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Obstetrics: The Science and the Art - Part III. The Therapeutics and Surgery of Midwifery; Chapter IX. Labor

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PART III.

THE THERAPEUTICS AND SURGERY OF MIDWIFERY.

CHAPTER IX.

LABOR.

In coming now to this third division of his subject, or Midwifery proper, the Student ought to understand that the practice of this art is one requiring not only a large amount of obstetrical or scientific information, but also a great deal of prudence and delicacy, as well as some knowledge of the world; without which he will scarcely attain to any considerable eminence or happiness in the practice of it. Even the foregoing imperfect statement of the Anatomy and Physiology of Midwifery, subjects which, to be well described, would require several volumes rather than a few short chapters in this one, might serve sufficiently to show him, that a great variety of considerations must precede the study of Midwifery proper; and that those considerations relate not only to the structure and functions of the living body, but also to every step in the development of that body, from the earliest dawn of its existence, up to the complete maturity of its powers and faculties.

There have not been wanting very good writers to show that the whole of this study and practice ought to be confined to persons of the tender sex; asserting that the differences between the sexes ought not to warrant those impudicities that are supposed inseparable from the practice of the Art of Midwifery by men; and, in the world, at the present day, though it is admitted that the Surgeon-accoucheur is an indispensable person in society, he is by many looked upon with a sort of doubt and distrust, on account of the very peculiar nature of his pursuits.
On this question, however, I think any man's mind may arrive at a satisfactory conclusion, if it be only considered that a person with a pure heart and righteous purposes may be safely confided in, as far as relates to the morals of the profession of an obstetrician; and I will add that the objectors to the practice of Obstetrics by males, are perhaps of more impure minds than the accoucheur himself; who, if he be actuated by the laudable motives that ought to rule the life and conversation of every medical man, may retort upon his opponent honi soit qui mal y pense, or shame on him who evil thinks. In Midwifery there is much to disgust and nothing to demoralize. The man who practices the art, sacrifices himself.

It ought to be evident to the intelligent and ingenuous Student, that some fit preparation of the mind to the discipline of this Art is required as an introduction to the exercise of it; since, to go at once from the College into the very delicate positions in which he is about to be placed, shows, to say the least, a great want of prudence and forethought. Many clever men have made shipwreck of their hopes by the want of a little reflection as to the course they should pursue; or by early abandoning themselves to professional habits, which, without the least intention on their part, have gradually assumed a tone of familiarity, that has been construed into impertinence, or downright insult.

No woman can be placed in a sanitary condition compelling her to appeal to the aid of the accoucheur, without some sense of a mortified delicacy, and it is quite clear that the only reparation for, or the only means of obviating this unpleasing impression, consists in the exhibition to her-wards, of the most profound respect and sympathy, and that, too, proffered with a sincere conviction of the painful nature of her position, as well as the indispensable propriety and necessity of her submission to it. A female possessed of ordinary sensibility will be less affected by the sacrifice of feeling she is thus compelled to make, if she be treated as an object of respectful consideration, than if approached with a light and indifferent address; and while she finds her own pride less wounded, will be both more confiding in the wisdom of her physician, and more grateful for his counsel or service, as well as respectful to and considerate of his calling and profession.

The occurrences that befall in the course of an accoucheur's professional life are many times of a nature to require at his hands secrecy and good faith; for he cannot but become the depository of many informations in which are involved the reputation and even honor of persons, and the safety of important private interests.

Let the Student, then, before he goes any farther, take a firm
resolution to guard with good faith those secrets with which he may become acquainted as physician or Surgeon-accoucheur. He ought beforehand to consider the meaning of the term professional secrets, and know that they are either accidental revelations, or homage due to his station as physician, and not to himself as person; for of the vast number of those which may be hereafter communicated to him, or discovered by him, not a tithe or hundredth part of them would ever be his but for his professional position. If a man, therefore, is dishonored who reveals a secret communicated by a friend, how far more base is he who takes advantage of his professional standing to make public circumstances that have been intrusted, so to speak, not to himself alone, but to the sacred character of the Iatrist! He disgraces his calling in disgracing himself.

It is not in regard to grave and serious matters only that he is called upon to be silent, prudently abstaining from acquiring for himself and his brethren the unenviable character of the babbler; even the most inconsiderable circumstances as to the sick are confidences that ought not to be disappointed and betrayed. This is a just and true remark, and it is a rule that ought to be followed in all circumstances and ages.

The Caliph Al-Mamun, as we are informed by Abul-Pharajius in his History of the Dynasties, was a friend of science, and exhibited his patronage of learning by fostering many learned men, among whom were some of our own profession. Among others of his numerous medical favorites was John Ocularius, the oculist, whose duty it was to visit the Commander of the Faithful every day, and that in his most private apartment, alone. The Caliph gave him great honor, and for his services allowed him a monthly stipend of a thousand gold sequins.

Upon one occasion, as the physician came out of his master's apartment, while passing through an anteroom, he was asked by one of the servants: "What is the Caliph doing?" "He is sleeping," was the incautious reply. Unhappily for the Doctor, this reply was overheard by the successor of Mohammed, whereupon the culprit was sent for, and brought before the chief of Islam. "What!" said he to the offender, "have I employed you as my physician and admitted you to my intimacy in order that you should report to my servants as to my private occupations? Go out of my house!"

The poor medico, in telling this story, to account for his fall, added the Caliph never afterwards would admit him into his presence, which was but the just punishment of a professional indiscretion. Let the Student reflect upon the punishment deserved by those who babble
the concerns of families or individuals. John Ocularius was turned out of the court of Al-Mamun for merely saying that his master was asleep! suppose the young doctor should say: "My mistress has a sore leg!"

But, in addition to the quality of discreetness above insisted upon, the Midwifery Student should firmly resolve to merit the appellation of Scholar, a title far more honorable than that of knight, nobleman, or minister of state, for it is to the Scholar that the world is indebted for its preservation from its own violence and vices. It is to the Scholar that it is indebted for laws, for science, and for all the arts. The Scholar is the promoter of virtue, and decency, and good conduct, both by his precept and his example; for it is to him that mankind turn their eyes to see what is wisdom, what is virtue, and what is true liberty. All those who are not, by education, brought out of the bondage of ignorance are slaves indeed—slaves of lust, superstition, and ignorance. Hence, it is evident that the Scholar is the only real nobleman, and his nobility becomes more and more exalted in the ratio of his elevation in virtue and knowledge towards the fountain and source of all knowledge and all virtue. Let him aim, therefore, to become a Scholar indeed, not only that he may embellish his understanding with every ornament of learning, but that he may become able also to minister to those who may be committed to his care, tost, securement, et sans douleur, as old Fournier says in his Accoucheur Méthodique.

The Student ought not to rest satisfied with the bare intention to make himself equal in skill and dexterity to the common midwives of the country. He ought to be resolved to become fully acquainted with the dynamics of the generation-sphere, by the irregular operation of which, as Wigand says, the power of the uterus in labors is so often baffled, and its energies misdirected. If he studies well the therapeutics of midwifery, and practices them well, there will be no occasion to twit him with the reproach so commonly cast on the accoucheur, that when he is called in, "one or the other, mother or child, goes to the grave," to use the words of Wigand, which I cannot but quote in this place. "Gibt es keine gegend, keine stadt mehr, wo das Publikum es nicht anders weiss und gewohnt ist als dass, wo ein accoucheur sein hand anlegt, wenigstens eins von beiden, das Kind oder die Mütter darauf gehen müsse? Kennen, wir jetzt keine Geburtshelfer mehr, die, wo sie hinzugerufen werden, keine andere Indication zu machen im Stande sind, als augenblicklich mit Zange oder Faust, über den unschuldigen Uterus herzufallen, und ihn, wie einem Dieb und Spitzbuben der das Kind gestohlen hat, zu mishandeln?" "Are there not any districts or cities to be found, in which the public generally sup-
pose that where a physician is called in, one of the two, mother or child, must be sacrificed? and are there no accoucheurs at the present day, who, being called to a case of labor, can discover no other indication of treatment than that of instantly, with fists or tongs, falling upon the innocent womb to abuse and maltreat it as a thief or robber that has stolen the child?"

These words of Wigand are strong words; let them sink deep into the heart of the Student, for they are from the lips of as true and noble a Scholar as has in any age graced the annals of Medicine. Let the Student also enter upon his pursuit with a good resolution to add something to the value of the art he is about to practise during his future life; let him leave to the brethren and to the world some fruit or fruits of his observation, his reflections, or his experience. He is about to enter upon a course of life singularly arduous and toilsome, and involving sudden and most painful responsibilities to individuals, and to society at large. He is doomed to sacrifice himself for his station. There are no vacations or holidays for him; and night itself is turned into day, for his occupations cease not with the setting sun; his task is never done. More labors occur at night than during the day, a circumstance that adds greatly to the onerous and distressing duties of the Accoucheur.

Labor is the process by which the contents of the gravid womb are expelled; and the word is highly expressive of the fatiguing, violent, and painful struggles and efforts of the woman to overcome the obstacles to her deliverance from the uterine burden.

Labor should commence, as we have already seen, at or about the two hundred and eightieth day from the last show of the menses, or the one hundred and fortieth day after quickening; and it may, in general, be expected to terminate without any artificial power or assistance, after a few hours of travail—the time being greater or less, according to the amount of the power employed, or the resistance to be overcome. The average duration of labor has been stated at four hours; I should think it greater. There are many examples of women in labor who are completely delivered in ten minutes from the first perception of the signs of parturition; very numerous cases occur in which labor is protracted during twenty-four hours; while some of the patients are occupied three, four, and even five days, with continuous efforts to bring the child into the world. I have witnessed one labor of nine days' duration, and many of from three to five days.

The essential element of labor is the contraction of the muscular fibres of the womb, the end or object of which is the evacuation of the
uterine cavity, so that, the whole of its contents being ejected, it may return again to the non-gravid state, when it will measure from two and a half to three inches in length, about an inch and a half in width, and half an inch or three-quarters of an inch in thickness; the organ being, before the commencement of the contractions, about twelve inches long by seven or eight inches in transverse diameter.

As the os uteri is closed during pregnancy, it follows that the expulsion of the contents of the organ cannot take place until the orifice becomes sufficiently opened to permit the child to pass out; and that there is also required a sufficient dilatation of the vagina, and of the vulva; in all which parts a greater or less degree of resistance or obstacle is found; which, taken in connection with the resistance afforded by the bony structures and the perineum, are generally the causes of a delay of several hours in the birth of the child, even where it presents itself most favorably to the openings through which it is destined to effect its exit.

In a vast majority of cases, the powers of the womb alone are insufficient to effect the delivery of the child, and its birth must be aided by the forces of the abdominal muscles, and the diaphragm, which are not only capable of making a direct expulsive effort, but, by presenting a point d'appui for the contracting womb, can assist it more efficiently to exert its own peculiar powers. The abdominal muscles and the diaphragm, acting alone, can push the point of the womb down low into the excavation, and hold or fix it there, while the fundus and body of the organ are propelling the ovum against the obstacles that stand in the way of its escape. Hence, although the essential element of labor consists in the uterine contractions, there are collateral dynamic elements of the process that greatly avail in its completion, and that ought always to be well understood, in order that they may be either called into action, or restrained, as the obstetrician may please to direct. Perhaps the best idea of the dilating pains of labor is, that the presenting part of the child is pressed against the circle of the os uteri, which, by the contraction of the body and fundus, is drawn upwards over it, so as to strip the womb up over its head, its body and its legs, until the whole is expelled from the cavity of the uterus.

Cause of Labor.—The cause of labor, or, I should rather say, the cause of the onset of labor, is not well understood, although it is quite probable that it is to be found only in the inability of the neck of the womb, in any given case, to bear further distension. In the beginning of pregnancy, the ovum inhabits and distends only the
LABOR.

corpus and fundus of the womb. As the child increases in size, it requires a larger nidus than these parts can afford, so that the upper end of the cervix now becomes distended. Gradually, the whole of the neck is taken in to form the oviform nidus for the full-grown ovum. The os uteri still remains unexpanded; when the ovum has become too large to exist within the completely developed uterus, even the circle of the os uteri can no longer resist the distending pressure. It begins to yield; it opens a little, and, at length, its antagonism to the expulsive powers growing feebleer and feebleer, it is fully dilated. The whole cervix is now become a wide cylinder, through which the child is thrust by the contractions, which tend to approximate the fundus to the os uteri. This is labor. Labor begins from a necessity of the uterine constitution, and not from any ascertained degree of development of the child, which, whether large or small, is most likely to be born two hundred and eighty days after the last catamenial period of the mother; but may not be born until three hundred, or even more days have elapsed. The size of the child is not found to bear a proportion to the excess of the duration of the pregnancy. It does, in fact, frequently occur, that the womb begins its contractile effort long before the expiration of the two hundred and eighty days; or, on the other hand, it fails to commence its retraction for several days after the two hundred and eighty have elapsed; but, whenever it does begin, it is because it will admit of no further or longer-continued distension; or because the cervix and os will no longer prevent the ovum from escaping, which it always tends to do when they cannot prevent it.

This is the theory by which Baudelocque endeavors to account for it, and which I have above explained. It seems clear that there is a contest or antagonization betwixt the fibres of the cervix and those of the fundus and body of the womb going on throughout every stage of the pregnancy; that, in the early months of pregnancy, the fibres of the body and fundus yield to, while those of the cervix resist the distending force, until about the seventh month, at which time they also begin to yield, and continue to yield until the end of the ninth month. These fibres of the cervix are the seats of a retentive, while those of the fundus and body are the seats of a contentive and expulsive faculty or power. At the ninth month they are balanced, or antagonize each other exactly. At length, the development of the ovum going on, those of the fundus become the more powerful, and those of the cervix and os uteri are loosened, and finally so completely opened as to allow the ovum to escape. The same force which converted the cylindrical into the conoidal cervix continues to operate
until it has converted the conoidal neck into the wide cylinder whose diameter is at least 3.8 inches. When this change is once effected, the foetus comes forth into the vagina and then into life. This explanation is, perhaps, as good as any that could be offered; it is perhaps not unworthy of remark, that, in the development of the gravid uterus and its contents, we behold a wonderful adaptation of parts to the purposes they are destined to fulfil; since the growth of the child would, if continued indefinitely, make its delivery impossible, and therefore the Author of nature has, by a simple law, provided against such a fatal contingency; the womb, by that law, refusing to yield any further than is sufficient to allow the child to acquire a certain degree of magnitude and vigor, essential for its respiratory life, but not too considerable to prevent its birth from taking place; and this perhaps is, after all, a sufficient solution of the problem.

Subsidence of the Womb.—The term of utero-gestation and the commencement of labor may be supposed, as has before been said, to be fixed, and rendered necessary in part, by the great distension of the abdominal muscles and the intolerable pressure upon and displacement of the parts contained within the abdomen. I know not what influence upon the production or first excitement of labor contractions may be exercised by the altered state of the abdominal muscles themselves; but it is, perhaps, not too much to infer that they do at length exert some considerable share of influence, by their constant or tonic contractile operation, in aiding the fundus and body to overcome the retentive effort of the os uteri, any yielding or relaxation of which tends to invite or provoke the contractile effort of the fundus. We see, at least, that in the last days of pregnancy the womb settles down with its apex in the excavation, and the woman seems much smaller than she was before this sinking downwards of the uterine globe was perceived. Now, it may be asked what can cause this settling or sinking downwards of the womb, if it be not the action of the abdominal muscles and diaphragm, which have pushed it downwards. Labor pains are caused by the contractions of the womb, and are first situated in the neck of the organ; but it happens that when the womb is much sunken, it in one case feels very hard and firm, as if its fibres were in a state of contraction or condensation; whereas in another case it is soft and flaccid, notwithstanding it may be very much depressed into the excavation; no sign of actual labor being present in either example. The sinking downwards of the womb takes place, in some persons, several days before the first pains are felt. In such instances, the womb must be regarded as wholly passive in the
matter; it is forced down by the muscles, and not by any intrinsic action or any power of its own.

This is called the subsidence of the womb before labor comes on, and it is a sign of the approach of that crisis, which monthly nurses and experienced women are acquainted with—and which it is proper that the Student should also be able to appreciate.

**Discharges from the Genitalia.**—As labor approaches, the secretions of the vagina and os uteri become augmented. They grow more viscid, and are often of a pink or even red color. In some cases there is a clear *show* of blood. The labia externa seem to be swollen or succulent with the increased circulation in their capillaries, and the mucous lining of the vulva retains its moistness notwithstanding the augmented vascular activity. They do not become harder, but, on the contrary, softer and more ductile: which prepares them well to yield to the distending force by which they are soon to open a way for the transit of the child.

**Labor Pains.**—The contractions of the womb take place at intervals which are longer at the beginning, and shorter as the labor advances. They last from fifteen to thirty or forty seconds, and, on many occasions, even longer. The intervals, at first, are from twelve to thirty minutes; but as the irritation becomes more intense, the pains are repeated every five, three, and two minutes, and even every minute; increasing in violence and duration until the organ is freed from its load.

As to the duration and number of the pains, I said a little while ago that the average duration of a labor has been stated to be four hours. If this computation is a correct one, then it may be said that in the first hour the woman shall have a pain every twelve minutes, which would give five pains for the first hour. If she should, in the second hour, have a pain every six minutes, she would have ten pains in the second hour; pains in every five minutes of the third hour would amount to twelve pains; and if she should be affected with them every three minutes during the fourth and last hour, she would suffer the pains twenty times in that period. So that twenty, twelve, ten, and five pains would make up the sum of forty-seven pains for the labor. The whole duration of the whole of the labor pains, supposing each one to last only forty seconds, would, under this computation, be about fifteen minutes; so that, in a labor of four hours, the woman would be thirty minutes under labor-throes, and three hours and a half without them. It is to be understood, however, that much pain
and distress may be sometimes experienced notwithstanding the womb is not actually contracting, or during the intervals; though, generally speaking, the woman is comfortable except when under the power of the pains.

This calculation refers, therefore, only to the state a woman is in when under the influence of a labor pain, and not to the other causes of distress, from pressure, distension, and the distension of the textures in the pelvis.

There is a very singular passage in Saccombe's *Elémenes de la Science des Accouchemens*, p. 202. I was much tempted to translate the whole story as he relates it, not only as a case excellently calculated to give instruction to the young, but quite as much so to show forth the impudence and audacity of that singular and talented author. The case in question is the history of a labor which he had charge of, and which he observed, from beginning to end, without in the least interfering with the operations of nature. He was alone in the chamber with the young woman. "En cet état des choses, je me suis mis en embuscade, l'œil au guet, et bien résolu d'abandonner entièrement la patiente à la nature, comme si elle eût été seule au sein d'un bois. Là, le compas dans l'œil, la montre d'une main et le crayon de l'autre, voici le spectacle vraiment ravissant dont je fus témoin." M. Saccombe goes on to say that, from ten o'clock exactly, to eleven A.M., the woman in labor had seven pains, which became greater and greater in succession, and followed each other in the order here expressed.

<table>
<thead>
<tr>
<th>From the 1st to the 2d pain</th>
<th>Duration of pain.</th>
<th>Interval of</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot; 2d &quot; 3d</td>
<td>21 seconds.</td>
<td>15 minutes</td>
</tr>
<tr>
<td>&quot; 3d &quot; 4th</td>
<td>27 &quot;</td>
<td>14 &quot;</td>
</tr>
<tr>
<td>&quot; 4th &quot; 5th</td>
<td>27 &quot;</td>
<td>10 &quot;</td>
</tr>
<tr>
<td>&quot; 5th &quot; 6th</td>
<td>29 &quot;</td>
<td>8 &quot;</td>
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<tr>
<td>&quot; 6th &quot; 7th</td>
<td>32 &quot;</td>
<td>7 &quot;</td>
</tr>
<tr>
<td></td>
<td>35 &quot;</td>
<td>6 &quot;</td>
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</tbody>
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From eleven to twelve o'clock she had twelve pains, increasing progressively and recurring as follows:—

<table>
<thead>
<tr>
<th>From the 7th to the 8th pain</th>
<th>Duration of pain.</th>
<th>Interval of</th>
</tr>
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<tbody>
<tr>
<td>&quot; 8th &quot; 9th</td>
<td>36 seconds.</td>
<td>6 minutes</td>
</tr>
<tr>
<td>&quot; 9th &quot; 10th</td>
<td>40 &quot;</td>
<td>6 &quot;</td>
</tr>
<tr>
<td>&quot; 10th &quot; 11th</td>
<td>42 &quot;</td>
<td>6 &quot;</td>
</tr>
<tr>
<td>&quot; 11th &quot; 12th</td>
<td>45 &quot;</td>
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<td>&quot; 12th &quot; 13th</td>
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<td>&quot; 13th &quot; 14th</td>
<td>47 &quot;</td>
<td>5 &quot;</td>
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<td></td>
<td>49 &quot;</td>
<td>5 &quot;</td>
</tr>
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</table>
As the clock struck twelve, the waters of the amnios gushed forth, and, as he says, "me baignèrent de la tête aux pieds." At the 20th pain, the head passed the inferior strait. With the 21st pain the head was born. After a rest of five minutes, the 22d pain carried the right shoulder to the sacrum and the left to the pubis, and the 23d pain expelled the child; five minutes after which the placenta was thrust forth from the organs.

The pain felt in labor is owing to the sensibility of the resisting, and not to that of the expelling organs. Thus the sharp, agonizing, and dispiriting pains of the commencement of the process, which are called grinders, or grinding pains, are surely caused by the stretching of the parts that compose the cervix and os uteri and upper end of the vagina. Pains are rarely felt in the fundus and body of the organ; and nineteen out of twenty women, if asked where the pain is, will reply that it is at the lower part of the abdomen, and in the back—indicating, with their hands, a situation corresponding to the brim of the pelvis, and not higher than that—a point opposite to the plane of the os uteri.

When the pains of dilatation are completed, and the fetal presentation begins to press open the lower part of the vagina, the pain will, of course, be felt there, and is finally referred to the lower end of the rectum, the sacral region and perineum. The last pains, which push out the perineum and put the labia on the stretch, will of course be felt in those parts chiefly. The sensation, under these circumstances, is represented as absolutely indescribable, and certainly as comparable to no other pain.

The effect of the pains on the bladder and rectum might easily be foreseen; but, even where they fail to excite the sympathetic action of those parts, the descent of the fetal head, which sometimes fills up the pelvic canal as a cylinder is filled by its piston, must cause the evacuation of the entire contents of the lower rectum and bladder of urine.

The effects produced by the pains and efforts of labor upon the constitution are very striking. The woman is in the beginning anxious, irritable, and full of the most gloomy anticipations; but as the process goes on, and the expulsive efforts become more and more violent, she acquires courage and firmness and the most dogged resolution; the
patient seems like one who has a task set which she is resolved to execute as rapidly as possible; and she therefore bears the great pains of expulsion far more submissively, or courageously, than the small or dilating pains.

The actions of the woman indicate pretty clearly to the practised eye, the state of advancement of the process. Previously to the exit of the head from the os uteri, or its deep insertion into that circle, the voluntary efforts of the patient are confined to a violent grasping of things with her hands. She generally seizes the hand of a bystander, and squeezes it violently or endeavors to twist or wring it, *not pull* it. Such an action always indicates a grinder, or a pain of dilatation; but when an expulsive effort takes place, she not only grasps with all her force, but she pulls at anything in her reach; so that an experienced accoucheur generally can decide, upon entering the chamber during a pain, that the dilation is or is not completed, by observing whether the patient merely squeezes or presses the hands of her assistants, or, on the contrary, whether she pulls them with great violence.

The low position or situation of the presentation at length brings on a tenesmus or bearing-down sensation, which is a desire to thrust with all the forces of the abdominal muscles, whatever exists within the pelvis, beyond the limits of the body. Tenesmus is, in the beginning, controllable by the will, but when it has become exaggerated by the presence of the presenting part in the ostium vaginae, no exhortation or fear is capable of inducing the woman to refrain from making the tenesmic effort, in certain cases; sometimes, however, the patient may be aroused from the all-absorbing tenesmic sense, and made to heed the urgent appeals of the surgeon to desist from efforts that endanger her. The urine and stool are generally expelled pretty soon after the commencement of the tenesmic pains of labor; but in some patients, the first signs of labor coincide with a disposition to go to the close stool.

In addition to the signs derived from the woman's voluntary actions, the practitioner can frequently decide upon the degree of forwardness of the labor, by attending to the nature of his patient's expressions and moans, and to her respiration. In the early stages, during the dilating pains, she either gives out her breath freely, with voice, or merely holds it, making use of no straining or bearing-down effort; and even if she be here requested to strain or bear down, as at stool, she will resist, or cannot obey the injunction.

Women cannot bear down, at the very beginning of labor. Bearing-down means an effort to expel, by contracting the muscles of the belly; but when the womb is full, its fundus at the scrobicle, and the
os at the plane of the strait, the recti muscles cannot expel, they can only hold or compress it: the same is true of the oblique and transversalis muscles. When, however, the fundus has descended low in the abdomen, having followed the os uteri, which has, by this time, been pressed down to the bottom of the excavation, then the abdominal muscles can exert a vast expulsive energy. So that, when the os uteri is nearly or quite opened, and the real expulsive pains begin, the woman not only holds her breath, but makes use of the muscles of respiration, to fix the thorax firmly, and then, in the most forcible manner, contracts the muscles of the abdomen upon the womb. If she be now enjoined to desist from bearing down, and fails to obey the injunction, it is because the tenesmus of labor, like that of dysentery, is irrepressible. The muscles that she employs in bearing down, after she has fixed the diaphragm and other muscles belonging to respiration, are the rectus abdominis, the external and internal obliqui, and the transversalis. Is it not clear that, while the fundus uteri is high up in the abdomen, the violent contraction of these muscles would have little effect in forcing the uterus downwards, but would rather compress the womb against the back part of the abdomen; while on the other hand, when the uterine globe has sunk low down in the belly, the operation of these abdominal muscles, as agents of expulsion, must become very great and cogent? I have ever found it useless to urge a woman to bear down upon a grinding pain, and always feel it incumbent upon me to cause the nurses and bystanders to desist from exhorting the patient to bear down in the early stages of labor; an exhortation which they very kindly, but very untimely, never fail to make. Such voluntary efforts cannot be beneficial in their influence on the labor, and may even become pernicious, in certain circumstances, where they not only tend to disorder the sanguine circulation, but very much to exhaust the strength.

I have placed here a cut, Fig. 76, which shows the state to which the cervix uteri must come before the full efficacy of the true expulsive, or bearing-down pains can become manifest. This is a cross section of the pelvis, with the womb and a part of the already dilated vagina. It seems that the cervix uteri has become almost cylindrical, from being a cone, as it was before labor began. The bag of waters is seen bulging out from the fully dilated orifice. The waters are nearly ready to give way—and, in fact, there are many labors in which, as soon as the crevasse in the membranes
takes place, the child's head rushes rapidly through the orifice, and descends to the very bottom of the excavation, or is even expelled by the same single pain.

Constitutional Effects of the Pains.—Even leaving out of the question the exciting effects of the pangs and agonies of travail, we should naturally expect that the muscular exertions of the parturient subject would, as in any violent exercise, greatly accelerate the circulation of the blood, and augment its momentum; and we accordingly find the pulse to become more and more elevated as the efforts prove to be greater and greater. The heart beats with increased violence, and the pulsations amount to one hundred and upwards in the minute; even one hundred and twenty beats are not uncommon. The respiration becomes hurried in proportion, and of course the heat of the body tends to be developed pari passu with the augmentation of the circulation and respiration; so that fever would soon become intense, were it not that the most profuse diaphoresis, chiefly from the upper part of the body and head, comes on to prevent the occurrence of what would, otherwise, become a dangerous fever, and in a few instances does become so. I have already taken occasion to remark upon this excited state of the vascular system, that it is not to be deprecated except in those instances in which it goes beyond the just bounds. It is, however, always worthy of close observation, in order that any tendency to excess may be checked, by a free use of cooling drinks; by ventilation; by lightening the bedclothes; by making the patient comfortable in her bed—appeasing her anxiety of mind by assurances of care and protection, by removing wet sheets and heated pillows; by an enema or purge; and, lastly and chiefly, by the use of the lancet.

The state of the mind is worthy of a large share of the accoucheur's regard. The most cheering and satisfactory assurances that the state and prospects of the labor will admit of, should be given, with a due observance of the truth. A woman will be more comforted and composed by being made certain that she shall be delivered in six hours, than by a promise which she does not fully believe, that half an hour more shall put a period to her anguish. No promises should be made, that may not be implicitly relied upon by the physician himself, as well as by the patient. One of the golden verses of Pythagoras says, σφυν ὑπερορίας—Keep thy troth.

Signs of Labor.—The signs of labor are those which we obtain from simply observing the woman's manner, and from hearing her own account of her symptoms; or they are such as we obtain from
the Touch, or examination per vaginam. For the most part, the statement of the patient herself, or that of her monthly nurse, is taken as our sufficient early evidence, and we wait for a certain degree of manifest progress before we address ourselves in a more particular manner to establish the absolute diagnosis, which cannot be very certainly done without the Touch.

Still, there may be observed the subsidence of the abdominal swelling, owing to the sinking of the apex of the uterus into the excavation, and, in some measure, to an increase of tonicity in the whole organ.

In most of the cases, the new vital activity set on foot, manifests itself by augmented moisture of the genitalia, and especially by a viscous mucus, that not a little resembles the white of eggs, which, moreover, is frequently stained with a little blood coming from the disrupted capillaries about the cervix uteri. This tenacious mucus is not yielded by the vagina, but always and only by the cervix.

An increased tendency of the bladder of urine to expel its contents also marks the beginning of labors; and the rectum is generally affected by the pelvic excitement, which prompts it to discharge of its contents.

Nausea and vomiting are frequently met with in the lying-in room, as symptoms of commencing labor; though it is true they mostly present themselves when the os uteri is about one-third dilated.

Violent and protracted tremors of the body and limbs, with clattering of the teeth, as in ague, are very generally observed, but they are unaccompanied with any chill or sense of coldness.

Finally, pain in the back and hypogastrium, lasting about twenty seconds, attended with hardening of the uterine globe, and recurring at regular equal intervals, is a sign much to be relied upon, though the vaginal taxis gives us the safest assurance by revealing the state of the os uteri.

In general, we are accustomed to note, by a watch, the length of the intervals betwixt the pains, and to form an opinion of their intensity, by the gestures or moans, or other complaint of the woman.

If the patient have reached her full term, we are free to announce, from these diagnostic signs, that labor is begun; and if, upon making examination per vaginam, we find the os uteri dilated ever so little, and the membranes rendered tense during the pains, we may be quite sure that the parturient process has commenced. The application also of the hand to the abdomen, discovers during each pain a certain hardness and rigidity of the uterine globe that give place to a flaccid and pliable softness during the absence of the pain. Such are signs of the true pains of labor.
**Touching or Examination.**—If the patient's assent can be obtained, after the proper reasons for asking the privilege of making an examination *per vaginam* have been laid before her, we should have two principal objects in view, while performing that operation; one of these is, to note the presentation, and the other, the position. There are other observations to be made at the same opportunity, such as the situation of the internal parts as to place, and the softness or relaxation of them—their moisture or dryness—the state of the rectum, and the sensibility of the organs concerned in the parturient process, as natural or morbid.

Upon obtaining the patient's consent to the examination, she should be requested to lie on the bed upon her left side, with the hips near the side or foot of the bed—being about eighteen inches from the edge or end—and with the knees drawn upwards towards the abdomen, a small pillow being placed betwixt them. Except upon occasions of the greatest emergency, a third person should always be present; and the physician ought to refuse to perform the operation of Touching, except in the presence of a third person, who should be some elderly individual, acting as nurse for the occasion.

Let the attendant provide a napkin, and a small quantity of pomatum, lard, or other unctuous substance, and a basin of water for the hands, which must always be bathed before performing the office of Touching. When a smart pain comes on, the left hand of the practitioner being pressed against the sacrum of the patient, outside of the bedclothes, the forefinger of the right hand, properly anointed, should be introduced into the vagina, nearest to, and pressing slowly upon its posterior commissure, taking care not to bruise or irritate the patient by any rough or hasty proceeding. The finger should be bent so as to let the knuckle pass in to the orifice first, after which the point may be extended. This advice was inculcated by Saccombe.

Old Paul Portal, at p. 3 of his *Pratique, &c.*, says, you must proceed to this operation "commencant aux parties supérieures de ces levres, et descendant le long du clitoris ; l'on prendra soigneusement garde de blesser l'urethre qui se trouve situee au dessous," &c. &c. This old author could not have given a worse advice in this matter, and I recommend to the Student to follow my directions, and not his.

If the point of the finger be now carried along the posterior wall towards the upper extremity of the vagina, the os uteri may be felt, and its degree of dilatation ascertained. When the finger comes to the os uteri, if the pain still continues, let the greatest care be taken not to rupture the chorion or bag of waters, as it is called, especially
in a first labor. These membranes become extremely tense during the pain, which forces them down through the opening of the womb, forming a segment of a sphere of greater or less size, according to the greater or less degree of the dilatation; if they should be too rudely touched while in a state of tension, they might burst, and permit the liquor amnii to escape, an event unfavorable in the early stage of labor, which it both retards and renders more painful. There is no need for pressing against the bag of waters during the pain, because by waiting until the pain subsides, the bag becomes relaxed, and can then be pushed back again within the mouth of the womb, so as to enable the finger to touch the presentation. For the most part, we only ascertain, in such an examination, the presentation, and being satisfied with that, we wait until a great dilatation, or the discharge of the waters, allows us to discover the position.

This examination is commonly called taking a pain, and we seize the moment of pain mainly for the purpose of avoiding to embarrass the patient, whose mind, fully occupied in perceiving the painful sensation, is at the moment somewhat diverted from the awkwardness of the situation. Hence, let the Student understand that he is to pass the index finger while the woman is in pain, but to make the exploration after the pain is gone.

During the operation of Touching, we also endeavor to learn the condition of the orifice of the womb, as to whether it is rigid and unyielding, or soft and dilatable; whether it be thick and dry, or thin and moist, with an abundance of glairy phlegm. We also ascertain whether the os uteri is in a favorable position, that is, in the middle of the pelvis where it ought to be, or on one side; or high up behind, towards the sacrum; and we rectify its position, if need be, by changing the situation of the mother to her back, or to either side, according as we may judge most fitting to bring the mouth of the womb into its proper place. Thus, suppose the mouth of the womb inclined altogether to the right side of the pelvis, the patient being on her left side; let her turn on to her back, or quite over to her right side, and the axis of the womb will be brought more nearly to the middle line, or axis of the pelvic canal. We are, also, in this operation, to form an opinion as to the probable resistance to be made by the vagina, perineum, and labia, so as to make up our prognosis, which it is best, however, to keep as a secret not to be divulged for the present.

At length, the pains having opened the os uteri to the greatest extent (as in Fig. 76), and driven down the bag or bladder of waters almost to the orifice, the membranes burst and the fluid of the ovum escapes with a gush, which is called the breaking of the waters. As
soon as practicable after the escape of the liquor amnii, the Touching should be repeated, and now there is little difficulty in determining the position of the presentation, though it may often be ascertained beforehand, through the unruptured membranes.

In general, that side of the pelvis in which the head can be felt at the lowest level is the one to which the vertex points; for the vertex must dip, in order to enter the bony canal. But if, upon feeling the scalp with a finger firmly pressed upon it, a suture is discovered, which, upon being traced, is found to meet with two other sutures, and only two, that point of meeting will be the posterior fontanel or vertex; and it will be in the first position if it be near the left acetabulum; in the second position if it be found near the right acetabulum; and in the third position if it be directly behind the symphysis of the pubis. But if, instead of three sutures, there be four, with a large membranous or soft space betwixt their points of union, it will be the anterior fontanel; and if it be near the left acetabulum, the head will be in the fourth position; in the fifth if it be to the right acetabulum; and in the sixth if it be near the pubis.

Let not the Student forget that when the head presents in a flexed attitude, it is a vertex presentation, no matter to what segment of the excavation the vertex may be addressed—nor that, in the first three vertex positions, the posterior or triangular fontanel is to be felt, while the quadrangular or anterior fontanel only is met with in the three last—videlicet, the fourth, fifth, and sixth positions.

False Pains.—These are pains that afflict some women towards the end of pregnancy, and which, however severe and regular they may seem, are nevertheless very justly denominated false pains, to be distinguished from the true ones only by Touching.

I have many times been kept out of my house all night, near a patient supposed to be in labor; and having been refused the privilege of making the examination until morning, after so tardy an admission of my request, I have found the os uteri perfectly closed, with a still tubulated or cylindrical cervix; so that I have been obliged to announce not only that the patient was not in labor, but that she had not yet reached the full term of pregnancy by ten days or a fortnight.

It is exceedingly vexatious thus to be baffled by the unreasonable backwardness of the patient to submit to an operation which she knows to be necessary and inevitable; but we shall, in all the early stages of labor, except those where the water comes off at the very commencement, be liable to such disappointment and deception, until we verify our other inferences by the infallible test of Touching.
The similarity of these false pains to the true pains of labor is very great; there is even to be felt the hardening of the abdomen; but, if carefully appreciated, it will be found that the rigidity is occasioned by a contraction, not of the womb itself, but of the muscles of the belly, that are so constricted upon the uterine tumor as to make even the womb appear to be contracted; whereas it is actually only compressed by the abdominal muscles. False pains, then, are essentially involuntary contractions of the abdominal muscles. They are, probably, of the nature of tenesmus, and are caused either by the ventral irritation produced by the distended womb, or else by intestinal irritation from sordes, flatus, acidity, rheumatism, and other causes that would also suffice, in the non-gravid state, to bring on spasms of the abdominal muscles. The difference between those of the non-gravid and those of the gravid state is, that in the former they are paroxysmal, but in the latter they are regularly periodical; which latter character they acquire from some law of the uterine innervation that I am unable to explain.

False pains are, likewise, common symptoms of rheumatism of the womb. This rheumatic disorder is far more common than has generally been supposed; and, when misunderstood, is the fruitful source of anxiety and doubt to the practitioner, besides of insufferable distress which it occasions for the patient herself.

Wigand, *Giburt des Menschen*, band i. p. 82, says that although rheumatismus uteri is sometimes connected with rheumatic pains of other parts of the body, yet, for the most part, only the womb and organs of generation suffer on such occasions. The causes, he thinks, are to be found in the hyperesthetic state of the gravid womb, its exposure to cold from its projecting position, and carelessness as to dress during pregnancy.

The characteristic signs of the disorder in labors consist, according to Wigand, in a general painful sensibility of the womb to the touch, which is attended with contractions of the organ that are painful alike at the beginning, middle, and end of the labor-pain. The pain of a contraction in the rheumatic womb differs thus from that of a healthy uterus. In the latter, a normal pain gives no distress during the first half of the contraction (Wehen Cyklus), for the pain of a labor-pain does not commence until the mass of the organ begins to exert its superior power by thrusting the presentation into the dilating cervix uteri and vagina.

I have met with several instances of rheumatic gravid womb, where the woman was tormented with false pains for many days previous to the real attack of labor. In one delicate female, pregnant with her
first child, there was daily pain in the womb for a month before the child was born; and these pains had so far the external characteristics of labor, that the most experienced practitioner might be deceived by them, until he should clear up the diagnosis by the Touch. The Touch alone could convince him that the os uteri was not in the least concerned in the matter; the tubule or cylinder of the vaginal cervix remaining as completely undeployed as in the most perfect repose of the gestation. In all such instances, the globe of the womb is sore to the touch, and only the slight occasional condensations that occur in all wombs towards the close of pregnancy could be looked to as the sources of the patient's distress. It may well be conceived that a rheumatic uterus could not but be painful whenever its parts should be disturbed by the normal contractions of its muscular tissue. This remark, however just and important to the Student, is not new; for Portal, who practised in the middle of the seventeenth century, expressly declares that he met with women in whom the womb became dilated to the size of a piece of fifteen sols, and then closed again; the pregnancy continuing to the full term; when they were delivered without at any time experiencing any serious inconvenience from the circumstance, p. 4. In certain examples of rheumatism of the uterus, I have found the patient with a sore belly, often supposing herself in incipient labor, and as often disappointed; yet disclosing to the Touch a partially dilated os uteri for many days, yea, even for a whole month, before the veritable attack of labor came on.

Let the Student remember that, when he shall be hereafter summoned again and again to a false alarm, as it is called, for the same patient, he will probably have to treat a rheumatismus uteri. Let him bleed such patient; let him keep her in bed, covered rather too warmly than not enough so with bedclothes; let him give her some doses of Dover's powder, or anodyne enemata, at night; let her abdomen be bathed two or three times a day with equal parts of warm oil and laudanum, and let him see to it, that she entertain a soluble state of the bowels by means of gentle aperients, among which pure precipitated sulphur, with calcined magnesia, is perhaps one most to be desired.

Case.—I advise the Student early to come to the resolution of being cautious in his diagnosis and prognosis of these doubtful cases of labor, for I know there belongs to professional men a disposition to pronounce at once, which, perhaps, arises from a false pride, prompting them to seem to know all things at a glance, or by mere intuition. If the young beginner, being called to a supposed case of labor, should
witness a very regular recurrence of pains in the belly, and should
also place his hand on the abdomen of the woman during one of these
pains, he might find it very hard, and be led to pronounce, "Yes; it is
her labor." Let him never pronounce, let him never give an opinion,
until he knows upon what it is founded. For example: I was called,
in the month of July, 1841, to a lady having very regular pains,
which she said were like those she had experienced in her two former
labors. During one of these, I held my hand on the abdomen, which
became hard, and evidently so because the womb was contracting
strongly. "How far are you advanced, madam, in your pregnancy?"
"Seven months and one week, sir!" "In that case I ought, before
making any prescription, to learn absolutely whether the womb is
opening or not; for if it be opening, then your labor is begun, and
must proceed; if not, then you ought to have some remedy to prevent
it from beginning, lest your child should be born prematurely, and
thereby lost, from its non-viability." Effectively, I found the os uteri
open so much that I could introduce two fingers and touch the chor-
ion, which was tense. The cervix yet retained a quarter of an inch
of its tubular form. I said, "You are in premature labor; but, as
there is not the least degree of vascular excitement, and no pain ex-
cept this that you complain of, I shall send you a portion of lauda-
um, in hopes of arresting the case here." She went out to her full
time, up to which date I was repeatedly called to give assistance in
her supposed attacks of labor. But, when the labor came on in
earnest, the relaxation of the cervix was already so great that she
delivered herself in a very few minutes. I am surprised, when I
reflect upon it, that the retentive power of the cervix and os uteri
should have enabled her so long to keep the ovum within the womb.
This was doubtless a specimen of disordered innervation of the womb,
arising from a rheumatic principle acting on the mass of that organ.
She had just come ashore from an East India ship, from Madras. Such
cases as the above occur repeatedly in course of a considerable practice.
I have seen a patient with the os uteri as large as a dollar, and with
strong pains, cease to suffer, sit up, walk about, and even go out for
days in succession, before the labor was resumed and terminated.

The regular manner in which labor pains recur has long been the
subject of curious speculation. I have not found any writer whose
explanation of this periodicity satisfies me, and shall not repeat here
for my reader the mere hypotheses which I reject myself. It is enough
to state that the contractions increase in frequency and power in pro-
portion as the uterus grows small, or approaches more nearly to the
moment of excluding its gravid contents—a most singular phenome-
non, which, of itself, is almost sufficient to refute all the existing hypotheses as to the anatomical arrangement and composition of the muscular texture of the organ. The observation, however, is perfectly true. In the contraction of the muscles of locomotion or relaxation, we find that the greatest power of the organ is excited at a point midway between elongation and the greatest condensation. Thus, the biceps acts with the greatest force when the arm is bent to a right angle, and not when it has drawn the hand up to touch the clavicle, nor when the arm is fully extended; but in the case of the uterine fibres, if we adopt the common theories, we must admit that the nearer the extremities of the muscular fibres are brought to each other, the stronger do they act. In the case of the uterine fibres, whatever be the cause of the first contractions, or whatever be that of the periodical return of them, both the forces, periodical and dynamic, seem to acquire strength by exertion. The weakest pains are those which are met with in women who have the womb enormously distended with water, or with twins; the uterus, in such cases, seeming to be distended beyond the just limit, and to lose thereby its tonic or contractile force; a case similar to that which is observed in an over-distended bladder, which, as is well known, refuses to act upon its contents; so that, even with the catheter introduced, it is sometimes necessary for the physician to aid the bladder by pressing his hand strongly upon the hypogastrium.

The indisposition to energetic movement in a womb too greatly distended by an excessive quantity of liquor amnii, or by twin pregnancy, may for the most part be obviated by early rupturing the ovum, and allowing the waters to run off; but we cannot, even by this practice, always remove a certain atony or apathy of the womb, which embarrasses the labor very much; nor always prevent a troublesome hemorrhage after delivery, the consequence of that atony. The womb, like the bladder, when once overstrained by distension, is exceedingly prone to relax and fill, so as to become over-distended again, because it is inert—atonic.

The whole muscular apparatus of the womb does not enter into contraction at the same moment of time. The fundus may be the first to begin the contractile movement, or the muscular mass of the cervix may take the initiative in the action, which, extending slowly to the whole muscular tissue, engages it at length in one uniform and equal effort at condensation of the whole womb. The observation of this fact is due to the celebrated Wigand, already quoted, one of the most careful and intelligent investigators of the phenomena of parturition who has existed in any age or country. Since my attention
was called to it, in his beautiful work, *Die Geburt des Menschen*, I have many times noticed that the earliest evidences of movement, upon the recommencement of the pain in labor, was a gentle drawing together, constriction or contraction of the mouth of the womb. This motion I have discovered by the Touch, before the woman herself was made conscious of it; and I have said: "Now the pain is come," to which she replied in the negative, but soon corrected herself; for, as I have said, when the contraction begins in the cervix, it overspreads or extends to the whole organ, and then causes pain.

The fundus, in other instances, is the first to exhibit manifestations of contractility. In this case, if the indicator finger be held in contact with the circle of the os uteri, so as, at the same time, to touch the bag of waters or head of the foetus, it will be found that the bag grows more tense, and begins to descend; or the head moves downwards, being urged on by the contraction of the fundus, before the circle of the os is felt at all to constringe or harden itself.

In a labor pain, the whole womb contracts. Let not the Student, then, imbibe the false notion that the cervix relaxes while the fundus and body contract. It is true that he will find, in a labor pain, that the contraction of the fundus commonly lasts longer than that of the cervix, and that the cervix becomes more dilated towards the latter half than in the first half of a pain, agreeably to Wigand's observation, ante: if the pain continues twenty seconds, and the woman is exhorted to bear down her pain, she ought not to begin to bear down during the first ten seconds, but should exert herself to improve the last ten seconds. The advantage of doing so has appeared to me very great, in numerous labors that I have superintended.

In the matter of labor pains, it is worthy of remark that the tenor of them is uncertain, and the action often capricious. For example, the cervix may give way regularly and progressively to a certain point where its dilatable disposition ceases for a time, giving place to the most obstinate rigidity: it is wrong then to prognosticate of a matter so uncertain. A man founding his prognosis upon the equable progress of the dilatation in a labor may announce that the end is nigh—when the dilatability is only nigh to a certain point where it is destined to stop for many hours.

Near the close, when, by the contractions of the fundus and corpus uteri, the child's head has been forced partially into the vagina, the tenesmus, or straining with the auxiliary or abdominal muscles, begins, and, as I have already mentioned, the whole womb, with its contents, is now pushed downwards. Under these circumstances, the
circle of the os uteri descends very low in the excavation, and its ante-
rior lip may be felt, stretched behind and across the pubic arch, a little
below its crown. There is no labor in which the anterior segment of
the circle of the os uteri does not descend lower than the crown of the
pubal arch in front; but as soon as the mouth of the womb is fully
opened, and the head completely lodged in the vagina, the lips of the
womb ascend quite to the top of the pelvis in front, and as high as the
projection of the sacrum behind—the os uteri encircling the throat of
the foetus with a gentle or strong constriction. At this stage of the
labor, the fundus uteri approaches much nearer the os uteri—nearer
by at least four inches, or four and a half, perhaps.

When the head escapes from the vulva, the thorax of the child takes
its place in the vagina, and at last, as the thorax emerges, the abdomen
and the lower extremities succeed it in that place, so that soon, nothing
remains in the womb but the placenta and membranes, with a few
ounces of blood and water. The fundus is now not more than five
inches from the os uteri, instead of twelve inches, as it was at the be-

ginning of labor. The womb is strongly contracted in the last expul-
sive throe; and if the placenta were not detached even earlier than
this, it could scarcely retain its connection with the uterine surface,
now that the superficies is so greatly reduced in size. In fact, we do
find in a large majority of cases, the placenta pushed wholly or in part
into the vagina by the same pain that forced the abdomen and breech
of the child to take that situation; or, if it be not thrust quite out of
the womb, it lies loose and detached within the cavity, and ready to
be expelled upon the slightest renewal of contraction, or even by the
voluntary expulsive effort of the abdominal muscles. Instances do
occur, of a morbid adhesion of the placenta to the womb, in which it
is not detached even for some time after the birth of the child; and I
think I have noticed that, where the attachment exists at the anterior
part of the cavity, it is least apt to be thrown off by the same pains
that expel the child. The constringing movement at the fundus is
greater than at the front or back of the womb; hence, a placenta at-
tached to the fundus is more likely to come off well than one seated on
another part of the cavity.

The separation of the placenta is commonly followed by an effusion
of blood. This effusion is inconceivable in proportion as the action
that condenses the uterine tissue is more energetic and stable. It is
supposed that nearly all, if not all, the blood that comes off flows from
what was the placental surface of the womb. Now, as the placenta is
from fifteen to twenty inches in circumference, it will occupy a space
equal to such a superficies, on the womb, before labor begins; but
when the womb has contracted so as to be no bigger than two fists, the utero-placental surface must at last be not more than one and a half or two inches in diameter, so that the effusion from its vessels is greatly checked, and, in very tonic uteri, wholly suppressed for a time. If in any case the tonicity ceases to exist, then the womb expands again more or less, and blood begins to flow. The womb owes its condensation to the muscular contractions, for the muscular fibres are disseminated everywhere in the substance of the organ; but inasmuch as there is a great deal of arterial, capillary, venous, absorbent, and cellular matter that serves to make up the sum of the uterine mass, these materials, which are not contractile, serve as elastic resistance, antagonistic to the muscularity, and thus cause the organ to spring open again as soon as the muscles relax, or lose their tonicity. It is desirable, therefore, after delivery, to have a well-contracted and tonic womb.

The Child.—During the whole of this process of parturition, the child is quite passive; if alive, its body possesses a certain degree of firmness and solidity (wanting in the dead foetus) that enables the womb to force it downwards, and cause it to dilate the parts it is destined to pass through. It does not assist itself; as, indeed, it could not do, with thighs and arms flexed upon the body and legs crossed perhaps upon the epigastrium, and pinioned by the coats of the womb, which press it together into a compact and passive olive-shaped mass.

If the child be dead, and especially if it have been long dead, its tissues are less firm and resisting; its articulations are all loosened, and even the cranial sutures become relaxed, so that when the contractions of the womb act upon the foetus to expel it, the whole mass of it yields to a certain extent, and is squeezed together by the pains. Under such circumstances, the parts to be dilated are opened much more slowly; for a portion of the power is expended or lost in press- ing the soft and yielding mass of the child into some degree of solidity before it can be efficaciously impelled against the organs to be riven open. In a first labor, a child long dead is often a cause of trouble. It might almost be true to say that, in this sense, a living child helps itself in the labor, while a dead one does not.

Outward Thrust of the Spinal Arch of the Child.—At the beginning of labor, the womb acts only upon the ovum en masse, compressing the membranes and their contents. The lower part of the chorion is pressed like a bag into the os tincæ, and protrudes through
it, and is often burst and the waters discharged, before the fundus of
the womb comes at all to press on the child's breech and push it
downwards. But whenever the fundus uteri does begin to compel the
child downwards, it can only do so by acting on the pelvic extremity
of the spinal column. The cephalic or cervical extremity of this
column of course resists the force, and the spine becomes more arched.
It is as if one end of a bow were set upon the floor, and the hand
resting on the upper end should press it directly downwards in order
to bend the bow. The outward thrust of the arch is in this case so
great that the ends of the bow strive to retreat to the parallel of the
centre of the piece. In the same manner, the cervical end of the
spinal arch, attached as it is to the condyles of the occipital bone, will
naturally thrust backwards, and thus raise the vertex and depress the
chin; or I should rather say (as the head is downwards), it will depress
the vertex and raise the chin, forcing it towards the infant's breast,
while the vertex, which is the occipital extremity of the occipito-
mental diameter, descends, as the presenting part. This happens
the more readily, as the child's head lies over the pelvic opening,
which, so to speak, yawns to receive it.

This bending of the neck, or carrying of the chin to the breast, is
a most important act in the mechanism of a labor; it is called the
flexion of the head; and when it takes place in due degree, it enables
the head to descend into the pelvis with very little obstruction; for the
other change, called the rotation of the head, does not take place well
if this first step fails. The head of a child at term passes very easily
into and through a well-formed pelvis, provided it present certain of
its diameters only to the canal. Now the diameter extending from
the child's chin to its vertex is 5.5 in many children: but the outlet of
the pelvis is nowhere more than four and a half inches, at most. Of
course, the child could not be born, should it present such a diameter.
Again, the diameter extending from the vertex to the space between
the eyebrows, is fully 4.5, and often more than that: but from one
ischial tuberosity to the other is but four inches, so that, were the occi-
pito-frontal diameter of 4.5, to become parallel with this bis-ischiatic
diameter of four inches, the head would stop; it could not descend any
farther. The vertical diameter of the head is, however, only 3.75,
which is smaller than any one of the pelvic diameters; so that no
great obstruction can, in any natural labor, be offered by the bones,
provided the chin, early in the process, be borne strongly against the
breast, so as to make the vertex descend, and cause a considerable dip
of the horizontal diameter of the fetial cranium.
Positions.—Though I have treated on the subject at p. 85, I shall here recapitulate some remarks on positions, a word which, in Midwifery, refers to a relation existing between a cardinal point on the pelvis and a cardinal point on the child's head. The cardinal point on the pelvis is the acetabulum, or rather the acetabular region. The cardinal point on the child's head is the vertex or posterior fontanel. When these two cardinal points come together, the position is number 1, and the other positions are called 2d, 3d, 4th, 5th, or 6th.

The promontory of the sacrum juts into the superior strait in such a manner as to turn any rounded body off, either to its right or left side, and accordingly, it rarely happens that either the forehead or the vertex can pass down immediately in front of the promontory; but, as there is a sacro-iliac concavity on each side of it, the vertex, or the forehead passes down in this concavity, which gives to the head an oblique direction as to the opening, or plane of the superior strait. The cut, Fig. 77, shows how the intrusion of the promontorium into the outline of the superior strait may serve as a guide to the forehead, compelling it to rest in the right, or in the left sacro-iliac space, as the case may be. The forehead, in a majority of instances, goes to the right of the promontory, or in front of the right sacro-iliac symphysis, while the vertex descends below the brim, opposite to the left acetabulum; not at a fixed point, but either nearer the front of the pelvis, or more posteriorly, as the case may be. Indeed, the child generally is found to bore with its head, so as to turn the vertex now forwards, and now backwards, until at last it becomes fixed in one position, by getting under the arch of the pubis. So common is it to observe the child to descend with the vertex opposite to the left acetabulum, that that is taken or counted as the first position of a vertex presentation; and Baudelocque, whose authority on this subject is much followed in the United States, enumerates a second, third, fourth, fifth, and sixth position, the enumeration or order being founded on the supposed relative frequency of the several sorts, as they are met with in practice.

Thus the most frequent, according to Baudelocque, is the first position, in which the vertex is directed to the left acetabulum, and the forehead to the right sacro-iliac symphysis. Here the two cardinal points come together.

Next in order is the second position, in which the vertex is to the right acetabulum, and the forehead to the left sacro-iliac symphysis.
The third position is that in which the vertex is behind the pubis and the forehead in front of the promontory.

The fourth position is that in which we find the vertex at the right sacro-iliac symphysis and the forehead towards the left acetabulum.

The fifth position is that in which the vertex is at the left sacro-iliac symphysis, and the forehead towards the right acetabulum.

And lastly, the sixth position, wherein the vertex is at the promontory and the forehead at the symphysis pubis.

It is doubtless extremely convenient and proper to reduce all the possible modes of vertex presentations to a small, yet sufficiently comprehensive classification; but the reader, and especially the young student, should remember that all these classifications are human inventions. They are the proposita or the dogmata of different men; and, in fact, it is possible for any presentable part of the head to present itself at any part of the brim. If he should, however, find any difficulty in remembering the order or application of these several positions, let him make use of such an arrangement as the following, which I place before him in this connection, rather than refer him back to an antecedent page.

Beginning with the vertex at the left acetabulum, let him say, vertex left; then, proceeding to the second position, in which the vertex is at the right acetabulum, let him say, vertex right, and so on, for the whole of the six positions, as follows:

Vertex left, vertex right, vertex front. Forehead left, forehead right, forehead front.

If the vertex be at the left acetabulum, the forehead is, of course, at the right sacro-iliac symphysis; if it be at the right acetabulum, the forehead is at the left sacro-iliac junction, and vice versa; for all these six positions are vertex positions. So, if it be forehead left, the vertex is at the right sacro-iliac joint. If the forehead be to the right, the vertex is near the left sacro-iliac symphysis; if the forehead be front, the vertex is towards the promontory. Hence I repeat, vertex left, vertex right, vertex front; forehead left, forehead right, forehead front. The first three are occipito-anterior positions, and the last three are occipito-posterior positions.

I have ever found this enumeration the easiest one to remember; and, as a real nomenclature of the positions, I prefer it to all others, and recommend it to the student of medicine.

Madame Boivin, in her Mémorial sur l'Art des Accouchemens, gives us a table showing the relative frequency of these positions.

In her practice, in 20,517 births, there were 19,584 vertex presentations, of which there were of the
Madame Lachapelle’s practice, in 22,243 births, showed that there were 20,698 vertex presentations, of which there were of the

1st position, 15,809
2d “ 4,659
4th “ 164
5th “ 66

That distinguished obstetrician, Dr. C. F. Nægèle, Professor of Midwifery at Heidelberg, asserts that, while the most ordinary position of the vertex presentation is that in which it is found nearest the left acetabulum, the one next in frequency is the fourth, or forehead left position, and he calls it, therefore, the second, in his enumeration. Dr. Nægèle makes this enumeration of first and second positions at page 114 of his Lehrbuch der Geburtshülfe, &c., and at sect. 264, p. 120, gives his views as to the very ordinary occurrence of fourth positions; and at sect. 267, p. 122, declares that, ceteris paribus, the forehead-left positions are as favorable for the mother, and the child also, as the first or vertex-left positions—the vertex rotating spontaneously from the right sacro-iliac junction to the right acetabulum, and then to the pubal arch.

In a conversation I had with this venerable and most honored professor, at Heidelberg, in 1845, he gave me convincing proofs of the correctness of his opinions of these circumstances.

Indeed, I had kept a register of presentations a few years before, upon learning, through a publication of Dr. N.’s Mechanism of Labor, made by Dr. Edward Rigby, now of London, that the common view, as to the greater frequency of the vertex-right position, was erroneous. I am fully convinced, by my register, and by the course of my clinical experience ever since, that Professor N. is quite correct in his statements; and I venture to assure the medical student that, while he shall surely meet with vertex-left positions more frequently than any others, he shall as surely find the forehead-left positions next in point of frequency.

This is a comfortable doctrine; for, the tyro, who has studied in the books the so-called mechanism of the head in the pelvis, is very likely
to be startled at the first case of forehead-left presentation he shall meet with; but if he now learns that it is a natural position, and the one second in point of frequency, he will not suffer himself to be disturbed by the occurrence; particularly if he remembers Dr. Nægèle's assurances, as above expressed. Dr. N.'s words are: "Die geburten bei der zweiten shädellage gehen, unter übrigens ganz gleichen umständen, durchaus ohne grössere Schwierigkeit als die bei der ersten, vor sich, und es hat nicht den allermindesten Einfluss auf die Mütter oder das Kind, ob der Kopf sie in der ersten oder in der zweiten Shädellage zur Geburt stellt."

Dr. Edward Rigby, of London, who was Professor Nægèle's pupil at Heidelberg, translated, some years since, as I stated, a small volume of his worthy teacher's on the mechanism of labor. At p. 36, Dr. N. informs us that, according to his observations during many years, made with the greatest possible care and attention, the fourth position, that in which the occiput is near the right sacro-iliac symphysis, is, after the first, far the most frequent in occurrence of all the head presentations; whereas, he thinks our second position of the vertex occurs very rarely. Out of one hundred labors where the head presented, there were twenty-nine cases of the fourth position; and out of another series of thirty-six labors there were twenty-two of the first, and eleven of the fourth position. The result of his inquiries shows that the fourth is to the first position in frequency, as one is to two and a half.

I am glad to be able to confirm Dr. N.'s statement so far as to say, that I am of opinion, from my own experience and observation, that the fourth position is far more frequently met with, in my own practice, than any other except the first. The reader has already seen in the table, that in Madame Boivin's records the relative frequency was 15,693 of the first, 3,682 of the second, and only 109 of the fourth. I am sure that the statistical record will not be borne out by the experience of any reader of the Midwifery Library. Professor Simpson agrees with Dr. N.'s views.

**Mechanism.**—Let the head enter the pelvis obliquely, the vertex being in the first, or vertex-left position; it is not to be understood that the dip of the horizontal diameter of the head will carry the posterior fontanel into the centre of the pelvic canal; on the contrary such a dip would be too great; but the vertex, or posterior fontanel, glides down along the ischium, repelled by that bone, and directed by its inclined plane inwards and forwards; so that it describes a spiral line in its descent, and the vertex, which on entering the upper strait was directed to the left, is, without any change of posture of the child's
body turned near a quarter or a sixth of a circle, to bring it under
the arch of the pubis, beneath which it extends itself again after re-
covering from its first flexion, so as to allow the crown of the head,
the forehead, the face, and last of all the chin, to roll out, in succession,

from the floor of the vagina and edge of the perineum. These three
mutations are the most important in the mechanism of labor: first, the
flexion; second, the rotation; and third, the extension of the head.
The regular succession of these several states is necessary to an easy
natural labor: and the principal business of the medical attendant, in
such labors, is to see to it that they occur in due order and time.

I am reminded here of the necessity there is to warn the Student to
pause for a moment, and consider what is really the presenting part in
a first or vertex-left position. He should reflect that the fontanel,
which is directed towards the left acetabulum, is a good ways off from
the ostium vaginae towards the left—and that, in fact, the part that he

Touches in his Examination is the right parietal bone, whose
parietal protuberance meets the point of the finger introduced for the
exploration or diagnosis. To reach the vertex, therefore, he must
carry the palp of the finger upwards and outwards; and backwards
towards the left acetabular region, where it will come in contact with
the triangular or occipital fontanel. In second positions or vertex-
right positions, it is the left parietal boss that presents, and so on as
to the rest of the positions. The vertex, therefore, is not, strictly
speaking, the presenting point in vertex labors until the rotation has
become complete.

As to any person's being able to explain the mechanism of the pelvis,
or its operation in parturition, without the aid of the subject, either
recent or dried, I hold it to be an impossibility. Let the Student,
therefore, who wishes to comprehend this matter, which involves prob-
ably the most important information that he will have occasion for in
obstetric practice—let him take a dried pelvis and a foetal cranium,
each well and naturally proportioned to the other—let him plunge the

cranium into the excavation, holding it in the first position, but with-
out flexion; he will find that it cannot descend very far, on account of
the rapid approach of the inclined planes of the ischia below. But if
he now turns the vertex somewhat downwards, or brings the chin
upwards, it will descend a little farther. As he presses it downwards,
the inclined plane of the left ischium tends to repel and deflect it
towards the pubic arch, in which direction no great bony resistance is
offered. If it glance upon the obturator membrane, and indent it, the
resiliency of that tissue is sufficient to repel it still more, and still more
to deflect it towards the front; in fact, it easily takes a pivot or rota-
tory movement, which is greatly enhanced or promoted by the structure of the back and lateral parts of the pelvic excavation, which are so inclined as to likewise repel and deflect the forehead backwards, and cause it to fall into the hollow of the sacrum. Let this experiment be tried both with the dip or flexion, and without it, and it will be seen that in the first case the rotation is almost spontaneous, and in the last very difficult, if not impossible, without powerful extrinsic aid.

The rotation being completed, the vertex is found jutting forth under the arch of the pubis; it emerges more and more completely until the occiput, or the upper part of the nucha becomes pressed against the crown of the arch, when the further progress of this part ceases—it becomes a fixed point, or it is an axis, on which the head, as before said, turns or rolls out from the orifice of the vagina, at the close of which evolution the extension of the head is complete.

After the head is born, the face turns again to the side of the pelvis, towards which it was directed at the beginning of labor, or before the rotation began; and that is called its act of restitution. If the vertex when within the pelvis was left, it seeks the left when driven outside of the excavation.

While the head is undergoing these mutations, the shoulders of the child are entering the basin. In the first position, the vertex is to the left acetabulum, and the right shoulder to the right acetabulum, while the left one is to the left sacro-iliac junction. As the shoulders descend, the right one rotates towards the arch of the pubis, and the other falls backwards into the hollow of the sacrum; the thorax is now plunged deep into the excavation, where its farther progress is arrested by the floor of the pelvis. A renewal of the uterine effort forces the left shoulder to glide off from the apex of the sacrum and coccyx, and displace the perineum, which it thrusts backwards, out of its way, until the shoulder is born. The edge of the perineum is now retired so far backwards as to allow the right shoulder to disengage itself from above, and then from beneath the crown of the pubic arch; and the body of the child is immediately afterwards expelled with great violence, occasioned by the irresistible tenesmus the woman experiences in this stage, and which compels her to bear down with her whole energy. Sometimes the shoulder nearest the pubis is first expelled; generally the other is the first to be born.

A repose of eight or ten minutes follows the birth of the child, and next, a slight pain, or a voluntary bearing down, expels the placenta and membranes, as before said.

The almost supernatural exertions and struggles of the woman, as well as the painful sensations she experiences, and the novel impres-
sions made upon her nervous system by the successive stages and occurrences of parturition, have brought about a violent excitement of the nervous and circulatory systems of the economy; the former of which is resolved by cries of joy, by tears, and by the delightful sense of security, of triumph, and finished toil, and by that gushing tenderness which a mother feels for her new-born helpless progeny. The excitement rapidly abates, under the more or less abundant effusion of blood, and the abstraction of the stimulus of exertion, pain, and dismay. The flood of perspiration gradually subsides, and a short sleep, the best restorative, soon permits the patient to feel "comfortable," a phrase peculiarly adapted to the case of a puerperal woman. A review of the whole of the phenomena, both physiological and psychological, that are evolved during the progress of a case of labor, presents perhaps the most perfect example of the condition called hysteria that can be anywhere observed. I shall not devote these pages to a comparison of them with those of an hysterical paroxysm, but merely refer the reader to his clinical observation, whether past or future, for a confirmation of this view of the case. Indeed, the whole matter of labor is ipso facto, a matter depending merely on the status or modality of the womb, and its influences and sympathies. It therefore is a pure specimen of the local action and constitutional influences displayed by the child-bearing organs, or what Wigand calls the whole generation-sphere.

The lochia, for such is the denomination of the bloody discharge that follows, flow in such abundance as to require five or ten napkins to imbibe the blood effused during the first twenty-four hours; after which they decrease in quantity, and grow pale, until, by the tenth or fifteenth day, many women have none but a whitish discharge, which also ceases between the twentieth and thirtieth day.

On the day after delivery, the globe of the uterus appears to be larger than it was immediately after the discharge of the placenta. It can generally be felt, in the hypogastrium, during from six to ten days; after which it retreats into the recesses of the pelvis, diminishing daily in size, until, by the end of the month, it is nearly as small as before it was gravid.

Such is the history of Labor, in general terms, which, though it may perhaps afford a pretty good coup d'œil of the phenomena by which it is characterized, is not sufficiently in detail for the purposes of this work; on which account I shall proceed to treat of other particulars in the ensuing pages.

In general, as soon as the signs of respiratory life are fully established in the child, the cord is to be severed by the attendant, who
divides the navel-string after having secured it with one or with two ligatures, and puts an end, by this severance, to all foetal connection with the mother.

As to the child, it comes, in a good labor, healthy and vigorous into the world. The loud sounds of its vagitus, its cries, pervade the apartment, and carry consolation and even transport to the bosom of the fatigued, exhausted, and terrified parent. "Ah, mi corazon! Mi carrissimo, querido corazon!" said a Spanish lady, from the midst of her pangs, as soon as the head of her offspring became free, and before the shoulders were born—for she heard its vagitus uterinus—and her heart "leaped up" with passionate expressions of love, to greet it even before it was completely ushered into the world. As a physician, who has passed a life among those who were in pain, in peril, and in fear of imminent death, I must have been witness to many scenes of human emotion—but of all the expressions of love, made manifest and identified in voice and in speech, that I have ever witnessed, the most intense, the most rapturous and sacred, have been the thoughts that breathed and words that burned as they vehemently issued from the lips of a young mother, whose body had just escaped from the fell sufferings of those who, in sorrow, travail in child-birth, according to the primal woe pronounced against the sex.

The child being born, it remains that the secundines, consisting of the placenta and membranes, shall be expelled from the uterine cavity. The same kind of power that was used to force the child into the world is required for the delivery of the after-birth.

I believe that the after-birth comes off in about ten minutes. There are many labors in which the placenta is chased out of the womb into the vagina by the same pain that pushes the child forth. But, in general, this is not the case, the placenta being only loosened and detached, in whole or in part, and left lying crushed up into a sort of ball by the contraction of the womb upon it.

After a repose of some ten minutes, it may be, and it is an indifferent matter, twenty minutes, the contractile power of the uterus is again in activity. This excites the tenesmus, as before, and the woman, bearing down, coincidently with the uterine contraction, pushes forth the after-birth, generally accompanied with coagula, and a quantity of fluid blood. The pregnancy is thus brought to its close.

Lochia.—After the expulsion of the entire product of the conception, the patulous orifices of vessels, left exposed by the separation of the placenta, freely discharge several ounces of blood. This discharge is called lochia. As the cavity of the womb is not obliterated by the
conclusion of the labor, it must happen that the blood effused within its capacity shall coagulate, and that the patient shall discharge from time to time a utero-morphous-clot, as large as an egg, or as large, sometimes, as a man's fist. As the organ grows smaller and smaller, these coagula become smaller and smaller—the flow assuming more and more the appearance of the menstrua. In the course of a fortnight in some, of a month in others, the last traces of uterine excretion dependent on the late pregnancy have disappeared, and the woman is restored to the Jewish estate of cleanness.

The lawgiver of that ancient race pronounced that a woman could not be clean until the fortieth day. But our Christian women generally deem a month sufficient for the whole process of the uterine purgation.

As to the lochia, let the Student learn that, when the milk begins to be abundantly secreted, which is on the third day, or about seventy-two hours after the close of the labor, the mammary molimen serves to check the determination to the womb; and consequently to lessen the amount of the lochia—which, however, becomes again abundant on the fifth day. Can it be that the opened orifices of the uterine vessels, from which the lochia are discharged, shall return to their normal, non-gravid condition, without the intervention of a state fit to be called phlebitis? Such is the proposition of an able French writer. If those vessels cannot recover their ordinary state without passing through a stage of inflammation worthy to be called phlebitis, however slight that may be, it is certain that we ought to feel no surprise when we find such inflammation to become violent, dangerous, or even fatal, by developing all the phenomena of pyogenic fever, and consequent pyaemia.

Having now given a plain account of what happens in an ordinary labor, I shall in the next chapter proceed to give directions for the Conduct of a Labor. I cannot, in doing so, avoid some iteration, nor shall I apologize further for so doing, since, without repetitions, I cannot possibly maintain the even tenor of the story, for, though Obstetrics is a Science, it is made up of a vast number of unconnected items.