exercising our judgment in curing than in preventing convulsions. These, it was before observed, may come on in the beginning, or in the course of a labour; or, which is more rare, though not less dreadful, after the birth of the child; and some difference of treatment may be requisite, according to the time of their appearance. But, whenever they do come on, the danger is so manifest, and so alarming, as to call for the immediate exertion of all the powers of medicine for the relief of the patient.

The first and most obvious remedy in a case of such violent agitation of the whole frame, and such obtusion or perversion of the mental faculties, is, to take away a proper quantity of blood from the arm; for the direct good which may be expected to be gained by bleeding speedily, as well as for the prevention of the mischief which might follow the convulsions. One copious bleeding has sometimes entirely removed the convulsions, which have not returned; but, should these continue with equal force for a certain time, it will be expedient, for the particular

particular easement of the head, to try the effect of local bleedings. Leeches are too slow in their operation; and scarification, with cupping, could not be done without much difficulty; so that the two methods, most applicable and adequate to the urgency of the case, are, to open the temporal artery, or the jugular vein; and the latter has certainly been found preferable, perhaps because the blood is thereby discharged with greater velocity*. Objections are sometimes made to bleeding, lest there should be a difficulty in restraining the blood while the patient is so much disturbed; but there is no hazard, and the case does not admit of delay. The bleeding, from whatever part the blood may be drawn, is to be repeated according to the effect produced, the strength of the patient, and the violence or continuance of the symptoms †.

The

* For a patient who was lying in a state which deprived me of all hope of her recovery, Dr. *Reynolds* proposed that the jugular vein should be opened. The good effects were almost instantaneous; the patient recovered, and has since had many children.

† The late Dr. *Bromfield* informed me of a case of puerperal convulsions, for which he had bled the patient

The state of the patient will seldom allow of the use of emetics; but, when they could be given, and have produced their effect, they have procured much relief; and the same observation may be made of purgative medicines. But the truth is, from the moment the convulsions come on, the patients often lose all power of swallowing, even in the intervals, and we are compelled to relinquish internal medicines altogether. Yet in such cases, clysters, if they can be made to pass, are usually given; but, whether they were purgative in the first instance, or afterwards composed with a due quantity of opium, of oil of amber, the fetid gums, or other medicines of that kind, I cannot say that I ever saw any good produced by them, at least before the birth of the child.

On a supposition that the remote cause of these convulsions is in the too great irritability of the constitution at large, and the immediate cause in the excitement raised by some new stimulant, of the labour, or the like,

without much benefit. In the violence of some of her struggles the orifice opened, and a considerable quantity of blood was lost before the accident was discovered; but the convulsions from that time ceased.

opium

opium in any convenient form has been freely given, and sometimes with evident advantage; though I have seen many cases in which it had no power to remove, or even to abate, this disease. Nor has more satisfaction been obtained by the various nervous medicines commonly prescribed; even musk, often repeated in very large quantities, has done as little service as the rest.

When the convulsions have continued or increased, notwithstanding the bleeding and the use of all the other reasonable means which could be devised, the patient may be put into the warm bath, in which she may remain a considerable time if the convulsions are suspended while she is in it. There have been instances of women with convulsions who have been freed from them while they were in the bath; and I have heard of one or more cases of their being actually delivered in the bath, without any ill consequences, either to the mother or child. When a warm bath could not be procured, or while it was preparing, I have directed flannels wrung out of hot water to be applied over the whole *abdomen*, and, I think, with advantage.

On every principle, of removing the cause of the convulsions, of substituting new modes of irritation different from that which produced the convulsions, of preventing their ill effects, or of abating that exquisite irritability which renders patients subject to them, almost every measure and method has at one time or other been tried. *Harvey** recommended the irritation of the nose in a comatose patient who was in labour, and gives an instance of its success. Many years ago I was led by accident to try the effect of sprinkling, or dashing cold water in the face; and in some cases the benefit was beyond expectation or belief †. But in other cases,

* *Exercitat de Partu.*—Page 554.

† I subjoin the following case to explain the manner of using the cold water. To a patient in convulsions who had been bled, and for whom many other means had been fruitlessly used, I determined to try the effect of cold water. I sat down by the bed side with a large basin before me, and a bunch of feathers. She had a writhing of the body, and other indications of pain, before the convulsions; and when those came on, I dashed, with some force, the cold water in her face repeatedly, and prevented the convulsion. The effect was astonishing to the bystanders, and indeed to myself. On the return of the indications

cases, in which I used this method with equal care and assiduity, no good whatever was derived from it; nor has the application of sinapisms to the feet, or blisters to various parts of the body, afforded any advantage, except, perhaps, when the convulsions had ceased, and the patient remained comatose.

When all means have been tried without success, and the convulsions remain, with evident and extreme danger of the patient dying every time they return, we shall, notwithstanding, be driven by necessity to wait quietly for the termination of the labour in a natural way, hoping she may struggle through; or shall be obliged to seek further resources in the delivery of the patient by art.

indications of pain I renewed the use of the cold water, and with equal success; and proceeded in this manner till the patient was delivered, which she was without any more convulsions, except once when the water was neglected. The child was born living about fifteen hours from the time of my being called, and the patient recovered perfectly.

I was much mortified to find that I had not discovered an unfailing method of treating convulsions; further experience convincing me that this often failed. It is however a safe remedy; and, though it may not always have sufficient efficacy to prevent or check convulsions, whoever tries this manner of using cold water will soon be convinced that it is a most powerful stimulant.

But this part of our subject shall be considered in the next section.

SECTION VI.

ON THE DELIVERY BY ART.

IF it be necessary to make distinctions as to the time when convulsions come on, with regard to the medicinal treatment, it is infinitely more so as to the delivery of the patient by art. We will therefore consider,

I. Whether delivery by art be proper or justifiable in the beginning of a labour attended with convulsions.

Women sometimes fall into convulsions before there is any discoverable tendency to labour, when there is not the smallest degree of dilatation or relaxation of the *os uteri*, and when there is no way of judging that it will be labour, except from the peculiarity of the convulsions, which may be readily distinguished from those proceeding from any other cause. In some cases also, after a long continuance of the convulsions, the *os uteri* has remained closed, and then it has been presumed that they were not, properly speaking, puerperal. Yet, after
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a long delay, it generally happens that the dilatation both of the internal and external parts begins, and proceeds very rapidly; so that, in a short space of time, from no degree of dilatation, the *os uteri* becomes completely dilated, when all hopes of delivery had been laid aside, and the very existence of the labour had been denied.*

Now whether it be proper and reasonable that attempts should be made to deliver a woman with the *os uteri* in this state, and under such circumstances in general, must appear very dubious to those who consider how much would then be required to be done by art. But, if we reflect upon the event of the greater number of cases of women who have been delivered by art, under these, and far more favourable circumstances, the greater part of whom died, their death being apparently hastened by the operation, however carefully it might have been performed, we shall be deterred from proposing it, and, I think, be justified in forming this general rule

* In a well known case of this kind, the midwife, presuming that it would not be labour, left the patient, who was found dead in the morning, with her child also dead lying in the bed,

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of practice, subject to some exceptions, that women, who fall into convulsions in the beginning of labour, ought not then to be delivered by art.

I presume that, with all the assistance which art enables us to give, or if the labour be resigned to Nature without interposition on our part, patients will sometimes die in a deplorable manner. I also know that, if the patient should die when no attempts were made to deliver, that the omission is always regretted; or, if she should be delivered by art and die, that the operation is lamented. Yet there must be a rule of conduct to be preferably followed, and with few exceptions; and these are to be made not according to the timidity or boldness of the person under whose care the patient may be, nor according to the hurry or tendernefs of friends; but according to a judgment formed by a sense of duty, and maturely weighing all that the knowledge of a present case, or the experience of others, has enabled us to collect*.

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* Dr. Ross, who, forty years ago, was one of the physicians of *St. George's Hospital*, was the first person who had courage to declare his doubt of the propriety of speedy delivery in all cases of puerperal convulsions. The observation

2. Though convulsions often happen in the beginning of a labour, and continue to its termination, the first stage is, in some cases, passed over without any unusual disturbance or irregularity, and they come on in the second stage of the labour when they were not expected. The propriety of delivering by art is then to be determined on other grounds than in the preceding statement. For, if it should be thought necessary to deliver by art, this may frequently be done without any peculiar force upon the parts concerned, as the *os uteri* will then either be dilated with the membranes, whole or lately broken, and the child may be turned without difficulty, and safely extracted by the feet; or the head will have descended so low into the *pelvis* as to allow of the use of the *forceps* or *veſtis*; or things may be so unhappily circumstanced as to leave no other option of the mode of delivery, but we may be compelled to lessen the head of the child. Whichsoever of these methods may be put in practice, the rules be-

tion on which these doubts were founded was merely practical, and the event of very many cases have since confirmed the justice of his observation, both with respect to mothers and children,

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fore given will be sufficient guides for our conduct. But, from a review of what has passed in my own practice, I feel it necessary to caution the operator against a forwardness to sacrifice the regard due to the child in cases of convulsions, as many of these, with very unfavourable appearances, have terminated happily ; and against hurry in any operation, as he would thereby lessen his chance of saving the child, and probably with disadvantage to the mother : and no good can result to society, or reputation accrue to the profession from a practice by which neither of their lives are preserved. Should the convulsions continue after the birth of the child, the methods before tried must be continued, or new ones adopted, as the state of the case may then require or allow ; and under these circumstances it will often be found preferable to satisfy ourselves with giving time, proceeding gently and circumspectly with general care, rather than to use incessantly the more active means which have sometimes been recommended.

With respect to those convulsions which first appear after the birth of the child, the exigence of the case must govern the treatment,

ment. There is in these an appearance of instant danger beyond what is found in convulsions before delivery, frightful as they are; and they seldom admit of any other consideration than that of supporting the patient by cordials and stimulating medicines, when she can swallow; or the application of such means as are in common use for restoring those who are faint, or in fits of any other kind; the principal and most efficacious of which is, to dash repeatedly cold water in the face, in the manner before described. If women escape the first fit there is a great chance of their recovery; but, should they remain comatose, or whatever their state may be, the particular symptoms are to be considered; and, from all that has been said upon this subject at large, we shall be at no loss to discover what may be applicable in any individual case.

ON COMPLEX LABOURS.

ORDER FOURTH.

ON LABOURS IN WHICH THERE IS A DESCENT
OF THE FUNIS UMBILICALIS BEFORE ANY
PART OF THE CHILD.



SECTION I.

THE *funis umbilicalis* may be easily distinguished from any part of the child by its pulsation when the child is living, and by its form and continuation, whether the child be living or dead.

Some incident is generally assigned as the cause of the descent of the *funis*; but the rupture of the membranes, with a rapid discharge of the waters of the *ovum*, especially if they be excessive in quantity, has been considered as the most usual cause. This circumstance

circumstance may sometimes occasion the descent of the *funis*, but far less frequently than has been imagined. For, before the rupture of the membranes, the *funis* may frequently be distinguished through them, lying before the head, or presenting part of the child; so that, whenever the membranes break, whatever might be the quantity of water, or the manner of their discharge, it would be impossible but that the *funis* must be the part which first descends. For this, with many other reasons, so many cautions have been given to avoid breaking the membranes; because, though the *funis* were thus situated, the child would not be in danger before the membranes were broken. It has also been observed, that the descent of the *funis* has happened to the same woman in several successive labours; so that, from the uncommon length of the *funis*, or from some other peculiar circumstance, some women seem to be particularly liable to this accident.

The descent of the *funis* makes little or no difference with regard to the progress or event of a labour, as far as the mother is concerned. The danger thence arising is wholly
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wholly confined to the child. All our attention, and every measure we pursue, must then relate to the prevention of this danger, which can only arise from the compression of the *funis*, and the consequent interruption or suppression of the circulation of the blood between the *placenta* and child.

All the assistance which art has afforded for this purpose has led to two points of practice; first, in directing us to return the descended *funis* beyond the head, or presenting part of the child, whatever that may be, in drawing it to the sides where it might be out of the way of compression; and, if these were impracticable, to favour the continuance of the circulation by preventing its exposure to the influence of the open air. Secondly, by passing the hand into the *uterus*, turning and delivering the child by the feet; by which the labour was accelerated and the danger of the compression of the *funis* avoided.

When the *funis* has descended, the state of the child may be precisely determined by the *funis* itself. If there be a pulsation in it, the child is certainly living, or though the pulsation may cease during the continuance of a pain and return in the intervals; but, if there
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there be no pulsation to be perceived in it, the child, we may be assured, is already dead. When the child is dead all the efforts of art must be useless to it, and might be injurious to the mother; we must therefore be satisfied with permitting the labour to proceed as if the *funis* had not descended. It is only when the child is living, which, as we before observed, will be proved by the pulsation of the *funis*, that any interposition can either be required or of service; yet it is remarkable that writers on this subject have instituted their directions in general terms, without regard to the state of the child, whether living or dead. It is also to be observed, that the same directions have been given under all the various circumstances in which the mother may be, though these are sometimes such as to make it impossible for them to be followed, without inducing some danger to the mother, or with any prospect of advantage to the child; but we shall understand this subject better by considering it in the following manner.

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SECTION

SECTION II.

ON THE DESCENT OF THE FUNIS WHEN THE
OS UTERI IS BUT LITTLE DILATED.

SHOULD the membranes break in the beginning of labour, more especially if it be the first, when the *os uteri* is but little dilated, and the *funis* descend before the presenting part of the child, this would probably perish long before the *os uteri* became dilated, or acquired such a state of dilatability as to allow of the safe introduction of the hand, if we were disposed to turn the child; and before we had an opportunity of putting in practice any of the methods for replacing the *funis*. With this statement of the situation of the mother, it appears to be most eligible, and, I believe, it is generally consonant to the present practice, to submit quietly to the natural event of the case, than by ill-timed and violent attempts to deliver the patient by art, with very little hope of saving the child, and with no small danger to the mother.

SECTION

SECTION III.

WHEN THE OS UTERI IS FULLY DILATED.

THE *os uteri* is understood to be completely or sufficiently dilated when it will allow of the introduction of the hand without much force. When the membranes break in the advanced state of a labour, should the *funis* descend before the child, it will even then be necessary to consider the state of the child before we determine on the measures we might find it safe and think it reasonable to pursue. If the child should be dead, we then certainly ought to resign the labour to the natural efforts without any interposition. But, if the child be living, and so far advanced as to give us hope of a speedy delivery, or if the presenting part of the child remain high up in the *pelvis*; especially if the pains have been slow and feeble, it will generally be better to pass the hand into the *uterus*, to turn and deliver the child

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by

by the feet; using, at the same time, the precaution of carrying up the descended *funis*, that it may be out of the way of compression. But if the head should be so far advanced in the *pelvis* as, in any conspicuous degree, to render the turning of the child unsafe to the mother, it may be proper to use our endeavours to preserve the child by other means, such as by replacing the *funis*, or by accelerating the labour.

For the first we have been directed to raise the descended *funis* beyond the presenting part of the child, in the absence of a pain, as far as we can reach; retaining it there when the pains come on, till it shall abide above the presenting part of the child, when we might presume it was in safety. But this method is, on trial, seldom or never found to succeed, for the *funis* is usually forced down again on the return of the pains; though the success of these attempts will very much depend upon the quantity of *funis* descended, or upon its being in a single fold, or in several convolutions, and whether it be on the fore part or sides of the *pelvis*,

pelvis, where it can be more commodiously managed.

The late Dr. *Mackenzie*, than whom I have not known a man more intelligent in conversation, or more excellent in practice, informed me of another method which he had tried. Instead of attempting to replace the descended *funis* in the common way, he brought down as much more of it as would come with ease, and then inclosed the whole mass in a small bag made of soft leather, gently drawn together with a string, like the mouth of a purse. The whole of the descended *funis*, inclosed in this bag, was conveniently returned, and remained beyond the head of the child till this was expelled; and, the bag containing the *funis* having escaped compression, the child was born living. But he very ingenuously told me, that he had made several other trials in the same manner without success.

Many years ago Mr. *Croft* also informed me of a method which he had successfully used in these cases. When he had in vain attempted to replace the *funis* in the common way, he carried up the descended part beyond

yond the head, till he met with a limb of the child, suppose the leg or arm. On this he suspended the *funis*, and then, withdrawing his hand, suffered the labour to proceed in a natural way. There may be much of accident in the success of these different methods, but I should believe, whenever it may be thought necessary to introduce the hand into the *uterus*, that it would be found more expedient to complete the business by turning the child and delivering by the feet.

With respect to the acceleration of the labour, the means to be used must depend upon various circumstances, which we will consider in the next section.

SECTION IV.

1. It is to be observed that every child is not born dead, though the *funis* had descended, and no means were used to free

it from compression; but it is evidently in great jeopardy. The danger depends upon two circumstances; the time which may pass when the *funis* is compressed before the expulsion of the child, and the degree of compression made upon it, in consequence either of the smallness of the *pelvis* in proportion to the head of the child, or upon the resistance of the soft parts. The first is beyond the power of art to remedy, and the second will depend upon the state of the parts, whether it be a first child, or whether the patient may have had one or many children. If the *funis* should have descended with a first child, in general, the slower the labour proceeds, the less will be the hazard of the compression; but, unfortunately, the children thus circumstanced will commonly perish, though sometimes they escape; and I have been mortified, in some instances, with an assurance that a very few minutes delay in the expulsion of the child has been the cause of the mischief. When the *funis* descends in those women who have had many children, there is little resistance made by the soft parts; and, by exciting

exciting the pains to act with more vigour, or by encouraging the patient to exert her efforts more strenuously towards the conclusion, the child will be sooner expelled, and its life be preserved. But no attempts to save the child are to be practised but such as are consistent with the safety of the mother.

2. When the head of the child presents, and has advanced far into the *pelvis*, if the pains are slow and ineffectual, and the child living, it may be considered whether, without hazard to the mother, we may not apply the *forceps* or *vectis*; and, by extracting the head sooner than there was reason to think it would be expelled by the natural pains, preserve the child. With regard to turning the child, and delivering by the feet in these cases, the operation can only be performed before the head has descended far into the *pelvis*; though in some instances I have gone beyond the common rules of the art, and have succeeded in saving the child.

3. When there is a descent of the *funis*, with a preternatural presentation of the child,
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our conduct must have regard to both these circumstances.

Should the breech present, the case will very much resemble the presentation of the head; that is, the same methods for replacing the *funis* may be tried, and with rather a better chance of success. If these fail, instead of considering the labour as one of those which is to be resigned to the natural efforts, it may be expedient at a proper time to bring down one or both of the inferior extremities, taking care that the *funis* be not entangled between the legs of the infant; and there are few cases in which we may not conduce to the preservation of the infant, by proceeding in this manner.

Should the arm of the child present, and such presentation be complicated with a descent of the *funis*, very little difference of conduct will be required; because, for the first reason, we should determine to turn the child, and deliver by the feet; and the additional circumstance of the descended *funis* can require nothing more to be done. The general rules already given for

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the use of the *forceps* and *vectis*, and for the management of preternatural labours, make it unnecessary to enlarge on this part of our subject in this place.

F I N I S.