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1828b



**COMPENDIUM**  
OF  
**OPERATIVE MIDWIFERY;**

OR,  
THE MANUAL AND INSTRUMENTAL  
OPERATIONS  
OF  
*M. A. Beckhan*  
**PRETERNATURAL LABOURS**

REDUCED TO THE GREATEST SIMPLICITY:

PRECEDED BY  
AN INVESTIGATION  
OF THE  
**Mechanism of Natural Labour.**

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FROM THE FRENCH OF  
**JULIUS HATIN,**

Doctor of the Medical Faculty of Paris; Professor attached to the same Faculty; Private Lecturer on Midwifery and on the Diseases of Women and Children; formerly Physician and Resident Surgeon of the First Class of the Hospitals and Civil Charities of Paris; Member of many Learned Societies, etc.

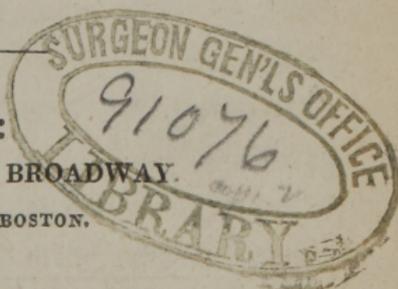
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BY RICHARD TUITE, M. D.,  
Formerly President of the Royal Physical Society of Edinburgh, etc.

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1828.



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Southern District of New York, ss.

**BE IT REMEMBERED**, that on the ninth day of September, A. D. 1828, in the fifty-second year of the independence of the United States of America, Charles S. Francis, of the said district, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit:

“Compendium of Operative Midwifery; or, The Manual and Instrumental Operations of Preternatural Labours reduced to the greatest simplicity: preceded by an Investigation of the Mechanism of Natural Labour. From the French of Julius Hatin, Doctor of the Medical Faculty of Paris; Professor attached to the same Faculty; Private Lecturer on Midwifery and on the Diseases of Women and Children; formerly Physician and Resident Surgeon of the First Class of the Hospitals and Civil Charities of Paris; Member of many Learned Societies, etc. By Richard Tuute, M. D., formerly President of the Royal Physical Society of Edinburgh, etc. etc.”

In conformity to the act of congress of the United States, entitled “An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the time therein mentioned;” and also to an act, entitled, “An act supplementary to an act, entitled, an act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the time therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints.”

**FREDERICK I. BETTS,**  
Clerk of the Southern District of New York.

## PREFACE.

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THE work which, in the capacity of translator, I here present to the American student, is the production of a celebrated teacher of practical obstetrics in Paris. It fell into my hands some months ago: my attention was arrested by its title and the name of its author; I had attended his courses; the benefit which I had received from his instruction was still vividly impressed on my mind; and I gave it an attentive perusal. Pleased with the beautiful simplicity and order of its arrangement, with its unity of design, with its analytic method, its style at once easy, concise, and perspicuous, I resolved to give it an English version, in the hope of extending the benefit it had produced abroad to the medical student of this country; and in this resolve I was confirmed by the circumstance of its having obtained the sanction of the profession in the very capital of medical science.

If the importance of a science is to be calculated from the practical utility to which it may be applied—from the beneficial effects which may result from it, what can be more important than that science whose immediate object is to assist fated woman laboring with the birth of man? What charge can be more responsible than the trust of the lives of both mother and offspring; or what idea more impressive than the reflection that their fate not unfrequently depends on our

judgment and skill? Midwifery is also one of the most satisfactory departments of medical science, because its principles are better determined, and its practice more clearly defined, than that of any other branch of the healing art.

The study of midwifery embraces the principles of science and the practical application of the precepts of art. They are both essentially and equally necessary to insure to the accoucheur a successful career of practice. Obstetrical anatomy is the foundation of the science; it includes a knowledge of those structures, foetal as well as maternal, which are concerned in parturition. The facts which are here acquired, when judiciously selected, clearly arranged, and well meditated, might enable us at once, without farther investigation, to establish the principles of the science; but it is seldom given to man to discover the secrets of nature by any process of *a priori* reasoning. These facts, however, are essentially necessary to enable us to understand the operations of nature exhibited in the mechanism of natural labour. It is in the study of this mechanism that the student learns to discover those general laws which are observed in her operations, and which constitute the principles of his science.

But, having attained this fundamental knowledge, having learned to reason on these principles, the student must not therefore think himself either profound in science or fitted for practice. It is their judicious application to practical utility which gives them value, and this supposes a more extended acquaintance with the individual facts or details of science than he yet possesses. It is in this knowledge of detail, and not in the mere abstract knowledge of principles, that profundity consists. Principles, after all, are but con-

clusions drawn from many individual facts; and though the details of a science may be said to be involved or wrapped up in its principles, yet he who has but learned its principles is no wiser than the man who, knowing the conclusion of a syllogism, is ignorant of the data on which it is founded—of the premises from which it is drawn.

If natural labour be the foundation of the science, it is also the great prototype of the art—the great model which the obstetrical operator must ever keep steadily in view when employed in his operations; for, in obstetrics, success will not always result even from the judicious application of the precept, unless we also study to imitate nature in the manner in which it is to be executed; thus constituting midwifery not only a scientific, but also an imitative art.

Art is the application of science to practice—its precepts being but so many corollaries deduced from the principles of science. Though science may be acquired by attentive reading and reflection, art can only be attained by exercise and practice. Reading, however extensive, has never formed an artist, nor will it ever create an operator. It is execution, frequent and repeated exercise, which can alone give a proficiency in art, insure skill, or constitute that habit which is indispensable to success.

In the study of midwifery, “to read too much is sloth;” because its principles are few and easily attained, whereas their application is vast and varied. How mistaken, then, is the idea, how fatal the error, to imbue the mind of the young accoucheur with the facts, principles, and even precepts of midwifery, and to leave him with his hand unskilled to seek in an emergency, at the bed side of labour, in the moment of danger, an opportunity of fulfilling those precepts, of per-

forming those operations, the success of which must essentially depend on his dexterity. It is hard to do that well which we do for the first time, and presumptuous is the idea that would promise success before the attempt has been made. Of what use, let me now ask, will it be to know that in such a position the fœtus is to be turned and delivered by the feet—here the forceps are to be applied, there the lever—if in delivering he fractures the limbs of the child, dislocates its trunk, and leaves it all mangled and mutilated; or if he lacerates the parts of the mother, and leaves them in that state of inflammation to which at this period they are so prone, and which a few hours may bring to its crisis?

Skill is no more natural to man than knowledge; they are both the result of the successful application of his faculties—the reward of industry. He who would doubt it, need but direct his attention to the frequent, incessant, and labor-ed efforts to which the child is doomed before it attains the use of its limbs; but this he may attribute to the want of strength; let him, then, figure to himself the lusty hand of a mechanic passing along the pliant keys of a harpsichord, and then tell me whether the hand is necessarily obedient to the dictates of the understanding or in accordance with the strongest influence of the will. The truth is that the hand requires cultivation as much as the understanding, and with cultivation it has produced feats more astonishing to man himself, than ever have been produced by the mightiest efforts of the intellect. The student need, therefore, not expect success or any satisfaction to result from his practice in the obstetric art, unless he accustom himself to repeat those operations on the machine which he may be called upon to perform at the bed side of labour.

The farther application of the foregoing remarks I must leave to the intelligence of the reader, and return to the work itself. The reader must not think to peruse this manual as he may have done others on the same subject, at a single sitting and without the labour of a single reflection. It was not written to be read, but to be studied, and perhaps more truly to be acted. While reading it, his attention will be put under contribution, his course frequently arrested, and his mind excited to reflection. But let not this discourage him, for it is the remark of d'Alembert, that the best books are those which most excite to reflection; and he himself must know, that knowledge is not a passive impress, but the active workings of an intelligent mind. If he content himself with the mere perusal of it, he will not receive all the benefit it is calculated to produce. I would recommend him, on the contrary, to ascertain every fact by self inspection, to verify every conclusion by attentive reasoning, to put every precept to the test by actual experiment. With a rule in his hand, I would have him take every measurement of the pelvis, every diameter of the fœtus; study their relative bearings, mark their different axes, and, by reasoning on these data, to try at what conclusions he himself will arrive. Let him then place the fœtus in the principal positions of natural labours, and by examination accustom his hand to distinguish the various presentations, and, following the descriptions herein given, proceed to exhibit the whole mechanism of natural labour. With nature as his guide, with her laws as his precepts, let him advance to the study of preternatural labours, in which the interference of art, enlightened by science, is required to assist the unavailing and sometimes self destructive efforts of nature. Here the operations of his

art are to be practised, in every presentation—in every position, and let him not cease to repeat them until proficiency be formed into habit and habit become a second nature. By this course of proceeding, the student will soon attain to that dexterous facility of operating, which he would in vain seek in the school of theory.

I have endeavored as much as possible to render this version a faithful transcript of the ideas of the author. How far I may have succeeded, is submitted to the impartial judgment of the candid reader.

R. T.

NEW YORK, SEPTEMBER, 1828.

## INTRODUCTION.

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THE manual operation of preternatural labours constitutes one of the most essential parts of the obstetric art. It is one of those subjects which inspire the young accoucheur with the greatest apprehension on entering his practical career. He may be thoroughly acquainted with the indications which this or that position of the fœtus may present, but he cannot precisely recall to mind the manual operation, by means of which such indications are to be fulfilled.

It is therefore with the view of assisting the memory of the practitioner, as well as of satisfying the urgent desires of those students who follow our courses, that we publish this treatise on the *Manual Operation of Preternatural Labours*. It is the most simple of all the methods hitherto published, and its adoption by the majority of practitioners sufficiently attests its superiority.

It behoves us, nevertheless, to point out the sources from which we have drawn. The learned lectures of professors Desormeaux and Dubois; the excellent articles which the former has published in the new *Dictionary*; the works of the celebrated Baudelocque; those of Capuron and Gardien; the lectures of our friend Dr. L. Colomb; such have been our principal aids in this undertaking.

We might have referred in this work to whatever is peculiar to each author, but this would be failing in our purpose, since our object is merely to teach, in its greatest simplicity,

the manual operation divested of every thing that could uselessly complicate it.

We shall divide preternatural labours into three classes. In the first, we shall include such as are completed by manual aid alone. In the second, such as require the aid of blunt instruments. In the third, such as cannot be accomplished but by means of operations performed both on the mother and child.

To study with advantage the manual operation of preternatural labours, it is indispensable to be thoroughly acquainted with the mechanism of natural labour, for it is on this mechanism that is based all manual assistance applicable to preternatural labour; in a word, it is this mechanism which traces out to the accoucheur the course through which he must direct the fœtus when called upon to terminate a labour. We should therefore greatly err, before commencing the study of preternatural labour, did we neglect to enter upon the special investigation of natural labour.

Moreover, as it is our wish to render this manual as complete as possible, we shall treat in the last chapter of whatever relates to the extraction of the placenta.

As this work will naturally be frequently consulted, we have thought proper to give it a portable form, so that the accoucheur having it always with him, may in a moment clear up his doubts, and conquer the difficulties he may meet with in his practice.

OF  
THE MANUAL OPERATION  
OF  
PRETERNATURAL LABOURS.

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THE object of the accoucheur's interference in preternatural labours, is to extract the fœtus from the parts of generation.

This extraction is sometimes effected by the hand alone; sometimes blunt instruments are required; while on other occasions, we are obliged to operate either on the mother or child. From this simple exposition, it is clear that preternatural labours should be divided into three classes, designated by their respective modes of termination.

In the two first classes, the parts are generally well formed, while the obstacle to the termination of labour is to be sought for in the defective proportion between the diameters of the pelvis of the mother and those of the fœtus. It is therefore very important, with the view of distinguishing this obstacle, and for the purpose of applying a proper remedy, to be thoroughly acquainted with the mechanism of natural labour in all its details.

To understand this mechanism, it is indispensably necessary to have an exact knowledge of the nature of the osseous canal, which the pelvis of the mother presents in its interior, as well as of the principal parts of the full grown foetus, such as the head, the shoulders, and the breech; for upon the mutual relations of these parts is based the mechanism of natural labour.

## PART THE FIRST.



### OF THE PELVIS.

The pelvis is a kind of osseous canal, situated below the trunk, between the vertebral column which rests upon its middle and posterior portion and the femurs which articulate with its mid-lateral and anterior parts.

It is divided into an external and internal surface, into a base and summit.

We shall merely treat of its internal surface, because a knowledge of this part alone is necessary for the explanation of natural labour.

The internal surface of the pelvis comprehends the great pelvis, the superior strait, the cavity of the pelvis, and the inferior strait.

**GREAT PELVIS.** The great pelvis is divided into four regions, an anterior, a posterior, and two lateral.

*Anterior region.* It only exists in the recent subject, and is entirely formed by the abdominal parietes.

*Posterior region.* It presents in its centre the termination of the vertebral column, and on its sides the appendages of the sacro-iliac symphysis.

*Lateral regions.* They are formed by the internal iliac fossæ, which are filled in the recent subject by the psoas and iliac muscles.

*Dimensions of the great pelvis.*

*Breadth.* About 10 inches from the middle of one iliac crest to the other; 9 inches between the anterior and superior iliac spines; 8 inches from the anterior and inferior iliac spine of one side to that of the other.

*Depth.* About  $3\frac{1}{2}$  inches from the middle of the iliac crest to the superior strait; and about 3 inches from the height of the anterior and superior iliac spine.

*Extent from the back to the front.* The extent of the great pelvis cannot be determined in this direction, because the abdominal parietes are susceptible of a greater or less extension.

**SUPERIOR STRAIT.** Is that osseous brim which separates the greater from the less pelvis.

*Form.* Its form is various; most commonly it is elliptical.

*Dimensions.* The superior strait is measured by four diameters, viz.: an antero-posterior, which extends from the sacro-vertical angle to the symphysis of the pubis; a transverse, which passes from one side of the pelvis to the other; and two oblique, which extend from the sacro-iliac symphysis on the one side to the ilio-pectineal eminence on the opposite. The antero-posterior diameter measures 4 inches; the transverse on the skeleton, 5 inches; but in the recent subject, it is diminished about half an inch on each side by the psoas and iliac muscles, and in labour presents in reality but 4 inches. The oblique diameters are  $4\frac{1}{2}$  inches.

*Inclination.* When the woman is in an upright position, the superior strait is not horizontal, but its posterior part is much more elevated than its anterior; so that its direction

is oblique from above downwards, and from back to front. The inclination which it then presents is from 35 to 40 degrees.

*Axis.* The axis of the superior strait may be measured by an imaginary line, which, departing from the umbilicus of the woman, passes through the centre of the cavity, and terminates at the inferior extremity of the sacrum.

CAVITY OF THE PELVIS. The cavity of the pelvis is divided into four regions, an anterior, a posterior, and two lateral.

*Anterior region.* Is slightly concave from one side to the other; it presents the posterior part of the symphysis and body of the pubis; further out, and on each side, is the foramen ovale, which is filled by the internal obturator muscle.

*Posterior region.* The posterior region is formed by the anterior surface of the sacrum and coccyx. It is concave, and marked by the transverse lines, which show the place of union of the different pieces of which the sacrum and coccyx are composed. It presents, likewise, the sacro-anterior foramina which give passage to the nerves of the same name.

*Lateral regions.* The lateral regions are almost plane, inclined upwards and inwards, and present the ischiatic notches, converted into foramina by the ligaments of the same name; a square surface which corresponds to the cotyloid cavity, (acetabulum,) and the ischiatic spine, which, projecting more inwards than any other part situated either before or behind it, thus gives rise to two inclined planes, on each side of the pelvis, one anterior and the other posterior. It is these inclined planes which impel the head to execute the rotary motion necessary to enable it

to replace its antero-posterior diameter in the direction of the longest diameter of the inferior strait. The anterior plane on one side causes that part of the head which is directed anteriorly to glide under the arch of the pubis, while the posterior plane on the opposite side forces the other portion of the head into the curve of the sacrum.

*Dimensions of the cavity of the pelvis.*

*Antero-posterior diameter.* From the middle of the symphysis of the pubis to the middle of the sacrum, about 5 inches, on account of the curve of this latter bone, which is an inch in depth.

*Transverse diameter.* Measured from the top of the excavation, it is about  $4\frac{1}{2}$  inches. This diameter diminishes in proportion as you approach the inferior part of the pelvis.

*Depth.* The anterior boundary is 18 lines; the posterior,  $4\frac{1}{2}$  inches, without following its curve; and the lateral portions are  $3\frac{1}{2}$  inches.

*Direction.* The cavity of the pelvis represents a canal very much curved forwards, with its extremities cut perpendicularly to its axis.

*Axis.* The axis of the cavity of the pelvis may be represented by a curved line, which, passing through the centre of the canal, would nearly follow the curve of the sacrum.

**INFERIOR STRAIT.** Such is the appellation of the inferior opening into the pelvis. Its contour is osseous in front and on its sides, while behind it is almost entirely ligamentous.

*Form.* It is very irregularly rounded.

*Dimensions.* The inferior strait, (outlet,) like the superior,

is measured by four diameters; an antero-posterior, which extends from the point of the coccyx to the inferior portion of the symphysis of the pubis; a transverse, which measures from one ischiatic tuberosity to the other; and two oblique, which extend from the ischiatic tuberosity on one side to the middle of the sacro-sciatic ligament on the opposite.

All these diameters are generally 4 inches in extent; but the antero-posterior may be enlarged to 5 inches, by the retrocession of the coccyx.

*Direction of the inferior strait.* Its posterior portion, as far as the ischiatic tuberosities, is inclined downwards and backwards, whilst its anterior portion is directed downwards and forwards. This latter portion forms the arch of the pubis.

#### *Dimensions of the arch of the pubis.*

*Breadth.* At the top, 15 to 20 lines; in the middle,  $2\frac{1}{2}$  inches; at the bottom, 4 inches.

*Height.* About 2 inches.

*Axis of the inferior strait.* The axis of the inferior strait may be represented by an imaginary line, which, departing from the sacro-vertebral angle, passes through the centre of this strait.

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## THE PRINCIPAL PARTS OF THE FŒTUS.

The principal parts of the fœtus, considered in relation to labour, are *the head, the shoulders, and the breech.* But a

thorough knowledge of these parts being no ways necessary to enable us to explain the mechanism of natural labour, we shall confine ourselves to the exposition of what relates to their form and volume.

#### OF THE HEAD OF THE FŒTUS.

The head of the fœtus separated from the trunk, presents an oval slightly flattened in different directions.

*Division.* It is generally divided into five regions and two extremities.

The regions are *the vertex or crown, the base, the face* properly so called, and *the temporal regions.*

The two extremities are the *occipital tubercle* and the *chin.*

*The crown of the head* offers certain parts which it is important for the accoucheur to know. The chief of these are the anterior fontanelle, the sagittal suture, and the posterior fontanelle.

*The base of the cranium* can never present, unless the head be separated from the trunk.

*The face properly so called* presents such prominent features, that it would be difficult to mistake it.

*The temporal regions* offer sutures and fontanelles; when they present, they are to be distinguished more particularly by the presence of the ear.

#### *Dimensions of the head of the fœtus.*

The head of the fœtus presents *five diameters* and *two circumferences.*

*Of the five diameters.*

*The first extends* from the chin to the occiput, and is called mento-occipital or oblique. It measures  $4\frac{1}{4}$  inches.

*The second extends* from the occiput to the forehead, and is called occipito-frontal. It measures  $4\frac{1}{4}$  inches.

*The third extends* from one parietal protuberance to the other. It measures  $3\frac{1}{2}$  inches.

*The fourth extends* from the summit of the head to the base of the cranium. It measures  $3\frac{1}{2}$  inches.

*The fifth extends* from one mastoid apophysis to the other, and thus measures the breadth of the base of the cranium. Its length is from  $2\frac{1}{2}$  to 3 inches.

*Of the two circumferences.*

*The first divides* the head perpendicularly into two lateral hemispheres. Its extent is from 14 to 15 inches.

*The second divides* the head perpendicularly into two halves, an anterior and a posterior half. The extent of this circumference is from 10 to 11 inches.

The head of the *foetus* is composed of two very distinct portions; the one superior, and is called the vault of the cranium; the other inferior, and is named its base.

The first of these portions is formed of osseous pieces, separated by membranous intervals, some of which are called fontanelles, others sutures. Thus disposed, it enables the vault of the cranium when compressed to diminish its volume by the approximation, or riding upon one another, (*chevauchement*,) of the different bones which compose it.

The base of the cranium is incompressible.

*Movements of the head of the fœtus upon the trunk.*

The head of the fœtus may be bent on the chest, reflected upon the back, and inclined on either shoulder. It can likewise describe the quarter of a circle.

THE SHOULDERS OF THE FŒTUS.

The shoulders of the fœtus, considered in relation to labour, are interesting only in as far as it regards their volume.

Measured transversely, they present a diameter of  $4\frac{1}{2}$  inches; but their structure allows of a considerable reduction of volume, and it has been remarked that by simple pressure, the extent of this diameter might be diminished an inch.

BREECH OF THE FŒTUS.

The breech, like the shoulders, is an object of interest only in as far as it relates to its dimensions, although its volume is never a real obstacle to the termination of labour, not even when it presents double. Moreover, it is composed of 14 osseous pieces, separated by cartilages, which, yielding to pressure during parturition, may still more facilitate its accomplishment.

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CONCLUSIONS DRAWN:

1. From the comparison of the diameters of the pelvis

with those of the principal parts of the fœtus. 2. From the different direction of the axes of the pelvis. 3. From the difference in length of its anterior and posterior boundaries.

1. The longest diameters of the fœtus surpass in extent the shortest diameters of the pelvis; but the longest diameters of the pelvis exceed the longest diameters of the fœtus; whence we must conclude that it is indispensable to the natural termination of labour, that the longest diameters of the fœtus should always correspond to the longest diameters of the pelvis.

2. The longest diameters with relation to parturition, at the superior strait of the pelvis, are the oblique; whilst the longest at the inferior strait, is the antero-posterior diameter; hence it follows that the largest part of the fœtus, placed obliquely at the inferior strait, must necessarily undergo a movement of rotation in order to assume a suitable position at the inferior strait.

3. The three axes of the pelvis represent a kind of curved line, whose concavity corresponds to the pubis and convexity to the sacrum; the fœtus, in disengaging itself, must necessarily follow this direction.

4. The posterior boundary of the small pelvis is 5 inches in extent, whilst its anterior boundary is but 18 lines. This difference in length explains the reason why, *the occiput necessarily escaping first in every presentation of the vertex*, the two first positions are much more favorable than the two last, since in the first case the occiput has but a passage of 18 lines to pass over, whilst in the second it has an extent of almost 5 inches.

## OF THE MECHANISM OF NATURAL LABOUR.

Labour may terminate naturally by the *head*, the *feet*, the *knees*, and the *breech*.

### OF NATURAL LABOUR BY THE HEAD.

Natural labour by the head may take place in four different positions, which correspond to the oblique diameters of the pelvis.

**FIRST POSITION.** *Principal relations.* The occiput corresponds to the left cotyloid cavity, and the forehead to the sacro-iliac symphysis. The posterior region of the fœtus looks forwards and to the left; its anterior, backwards and to the right. The feet are at the fundus of the womb.

*Mechanism.* Pressed by the contractions of the womb, the head bends upon the chest, and its mento-occipital diameter becomes parallel to the axis of the superior strait. In this position it passes through the cavity of the pelvis; but, arrived near to the inferior strait, it meets with the inclined planes, which impel it to rotate, by which the occiput comes and presents under the arch of the pubis, and the face in the curve of the sacrum. From that moment the longest diameter of the head is found in the longest diameter of the inferior strait, and nothing now opposes the passage of this portion of the fœtus, unless it be the resistance of the external parts of generation. Still forced by the contractions of the womb, the head advances more and more, and thus gradually effects the dilatation of the vulva; but, after each pain, it recedes more or less into the cavity of the pelvis. At length,

after a labour more or less protracted, the resistance of the external parts of generation being overcome, the head frees itself; at that moment the occiput rolls under the arch of the pubis, and the principal parts of the face develop themselves before the posterior commissure. The head now freed, resumes its natural relations with the trunk; the occiput turns towards the left groin, and the face towards the posterior and internal part of the right thigh. There is nothing in this movement of restitution that ought to surprise us, for the trunk has not participated in the movement of rotation which the head must have undergone to enable it to escape through the inferior strait.\*

The shoulders, engaged obliquely at the superior strait, pass through the cavity, and arrived at the inferior strait, they meet the inclined planes, which force them to perform the same movement of rotation as the head. The right shoulder is brought under the arch of the pubis, and the left is carried into the hollow of the sacrum. At this moment the head changes its relations; the face now corresponds directly to the middle and internal part of the right thigh, and the occiput to the middle and internal part of the left. The shoulder which is behind, receiving all the contractions of the womb, soon appears at the vulva, through which it passes, whilst the other which is under the pubis acts as a fulcrum to it.

When once the shoulders are out, the rest of the body is expelled with great rapidity, which is easily explained, for

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\* It has been remarked that the head at this moment, instead of resuming the position which it had at the superior strait, sometimes places itself in the second position.

the dimensions of the fœtus continue decreasing, and the passage has been dilated by the more voluminous parts.

**SECOND POSITION.** *Principal relations.* The occiput corresponds to the right cotyloid cavity, and the face to the left sacro-iliac symphysis. The posterior region of the fœtus is directed forwards and to the right; the anterior, backwards and to the left; the feet are towards the fundus of the womb.

*Mechanism.* The mechanism of the second position is precisely the same as that of the first, with this single difference, that the movements of rotation are executed in an inverted direction.

**THIRD POSITION.** *Principal relations.* The occiput corresponds to the right sacro-iliac symphysis, and the forehead to the left cotyloid cavity. The posterior region of the child is directed backwards and to the right; the anterior, forwards and to the left. The feet are at the fundus of the womb.

*Mechanism.* The mechanism of natural labour in this third position differs little from the mechanism of the first, for the same diameters of the fœtus correspond to the same diameters of the pelvis.

Thus, at the superior strait, the head bends on the chest, and the occiput plunges first into the cavity. When the head reaches the inferior strait, it comes in contact with the inclined planes, which give it a rotary motion; the occiput glides upon the posterior and right lateral inclined plane, that it may lodge itself in the hollow of the sacrum, whilst the face glides upon the anterior and left lateral inclined plane, to place itself under the arch of the pubis. The occiput then bearing all the contractions of the womb, passes over the curve of the sacrum, the coccyx, and the perineum,

at the same time that the face retreats into the pelvis and is forcibly bent upon the chest. The occiput soon begins to appear at the vulva, which it dilates by degrees; after each pain, it ascends more or less into the pelvis. At length, the resistance of the external parts being overcome, the occipital region of the head frees itself, following the axis of the inferior strait; now resting on the posterior commissure, it throws itself back, and the different points of the face are disengaged from under the symphysis of the pubis.

The head, which is now free, resumes its natural relations with the trunk; and the occiput is found to correspond to the posterior and internal part of the right thigh, and the face to the left groin.

The shoulders engaged obliquely at the superior strait, pass through the cavity of the pelvis. Arrived near the inferior strait, they meet the inclined planes, which force them to execute a movement of rotation. The right shoulder lodges itself in the sacrum, and the left comes under the arch of the pubis. The head at the same time changes its relations; the face is turned directly opposite to the middle part of the left thigh, and the occiput to that of the right thigh.

The shoulder which is behind, receiving all the contractions of the womb, escapes the first, whilst the other which is under the pubis serves as a fulcrum to it.

When the shoulders are out, the rest of the fœtus passes without difficulty.

*Nota.* This third position is sometimes naturally converted into the second. This favorable conversion takes place, when the movement of rotation impressed on the fœtus is properly directed.

**FOURTH POSITION.** *Principal relations.* The occiput corresponds to the left sacro-iliac symphysis, and the face to the right cotyloid cavity. The posterior region of the fœtus is directed backwards and to the left; the anterior, forwards and to the right. The feet are at the fundus of the womb.

*Mechanism.* The mechanism of the fourth position is precisely the same as that of the third, with this difference, that the rotary motions are executed in an inverted direction.

*Nota.* This position may be naturally converted into the first.

OF NATURAL LABOURS BY THE ABDOMINAL EXTREMITIES OF  
THE FŒTUS.

*Positions of the feet.*

The feet present in four different positions, which correspond to the oblique diameters of the pelvis. In these positions, the fœtus is disposed in such a manner that the thighs are bent upon the pelvis, the legs upon the thighs, and the heels applied to the breech.

**FIRST POSITION.** *Principal relations.* The heels correspond to the left cotyloid cavity, and the toes to the right sacro-iliac symphysis.

The posterior region of the fœtus is directed forwards and to the left, and the anterior backwards and to the right. The head is at the fundus of the womb.

*Mechanism.* Pressed by the contractions of the womb, the feet escape without difficulty through the cavity of the pelvis and the inferior strait. The breech soon meets the

inclined planes, and undergoes a movement of rotation, by which the left hip places itself under the pubis and the right in the hollow of the sacrum. (*This rotary motion does not take place when the pelvis of the mother is of a certain breadth, and in this case the breech escapes obliquely.*) The hip which is behind, receiving the whole force of the contractions of the womb, is first delivered, whilst the other which is above serves as a fulcrum to it. After the breech has escaped, it insensibly resumes the position it had before meeting the inclined planes.

The shoulders engage obliquely at the superior strait, at the same time the arms, as it were, hooked by this strait, rise upon the lateral parts of the head. Arrived at the inferior strait, the shoulders assume the direct position, and the one which is behind escapes the first.

The head enters obliquely at the superior strait, and the chin bends upon the chest. Arrived at the inferior strait, it undergoes its movement of rotation; the face places itself in the curve of the sacrum, and the occiput comes under the arch of the pubis.

The chin then passes over the whole curve of the sacrum, the coccyx, and the perineum, and soon presents itself at the vulva.

The different parts of the face disengage themselves before the posterior commissure, and the occiput comes out the last.

**SECOND POSITION OF THE FEET.** *Principal relations.* The heels correspond to the right cotyloid cavity, and the toes to the left sacro-iliac symphysis. The posterior region of the child is directed forwards and to the right; the anterior,

backwards and to the left. The head is at the fundus of the womb.

*Mechanism.* The mechanism of the second position of the feet is precisely the same as that of the first position, with this difference, that the rotary movements are executed in an inverse direction.

**THIRD POSITION OF THE FEET.** *Principal relations.* The heels correspond to the right sacro-iliac symphysis, and the toes to the left cotyloid cavity. The posterior region of the child is directed backwards and to the right; the anterior, forwards and to the left. The head is at the fundus of the womb.

*Mechanism.* The mechanism of natural labour in this third position differs little from the mechanism of the first, for the same diameters of the fœtus are found to correspond to the same diameters of the pelvis of the mother.

Thus, the feet, pressed by the contractions of the uterus, pass without difficulty through the cavity and inferior strait of the pelvis. The breech, arrived at the inclined planes, assumes the direct position; or it passes out obliquely, if the pelvis of the mother be very large. The shoulders clear the superior strait obliquely, and present directly at the inferior strait. The head likewise engages obliquely at the superior strait, the chin bending upon the breast; when it reaches the inferior strait, it undergoes a rotary motion, by which the occiput passes into the curve of the sacrum, whilst the face comes under the arch of the pubis.

The occiput traverses the whole curve of the sacrum, the coccyx, and the perineum; whilst the face rises up in the pelvis; but the nape soon resting upon the posterior com-

missure, is reflected backwards, and the face disengages itself from under the pubis. The occiput is the last to make its exit.

*Nota.* It may happen that the spiral motion which the breech is forced to execute when it reaches the inferior strait, may be powerful enough to convert this third position into the second. This conversion is favorable to the termination of labour.

**FOURTH POSITION OF THE FEET.** *Principal relations.* The heels correspond to the left sacro-iliac symphysis, and the toes to the right cotyloid cavity. The posterior region of the fœtus is backwards and to the left; the anterior, forwards and to the right. The head is at the fundus of the womb.

*Mechanism.* Is the same as in the third position; the movements of rotation, however, are executed in an inverse direction.

*Nota.* This fourth position may be converted by the efforts of nature into the first.

### *Positions of the knees.*

The knees, like the feet, may present in four principal positions, which correspond to the four oblique diameters of the pelvis. The fœtus is so disposed, that the legs are bent upon the thighs, and the thighs extended on the pelvis.

**FIRST POSITION.** *Principal relations.* The anterior part of the legs corresponds to the left cotyloid cavity, and the anterior part of the thighs to the right sacro-iliac symphysis. The posterior region of the fœtus looks forwards and to the left; the anterior, backwards and to the right.

**SECOND POSITION.** *Principal relations.* The anterior

part of the legs corresponds to the right cotyloid cavity, and the anterior part of the thighs to the left sacro-iliac symphysis. The posterior region of the fœtus looks forwards and to the right; the anterior, backwards and to the left.

**THIRD POSITION.** *Principal relations.* The anterior part of the legs is opposite to the right sacro-iliac symphysis, and the anterior part of the thighs to the left cotyloid cavity. the posterior region of the fœtus looks backwards and to the right; the anterior, forwards and to the left.

**FOURTH POSITION.** *Principal relations.* The anterior part of the legs corresponds to the left sacro-iliac symphysis, and the anterior part of the thighs to the right cotyloid cavity. The posterior region of the fœtus looks backwards and to the left; the anterior, forwards and to the right.

#### *Mechanism of the four positions of the knees.*

The mechanism of natural labour in the four positions of the knees is precisely the same as in the corresponding positions of the feet, except that the knees present the first.

#### *Positions of the breech.*

The breech, as well as the feet and knees, presents in four positions. The fœtus is so disposed that the thighs and legs are raised and applied to the anterior surface of the trunk.

**FIRST POSITION.** *Principal relations.* The posterior part of the sacrum corresponds to the left cotyloid cavity, and the posterior part of the thighs to the right sacro-iliac symphysis. The posterior region of the fœtus is directed forwards

and to the left; the anterior, backwards and to the right. The head is at the fundus of the womb.

**SECOND POSITION.** *Principal relations.* The posterior part of the sacrum answers to the right cotyloid cavity, and the posterior part of the thighs to the left sacro-iliac symphysis. The posterior region of the fœtus is directed forwards and to the right, and the anterior backwards and to the left. The head at the fundus of the womb.

**THIRD POSITION.** *Principal relations.* The posterior part of the sacrum answers to the right sacro-iliac symphysis, and the posterior part of the thighs to the left cotyloid cavity. The posterior region of the fœtus is directed backwards and to the right, and the anterior forwards and to the left. The head is at the fundus of the womb.

**FOURTH POSITION.** *Principal relations.* The posterior part of the sacrum corresponds to the left sacro-iliac symphysis, and the posterior part of the thighs to the right cotyloid cavity. The posterior region of the fœtus is directed backwards and to the left, and the anterior forwards and to the right. The head is at the fundus of the womb.

*Mechanism of the four positions of the breech.*

The breech engages obliquely at the superior strait of the pelvis. Arrived at the inferior strait, it undergoes a movement of rotation, by means of which one of the hips gets into the curve of the sacrum, whilst the other comes under the arch of the pubis. The hip which is behind disengages itself the first, whilst the other which is under the pubis serves as a fulcrum to it. The trunk passes through with-

out difficulty, even though its abdominal extremities be bent upon its anterior region; in short, the axillæ present obliquely at the superior strait, the arms rise upon the sides of the head, and the rest of the labour terminates precisely the same as in the corresponding positions of the feet.

## PART SECOND.



### OF THE MANUAL OPERATION OF PRETERNATURAL LABOURS.

#### FIRST SECTION.

##### LABOURS WHICH MAY BE TERMINATED BY THE HAND ALONE.

*General causes which should determine the practitioner to act.*

*On the mother's side.* The inertia of the womb, hæmorrhage, convulsions, exhaustion of strength, syncope, exaggerated obliquity of the uterus, aneurism, strangulated hernia, &c.

*On the side of the child.* The descent of the umbilical cord; its deficiency in length; its being twisted round the fœtus. The presence of several children in the womb, &c.

*Position in which the woman is to be placed.* The woman should lie on her back; the breech raised and quite unincumbered; the thighs and legs half bent and properly separated. Assistants are directed to keep her in this position.

*Rules for introducing the hand.* The hand is to be lubricated with some oily or mucilaginous substance, which renders its introduction less painful, and protects the accouch-

eur from any virus with which the parts of the woman might be infected.

It ought to present the smallest volume possible, for which purpose the fingers and thumb must be so united as to represent a cone, whose summit shall correspond to the extremity of the fingers.

The hand ought to be presented in a strong pronation; and in proportion as it penetrates the parts it is to be gradually brought to the state of supination. It should be so directed as to follow the two axes of the pelvis.

Introduce your hand into the vagina during the existence of a pain, and choose the moment of repose to penetrate into the opening of the neck.

When you wish to penetrate through the neck of the womb, the bottom of this organ ought to be solidly fixed by the other hand placed upon the abdomen; for we thereby spare the mother very acute pains.

#### POSITIONS OF THE FEET.

The feet present in four principal positions, which correspond to the oblique diameters of the pelvis. We have described them in detail under the article natural labour.

We can extract the child in these four positions; but as the termination in the first and second position is more favorable, and as it is always in our power to bring the foetus to them, we should always terminate in these two first positions.

*Signs by which the feet may be recognised.*

The articulation of the foot with the leg at right angles, the jutting out of the heels, the shortness of the toes, the convexity of the dorsal aspect, the inverse disposition of the plantar aspect, the projection of the ankles; such are the signs by the aid of which the feet may always be recognised.

*General rule for the choice of the hand.*

We should introduce that hand by preference which naturally corresponds to the heels.

Or, to be more explicit, when the heels are turned towards the left side of the pelvis, introduce the right hand.

When they are turned to the right, introduce the left hand.

When they face the pubis or sacrum, introduce either hand; but then, the hand of which we have made choice decides the position in which the labour must terminate.

**FIRST POSITION OF THE FEET.** *Principal relations.* The heels are turned towards the left cotyloid cavity, and the toes towards the right sacro-iliac symphysis.

*Signs which characterise the position.* The direction of the feet alone suffices to indicate the position in which they present. Thus, in this first position, the plantar aspect is placed obliquely in the direction of a line which, departing from the left cotyloid cavity, terminates at the right sacro-iliac symphysis. The heels are forwards and the toes backwards.

*Manual operation.* It is the same at both the straits of the pelvis.

The two feet are to be seized from behind, the index placed between them. If but one foot presents, we must go in search of the other, in order that we may extract them both at the same time.

When the feet are delivered, we must ascertain that they belong to the same child. We then envelop them in linen, so as to prevent the fingers from slipping. We seize hold of the left extremity with the left hand, and of the right with the right hand, taking care to place the thumbs on the posterior part of the legs, and the fingers united on their anterior surface; in this manner, nothing separates the members, and they afford a mutual support to each other. We deliver successively the legs and the thighs, by extracting them in the direction of the axis of the superior strait. We slide the linen and hands upwards, in proportion as the parts are disengaged.

When the breech reaches the inferior strait, you must raise it a little, so as to disengage in the first place the hip which is behind. This done, pass the right hand under the thighs of the foetus, and raise it a little towards the left groin. The accoucheur then insinuates the index and middle finger of the left hand along the child's abdomen, to ascertain the state of the umbilical cord; should it be on the stretch, it must be relaxed by pulling on that portion of the cord which is attached to the placenta. If the cord should be between the thighs, you must bend the thigh which is uppermost, relax the cord, and thus endeavor to bring it back to the side of the umbilical region.

Should it not be possible to relax it, we must cut it and terminate the labour.

After directing his attention to the umbilical cord, the ac-

coucheur spreads his left hand upon the left thigh and his right hand upon the right thigh, and directs the fœtus in alternate movements of elevation and depression in the course of a line which takes its departure from the right groin to terminate at the posterior and internal side of the left thigh. In this manner he extracts the trunk as far as the axillæ. When they appear at the vulva, the accoucheur raises the fœtus towards the right groin, and fixes it solidly on his left hand, that he may attend to the extraction of the right arm, which he disengages in the following manner: he begins by introducing at the anterior commissure of the vulva the thumb of the right hand, which he fixes behind the shoulder; then, introducing the index and middle finger into the posterior commissure, and carrying them in front of the articulation, he depresses the shoulder, by pulling upon it in a parallel direction to the trunk's axis. Then insinuating the index and middle fingers well behind the arm, and the thumb into the hollow of the axilla, he causes the member to traverse the curve of the sacrum, and disengages it on the opposite side, by bending the forearm on the arm, and by successively passing over all the intervening parts until he reaches the fingers. During this latter period of the operation, the fœtus should be inclined to the left side of the mother, in order to facilitate the disengagement of the arm.

The right member being extracted, must be placed on the corresponding side of the trunk. The fœtus must now rest on the right hand and be depressed towards the posterior and internal side of the left thigh of the mother, by acting on the left hip. This done, the accoucheur proceeds to bring down the other member which remains to be disengaged; for which purpose he seizes hold of it between the index slipped be-

hind and the thumb placed in the hollow of the axilla ; then, without abandoning his hold, he pushes forward the index finger as far as possible, forces the member to pass over the curve of the sacrum, and extracts it in the same manner as the preceding.

The two superior extremities now disengaged, the accoucheur introduces the whole of the right hand as high as the face, and places two fingers on each side of the nose ; at the same time he glides the index and middle finger of the left hand along the back of the child to the occiput ; then, drawing towards him with the hand placed on the face, at the same time that he pushes with the two fingers placed on the occiput, he thus effects the flexion of the head upon the chest. Without deranging his hands, he draws the head down to the inferior strait, directing it in the axis of the superior strait. Then, placing the index and middle fingers of the left hand transversely upon the mastoid apophysis of the right side, and the same fingers of the right hand transversely upon the left side of the chin, he causes the head to execute its rotary motion ; and, by lateral and elevating motions, he directs it in the axis of the inferior strait, and thus completes its delivery. When the head is on the point of escaping, the left hand must be carried before the perineum and under the head, to support these two parts. At the same time he glides his right hand upon the breech of the fœtus, and when the birth is completed, he places the child across the parts of generation.

SECOND POSITION OF THE FEET. *Principal relations.* The heels correspond to the right cotyloid cavity, and the toes to the left sacro-iliac symphysis.

*Signs which characterise the position.* The soles of the

feet are placed obliquely in the direction of a line drawn from the right cotyloid cavity to the left sacro-iliac symphysis. The heels are before, the toes behind.

*The extraction of the fœtus*, in the second position, is performed in the same manner as in the first, but in an inverted order.

Thus, the two feet must be grasped with the left hand, and drawn out of the vulva. They are then to be enveloped in linen, and the left member is to be grasped by the left hand and the right member by the right hand. When the breech is on the point of passing out, the fœtus must be raised to disengage in the first place the hip which is behind. You must then pass your left hand in front of the thighs, and raise the fœtus to the right groin; then, with the index and middle finger of the right hand, you go in search of the umbilical cord for the purpose of ascertaining its position. Then spreading out the right hand on the right thigh, and the left hand on the left thigh, you must gently and slowly raise and depress the trunk in the direction of a line beginning at the left groin and terminating at the posterior and internal part of the right thigh; and these movements must be continued until the axillæ arrive at the vulva. The accoucheur now, fixing the fœtus on his right hand, and keeping it raised towards the left groin, proceeds to disengage the member which is behind. Then, carrying back the fœtus upon his left hand, and keeping it lowered towards the posterior and internal part of the right thigh, he effects the disengagement of the member which is above. Now, gliding the left hand upon the face, and the two first fingers of the right hand upon the occiput, he executes the flexion of the head, and brings it down into the inferior strait. Placing

the two first fingers of the right hand across upon the left mastoid apophysis, and the same fingers of the left hand upon the right side of the chin, he causes the head to rotate, and by means of lateral and elevating movements effects its delivery. When the head is on the point of escaping, he carries his left hand in front of the perineum, and at the same time glides his left hand upon the breech. When the delivery is terminated, he places the child across the parts of generation.

**THIRD POSITION OF THE FEET.** *Principal relations.* The heels are directed towards the right sacro-iliac symphysis, and the toes to the left cotyloid cavity.

*Signs which characterise the position.* The soles of the feet are found in the direction of a line, from the right sacro-iliac symphysis to the left cotyloid cavity. The heels are behind and the toes before.

*Manual operation.* Precisely the same as in the preceding position; only, in proportion as the foetus escapes, we must reduce it to the second position.

*Nota.* If the accoucheur be not called until the trunk is in part delivered, let him place his right hand on the child's abdomen and his left on its back; by repeated attempts he is to push back the trunk, and in extracting the child he must endeavor to reduce it to the second position.

**FOURTH POSITION OF THE FEET.** *Principal relations.* The heels correspond to the left sacro-iliac symphysis, and the toes to the right cotyloid cavity.

*Signs which characterise the position.* The direction of the soles of the feet is oblique from behind forwards, and from the left to the right.

*Manual operation.* Lay hold of the feet with the right

hand and draw them out. Seize hold of the right foot with the right hand, and of the left foot with the left hand, and by degrees, as the parts descend, reduce to the first position.

*Nota.* Should the trunk be already in a great measure delivered, place the left hand upon the abdomen and the right upon the back: push back the child, and in bringing it down again reduce it to the first position.

1. The heels may correspond directly to either side of the pelvis, as Baudelocque admits. In these positions, we must conform to the general rules established for the introduction of the hand. Are the heels on the right side of the pelvis? introduce the left hand, and reduce to the second position. Are they on the left? introduce the right hand, and reduce to the first.

2. In those positions in which the heels correspond to the pubis or sacrum, introduce indifferently either hand; but then the hand which we have made choice of decides the position in which we must terminate the labour. Have you introduced the right hand? bring the heels to the left of the pelvis, and reduce to the first position. Have you chosen the left? bring the heels to the right of the pelvis, and convert into the second position.

*Nota.* If in these faulty positions the trunk had in part descended, strive to push it back, placing one hand on the abdomen and the other on the back, for the purpose of reducing it afterwards to the diagonal in proportion as we extract the foetus.

If the trunk had entirely passed the neck of the womb, and the neck alone should be arrested at the superior strait, it would then be no longer possible to push it back, and you must extract the arms as usual, if the anterior region of the

fœtus be directed towards the sacrum, but in the contrary case they are to be brought under the arch of the pubis. The head must then be replaced diagonally, by fixing two fingers upon the mastoid apophysis on the one side, and two on the opposite side of the chin. Bring it down into the inferior strait, and act as in the corresponding positions of the feet.

RECAPITULATION OF THE MANUAL OPERATION APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE FEET.

1. In the first position, in the fourth, and in that position in which the heels correspond directly to the left side of the pelvis, the manual operation is precisely the same; for, the heels being always on the left, the right hand must constantly be used, and you must terminate in the first position.

2. In the second position, in the third, and in that position in which the heels correspond directly to the right side of the pelvis, the manual operation is likewise the same; for we must constantly employ the left hand and terminate in the second position.

3. When the heels correspond to the sacrum or pubis, you may introduce indifferently either hand.

You must always seize hold of the feet from behind, and place the index finger between them. In all positions, when once the feet are out, you must lay hold of the right member with the right hand and of the left with the left hand. You must always disengage in the first place the member which is behind.

## POSITIONS OF THE KNEES.

The knees, like the feet, present at the superior and inferior straits in four principal positions, which correspond to the oblique diameters of the pelvis. We have designated them in detail while treating of the mechanism of natural labour.

*Signs which characterise the knees.* The knees present themselves in the form of two rounded tumours, hard and much more voluminous than the elbows, the only parts with which they can be confounded. These two tumours are generally placed by the side of each other. But should there be a doubt, introduce your finger higher, and the neighboring parts will soon enable you to ascertain the diagnosis.

As the manual operation is not the same at the inferior strait as it is at the superior, let us study it, in the first place, as it relates to the inferior strait.

*Positions of the knees at the inferior strait.*

The knees, at the inferior strait, may be extracted, 1st, by the aid of the fingers placed in the bend of the knees; 2d, by means of a blunt crochet or hook; 3d, by the fillet.

The fingers slip upon the child, and rarely suffice.

The blunt hook, though very applicable, yet, as it alarms the woman, should be avoided.

The fillet\* (*le lacs*) replaces the crochet perfectly well, and has not its inconveniences.

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\* The fillet is a band of about three yards in length and one inch in breadth.

*General rules relative to the fillet.* It must be fixed by the right hand in the first and fourth position, and by the left in the second and third.

The fillet ought in preference to be fixed in the bend of the knee which is before; or, if the knees be directed one to the right and the other to the left, it may be indifferently applied to either. One hand suffices for its application.

When the fillet is once applied, it represents the extremity which it embraces, and it must always be held by that hand which corresponds in name to the extremity.

FIRST POSITION OF THE KNEES AT THE INFERIOR STRAIT.

*Principal relations.* The anterior part of the legs corresponds to the left cotyloid cavity, and that of the thighs to the right sacro-iliac symphysis.

*Manual operation.* Fix the middle of the fillet upon the extremity of the right index finger, press it down into the bend of the knee which is uppermost, draw it out with the thumb and index finger of the same hand between the two knees, and you form with its extremities two ends nearly equal. These two ends ought to be securely fixed in the palm of the left hand by the three last fingers, whilst the index is stretched out upon the external side of the thigh which is uppermost. The index finger of the other hand ought to be glided on the external surface of the member which is undermost.

Draw down the knees in the axis of the superior strait: they will soon be sufficiently disengaged to be grasped by

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It matters little whether it be of silk, linen, or wool. It is principally used to secure a foot which has been delivered, an arm which has escaped prematurely, or to extract the knees when delayed in the cavity of the pelvis. It is always applied in the form of a running knot.—TRANS.

the hand. Then withdraw the fillet, and place the thumb on the anterior part of the legs, and the other fingers united on the corresponding surface of the thighs. As soon as the breech appears at the vulva, raise the fœtus, in order to disengage in the first place the hip which is behind; then bring the feet under the arch of the pubis, and disengage them by bending the thighs upon the pelvis.

When once the feet are delivered, terminate as in the first position of the feet.

#### SECOND POSITION OF THE KNEES AT THE INFERIOR STRAIT.

*Principal relations.* The anterior part of the legs corresponds to the right cotyloid cavity, and the anterior part of the thighs to the left sacro-iliac symphysis.

*Manual operation.* Introduce the fillet with the left hand, and lay hold of it with the right. The index finger of the other hand ought to be placed along the member which is underneath. Then extract the knees according to the rules already prescribed. When the feet are disengaged, the position is reduced to the second of the feet.

#### THIRD POSITION OF THE KNEES AT THE INFERIOR STRAIT.

*Principal relations.* The anterior part of the legs corresponds to the right sacro-iliac symphysis, and the anterior part of the thighs to the left cotyloid cavity.

*Manual operation.* Introduce the fillet with the left hand, but when fixed lay hold of it with the right, because it encircles the right knee. Place the left index finger behind, and extract the knees in such a manner as to reduce them to the second position. When the feet are delivered, terminate as in the second of the feet.

#### FOURTH POSITION OF THE KNEES AT THE INFERIOR STRAIT.

*Principal relations.* The anterior part of the legs corres-

ponds to the left sacro-iliac symphysis, and the corresponding part of the thighs to the right cotyloid cavity.

*Manual operation.* Introduce the fillet with the right hand and seize it with the left, because it embraces the left knee. The index of the right hand is stretched out on the member which is behind. Extract the knees and bring them to the first position. When the feet are disengaged, terminate as in the first position of the feet.

1. If the anterior part of the legs correspond directly to the left side of the pelvis, the fillet must be introduced with the right hand, laid hold of with the left, and the position reduced to the first.

2. If the anterior part of the legs correspond directly to the right side of the pelvis, the fillet should be introduced with the left hand, seized with the right, and the position reduced to the second.

3. Should the anterior part of the legs regard directly either the pubis or sacrum, introduce the fillet with either hand, and reduce to the first or second position.

RECAPITULATION OF THE MANUAL OPERATION APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE KNEES AT  
THE INFERIOR STRAIT.

1. In the first position, in the fourth, as well as in that position in which the anterior part of the legs corresponds to the left side of the pelvis, the manual operation is the same; for in all these positions you must introduce the fillet with the right hand, lay hold with the left, and terminate in the first position.

2. In the second, third, and in that position where the

legs correspond directly to the right side of the pelvis, the manual operation is precisely the same; in fine, in all these positions, introduce the fillet with the left hand, lay hold of it with the right, and reduce to the second.

3. In the positions in which the anterior parts of the legs correspond to the pubis or sacrum, introduce the fillet indifferently with either hand, and reduce the fœtus to the first or second position.

*Positions of the knees at the superior strait.*

In these positions it is preferable to disengage each foot separately, and to convert them immediately into footling cases.

*Choice of the hand.* When the feet are on the left side of the pelvis, introduce the right hand.

When on the right side, introduce the left hand.

When they face the pubis or the sacrum, introduce indifferently either hand.

*General rule for disengaging the feet.* You should always pass your hand along the member which is behind, but should extract in the first place the member which is uppermost.

When the member which is behind has been first disengaged, you must make use of it as a guide to the member which is forwards; but when this latter has been extracted first, you must again pass over the member situated behind to effect its disengagement.

This general rule being applicable to all cases of the disengagement of the feet, we shall not revert to it.

FIRST POSITION OF THE KNEES AT THE SUPERIOR STRAIT.

*Principal relations.* The same as at the inferior strait; the parts, however, being less engaged.

*Manual operation.* Introduce the right hand as high as the member placed behind; then descend on the thigh to the knee, and from the knee pass along the leg to the foot; grasp the latter between the thumb and fingers, and draw it out.

This first member now delivered, serves as a guide to seek for the other. Pass along its external and posterior side, taking care to leave the thumb on its internal side. When you reach the breech, you will meet the second extremity: pass the four fingers over it and extract it, pressing on the member first disengaged.

The two members now delivered, you terminate as in the first position of the feet.

SECOND POSITION OF THE KNEES AT THE SUPERIOR STRAIT.

*Principal relations.* The same as at the inferior strait.

*Manual operation.* Introduce the left hand, and proceed to deliver the feet precisely in the same manner as in the first position. As soon as the two members are brought down, terminate as in the first position of the feet.

THIRD POSITION OF THE KNEES AT THE SUPERIOR STRAIT.

*Principal relations.* The same as at the inferior strait.

*Manual operation.* Introduce the left hand and disengage the feet, observing the same rules as in the second position. The extremities being once out, the position is actually changed into a third position of the feet, which must be converted into the second.

FOURTH POSITION OF THE KNEES AT THE SUPERIOR STRAIT.

*Principal relations.* The same as at the inferior strait.

*Manual operation.* Introduce the right hand and disengage the extremities, in the same manner as in the first position. Their delivery once effected, you have before you a fourth position of the feet, which you must convert into a first.

1. Should the anterior part of the legs correspond directly to the left side, introduce the right hand, and proceed to disengage the extremities in the same way as in the first and fourth positions: terminate in the first of the feet.

2. Should the anterior part of the legs correspond to the right side, introduce the left hand, and conduct the delivery as in the second and third positions: terminate in the second of the feet.

3. If the anterior part of the legs correspond to the sacrum or pubis, introduce indifferently either hand, only remarking that the hand of which you make choice decides the position in which you must terminate the labour.

Thus, should you have introduced the right hand, carry the legs of the fœtus to the left of the pelvis, and in the contrary case carry them to the right.

RECAPITULATION OF THE MANUAL OPERATION APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE KNEES  
AT THE SUPERIOR STRAIT.

1. In the first, in the fourth, and in that position in which the anterior part of the legs corresponds directly to the left side of the pelvis, *the manual operation is the same*; for in all these positions, the feet being on the left, you must introduce the right hand, and always reduce the fœtus to the first position of the feet.

2. In the second, in the third, and in that position in which the legs correspond directly to the right of the pelvis, *the manual operation is the same*; for in all these positions where the feet are to the right, you must introduce the left hand, and convert the fœtus to the second position of the feet.

3. In those positions in which the anterior parts of the legs correspond to the pubis or sacrum, introduce either hand, and convert them into a diagonal, and then act as if in that position.

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#### POSITIONS OF THE BREECH.

The breech, as well as the feet and knees, presents at the superior and inferior straits in four principal positions, which correspond to the oblique diameters of the pelvis. We have already pointed them out with sufficient detail, while treating of the mechanism of natural labour.

#### *Signs by which the breech may be recognised.*

You recognise the breech by a large, rounded tumour, not so hard as the head and less supple than the abdomen, offering three osseous projections, formed by the coccyx behind and the ischiatic tuberosities on the sides; in the middle is a deep furrow, wherein is found the anus and the parts of generation; the two columns, formed by the thighs and the issue of the meconium, more particularly aid the diagnostic.

As the manual operation at the inferior strait is different

from that at the superior, we shall first direct our attention to the inferior strait.

*Positions of the breech at the inferior strait.*

When the breech presents at the inferior strait, it is almost always impossible to push it back into the womb, and we are obliged to extract it in the position in which we find it.

To effect which you may use either your fingers, a fillet, or blunt hooks (crochets) placed in the bend of the groin.

As the blunt hooks almost always merit the preference, we should refer these positions to those labours which require the use of instruments: however, as, strictly speaking, we may extract the breech by means of the fingers alone, or by the aid of a fillet, we think proper to treat of them here.

*Rules for the application of the fingers, the fillet, and the  
crochet.*

*Fingers.* When you make use of your fingers alone, always place the right index finger in the bend of the right thigh, and the left index in the bend of the left thigh. The fingers alone are not sufficiently strong; they slip upon the parts which they embrace, and are generally insufficient to extract the breech.

*Fillet.* If you use the fillet, fix it in the bend of the thigh which is foremost; carry it up with the index of the right hand in the first and fourth positions, and with the index of the left hand in the second and third.

The fillet once fixed, represents the extremity which it

embraces, and ought to be constantly held in that hand which corresponds in name to the extremity.

The fillet is introduced with great difficulty, and is seldom used for the extraction of the breech.

*Crochet.* If you make use of two crochets, apply the one to the bend of the thigh which is forwards, the other to that which is behind; but most commonly one suffices, and then always apply it to the thigh which is forwards. You should make use of a crochet which forms a right angle with its handle; by so doing you need not fear to penetrate the thickness of the thigh with its extremity, which might very well happen when a crochet is used whose curve is too small to embrace the whole thickness of the member.

It matters little with which hand the crochet is introduced; however, it is preferable to use the right hand in the first and fourth positions, and the left in the second and third.

The index of the hand which is free ought always to precede the crochet, in order to render its introduction more sure and more easy.

The crochet once fixed, represents the extremity which it embraces, and ought always to be laid hold of by the hand which corresponds in name to that extremity.

#### FIRST POSITION OF THE BREECH AT THE SUPERIOR STRAIT.

*Principal relations.* The posterior aspect of the sacrum corresponds to the left cotyloid cavity, and that of the thighs to the right sacro-iliac symphysis.

*Signs which characterise the position.* You find the point of the coccyx behind the left cotyloid cavity, and the genitals in front of the right sacro-iliac symphysis. Between these two points are found the anus and the perineal sulcus,

which is directed in the course of a line beginning at the left cotyloid cavity, and terminating at the right sacro-iliac symphysis.

*Manual operation.* Apply the crochet to the bend of the left groin, and lay hold of it with the left hand; then slide the index of the right hand into the groin which is behind; extract the breech by making it follow the axis of the inferior strait, and when you can lay hold of it with both hands withdraw the crochet. Then, spreading out the left hand on the left hip and the right hand on the right hip, raise and depress the trunk alternatively in the direction of a line from the right groin to the posterior and internal side of the left thigh: it is not long before the abdominal members disengage themselves, and the rest of the labour must terminate as in the first position of the feet.

#### SECOND POSITION OF THE BREECH AT THE INFERIOR STRAIT.

*Principal relations.* The posterior aspect of the sacrum answers to the right cotyloid cavity, and that of the thighs to the left sacro-iliac symphysis.

*Signs which characterise the position.* You will find the point of the coccyx behind the right cotyloid cavity, and the genitals before the left sacro-iliac symphysis. Between these two points present the anus and principal sulcus, whose direction follows a line from the right cotyloid cavity to the left sacro-iliac symphysis.

*Manual operation.* Apply the crochet to the bend of the right groin, and hold it in with the right hand; then slide the left index finger into the bend of the left groin, and draw the breech out in the direction of the axis of the inferior strait. When it can be fully grasped by the hands, withdraw the crochet. Then, spreading out the right hand upon the right

hip and the left hand upon the left hip, extract the trunk by alternate movements of elevation and depression in the direction of a line departing from the left groin, and terminating at the posterior and internal part of the right thigh. It is not long before the abdominal members disengage themselves, and the rest of the labour ought to be terminated as in the second position of the feet.

**THIRD POSITION OF THE BREECH AT THE INFERIOR STRAIT.**

*Principal relations.* The posterior aspect of the sacrum answers to the right sacro-iliac symphysis, and the corresponding part of the thighs to the left cotyloid cavity.

*Signs which characterise the position.* The point of the coccyx is before the right sacro-iliac symphysis, and the genitals behind the left cotyloid cavity. Between these two points you discover the anus and the perineal sulcus, whose direction is a line which measures the distance from the right sacro-iliac symphysis to the left cotyloid cavity.

*Manual operation.* Introduce the crochet into the fold of the right groin, and hold it in the right hand; then slide the index of the left hand into the fold of the left groin, and extract the breech so as to reduce to the second position. You must then conduct the rest of the labour precisely as you did in the second position.

**FOURTH POSITION OF THE BREECH AT THE INFERIOR STRAIT.**

*Principal relations.* The posterior aspect of the sacrum answers to the left sacro-iliac symphysis, and the corresponding part of the thighs to the right cotyloid cavity.

*Signs which characterise the position.* The point of the coccyx is found before the left sacro-iliac symphysis, and the genitals behind the right cotyloid cavity. Between the two points are found the anus and the perineal sulcus, whose

direction follows a line which begins at the left sacro-iliac symphysis and terminates at the right cotyloid cavity.

*Manual operation.* Introduce the crochet into the bend of the left groin, and lay hold of it with the left hand; then slide the right index finger into the fold of the right groin, and extract the breech so as to reduce to the first position. You must then proceed precisely the same as you did in the first position.

1. Should the posterior aspect of the sacrum correspond directly to the left side of the pelvis, and that of the thighs to the right side, the position would be characterised by the presence of the coccyx on the left and the genitals on the right: the perineal sulcus would be directed transversely.

*Manual operation.* Exactly the same as in the first and fourth positions.

2. Should the posterior aspect of the sacrum be found to correspond directly to the right of the pelvis, and that of the thighs to the left, you will find the coccyx to the right, the genitals to the left, and the perineal sulcus transversely.

*Manual operation.* Precisely the same as in the second and third positions.

3. Should the posterior aspect of the sacrum correspond directly to the pubis, and that of the thighs to the sacrum, the position would be characterised by the presence of the coccyx behind the pubis, and the genitals before the sacrum: the perineal sulcus would be directed from the front backwards.

*Manual operation.* Introduce the crochet, apply it to either groin, and convert into the first or second diagonal position, but so as always to have the member which is em-

braced by the crochet directed forwards. You must proceed as is usual in that diagonal.

4. Should the posterior aspect of the breech correspond directly to the sacrum, and that of the thighs to the pubis, you will find the coccyx before the sacrum, and the genitals behind the pubis: the perineal sulcus is directed from the front backwards.

*Manual operation.* Place the crochet in either groin, and reduce to the third or fourth diagonal, so as always to bring the crochet forwards.

RECAPITULATION OF THE MANUAL OPERATIONS APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE BREECH  
AT THE INFERIOR STRAIT.

1. In the first position, in the fourth, and in that position in which the sacrum is directed to the left side of the pelvis, *the manual operation is the same.* In fine, in all these positions you introduce the crochet or the fillet in the bend of the left groin, insinuate the right index finger into the bend of the right groin, and terminate in the first position.

2. In the second, third, and in that position where the sacrum corresponds to the right side of the pelvis, *the manual operation is the same;* for in all these positions you must fix the crochet or fillet in the bend of the right groin, and the left index finger into that of the left, and always terminate in the second position.

When the posterior aspect of the breech corresponds to the pubis or sacrum, introduce the fillet or crochet into the one or the other groin indifferently, and convert into a dia-

gonal in order to terminate either in the first or second position.

*Positions of the breech at the superior strait.*

When the breech is still at the superior strait, it is most generally easy to push it back and bring down the feet. By this manœuvre we immediately convert the positions of the breech into those of the feet.

*Indications to be fulfilled before proceeding to bring down the feet.*

As the breech fills up the superior strait of the pelvis, it would be impossible to introduce the hand into it; on the other hand, as the feet are at a distance from the superior strait, it behoves us in the first place to disengage the superior strait, and by a well combined manœuvre to bring the feet nearer to it. This double indication is fulfilled, on the one hand, by pushing back the breech into one of the internal iliac fossæ, and on the other hand by inclining the uterus to the opposite side.

*A general rule relative to pushing back the breech.*

Whenever you introduce the right hand into the parts, push back to the right. Whenever you introduce the left hand, push back to the left. You must always incline the uterus to the side opposite to that towards which you push back the fœtus.

*Choice of the hand.* When the feet are on the left side

of the pelvis, introduce the right hand, and when they are on the right, introduce the left hand; should they be turned towards the sacrum or pubis, you may introduce either hand.

**FIRST POSITION OF THE BREECH AT THE SUPERIOR STRAIT.**

*Principal relations.* The same as at the inferior strait, only the parts are less engaged.

*Signs which characterise the position.* The same as at the inferior strait.

*Manual operation.* Introduce the left hand into the parts, grasp the breech between the thumb placed before and the fingers behind, push it back into the left iliac fossa, whilst with the right hand applied upon the fundus of the womb you incline this organ to the right; then pass along the whole length of the abdominal member which is behind, and when you reach the foot, seize hold of it between the thumb and fingers and draw it out.

This first member disengaged, serves as a guide to discover the other, which generally crosses the anterior part of the abdomen and chest: pass along its external and posterior side, leaving the thumb on the inner side. When you reach the anterior region of the trunk, you will soon meet the second extremity, which you bring down by passing your four fingers above it. When the feet are once delivered, terminate as in the first position of the feet.

**SECOND POSITION OF THE BREECH AT THE SUPERIOR STRAIT.**

*Principal relations.* The same as at the inferior strait.

*Manual operation.* Introduce the right hand, and push back into the right iliac fossa, at the same time that, with the left hand placed upon the abdomen, you incline the uterus to the left. You must then proceed to disengage the abdominal members in the same manner as in the second posi-

tion. When the extremities are delivered, terminate as in the second of the feet.

**THIRD POSITION OF THE BREECH AT THE SUPERIOR STRAIT.**

*Principal relations.* The same as at the inferior strait.

*Signs which characterise the position.* The same as at the inferior strait.

*Manual operation.* Introduce the right hand, and push back into the right iliac fossa, turning as much as possible the breech into the second position. Incline the uterus to the left, and proceed to disengage the abdominal members as in the second position. Terminate as in the second of the feet.

**FOURTH POSITION OF THE BREECH AT THE SUPERIOR STRAIT.**

*Principal relations.* The same as at the inferior strait.

*Signs which characterise the position.* The same as at the inferior strait.

*Manual operation.* Introduce the left hand, and push back into the left iliac fossa, turning the breech as much as possible into the first position. Incline at the same time the uterus to the right, and disengage the abdominal extremities as in the preceding positions. Then terminate the labour as in the first of the feet.

1. Should the posterior aspect of the sacrum correspond directly to the left side of the pelvis, and the corresponding part of the thighs to the right side, the position would be characterised by the same signs as at the inferior strait, and you should operate as in the first and fourth positions.

2. Should the same part regard the right side directly, operate as in the second and third positions.

3. Should the posterior aspect of the sacrum correspond directly to the pubis, introduce either hand, and convert

into the first or second diagonal, as it may be found most convenient to the hand introduced. Thus, you should push to the right, if you have introduced the right hand; and to the left, if the left has been introduced. You must then proceed as in the diagonal to which you have converted the position.

4. If the sacrum regard directly the sacro-vertebral angle, introduce either hand, and convert to the third or fourth diagonal, acting in other respects as we have just explained.

RECAPITULATION OF THE MANUAL OPERATIONS APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE BREECH  
AT THE SUPERIOR STRAIT.

1. In the first position, in the fourth, and in that position where the sacrum is turned directly to the left of the pelvis, *the manual operation is the same*; for in all these positions, the feet being directed to the right of the mother, you are to introduce the left hand, push back into the left iliac fossa, and incline the uterus to the right. When the extremities are disengaged, terminate as in the first of the feet.

2. In the second, third, and in that position where the sacrum corresponds directly to the right of the pelvis, *the manual operation is the same*; for in all these positions, the feet being on the left of the mother, you must introduce the right hand, push back to the right, incline the uterus to the left, and terminate always in the second position of the feet.

3. When the breech directly faces the sacrum or the pubis, introduce indifferently either hand, and convert into one of the diagonal positions.

## POSITIONS OF THE CROWN OF THE HEAD.

The head, as well as the feet, the knees, and the breech, presents at the superior as well as at the inferior passage in four principal positions, which correspond to the oblique diameters of the pelvis. We have pointed them out with sufficient detail, while treating of the mechanism of natural labour.

*Signs by which you may recognise the head.* The head presents under the form of a voluminous tumour, rounded, hard, offering in certain parts membranous spaces, some of which are called fontanelles, others sutures. The peculiar character of the hairy scalp may likewise tend to clear up the diagnostic.

*The manual operation* applicable to the positions of the head is different at the inferior and superior passages.

When the head is at the inferior passage, whether it may or may not have passed the neck of the womb, you must apply the forceps; we consequently refer this series of positions to those labours which require the use of instruments.

When the head is at the superior passage, although it may often be more judicious to apply the forceps, you can still turn the child, and terminate the labour by manual aid alone.

*Extraction of the fœtus in the different positions of the crown of the head at the superior strait.*

This class of labours cannot be terminated by manual aid alone, except by turning the child.

*Indications to be fulfilled.* Before you go in search of the feet, you must disengage the superior passage, by pushing back the head into one of the iliac fossæ, and bring the feet nearer to this passage, by inclining the womb as much as possible to the opposite side.

*Rules for pushing back the presentation.* They have already been given, when treating of the positions of the breech at the superior strait.

*Choice of the hand.* Whenever, in searching for the feet of the fœtus, we are obliged to pass over the sides of its trunk, we must always introduce that hand into the parts which corresponds in name to the side to be passed over. In the diagonal positions, this side is always directed backwards.

In the direct position, the lateral regions of the fœtus being situated, the one directly to the right and the other to the left, you may indifferently introduce either hand.

**FIRST POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The occiput is behind the left cotyloid cavity, and the forehead before the right sacro-iliac symphysis. The left side of the fœtus is backwards, and the right forwards. The feet are at the fundus of the womb.

*Signs which characterise the position.* You meet behind the left cotyloid cavity the posterior fontanelle, and before the right sacro-iliac symphysis the anterior fontanelle. Between these two fontanelles is found the sagittal suture, which is directed in the course of a straight line from the left cotyloid cavity to the right sacro-iliac symphysis.

*Manual operation.* The left side of the fœtus being behind, introduce the left hand and push back the head into the left iliac fossa, grasping it between the thumb placed be-

fore and the four fingers behind. At the same time, with the right hand placed upon the mother's abdomen, incline the uterus strongly to the right. Then introducing the hand as far as possible, pass over successively the side of the head, the neck, the back of the shoulder, the side properly so called, and the hip: arrived at the breech, you most commonly meet the feet, which you may bring down together, but it is better to disengage them one after the other. To effect which purpose, you must pass your hand down the thigh to the knee, and then up the leg to the foot, which you lay hold of between the thumb and fingers and extract. This first foot now disengaged, must be secured by means of a fillet disposed in the form of a running knot, which you are to fix above the ankles. This fillet is then to be confided to an aid.

The accoucheur, using this extremity as a guide, passes along its extreme and posterior side with the thumb on the inner side. Arrived at the breech, he meets the second extremity and draws it out, grasping it from above with his four fingers.

Having now disengaged the extremities, you must terminate as in the second position of the feet.

It sometimes happens that the head is locked at the superior strait, which very much obstructs the extraction of the foetus. In this case you must introduce the right hand and push it back, while at the same time you extract with the left grasping the abdominal extremities.

SECOND POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT. *Principal relations.* The occiput corresponds to the right cotyloid cavity, and the forehead to the

left sacro-iliac symphysis. The right side of the fœtus is behind, the left before; the feet at the fundus of the womb.

*Signs which characterise the position.* You will find the posterior fontanelle behind the right cotyloid cavity, and the anterior before the left sacro-iliac symphysis. The sagittal suture is directed obliquely, from the right cotyloid cavity to the left sacro-iliac symphysis.

*Manual operation.* Precisely the same as in the first position; but, instead of the left, use the right hand.

Thus, push back into the right iliac fossa, incline the uterus to the left, pass along the side of the fœtus which is behind, and disengage each foot separately. When the extremities are out, terminate as in the first position of the feet.

Should the head embarrass the extraction of the fœtus, push it back with the left hand, and at the same time extract with the right hand upon the abdominal extremities.

**THIRD POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The occiput corresponds to the right sacro-iliac symphysis, and the forehead to the left cotyloid cavity. The right side of the fœtus is behind, the left before; the feet at the fundus of the womb.

*Signs which characterise the position.* You will find the posterior fontanelle before the right sacro-iliac symphysis, and the anterior fontanelle behind the left cotyloid cavity. The sagittal suture is directed obliquely from the right sacro-iliac symphysis to the left cotyloid cavity.

*Manual operation.* Precisely the same as in the second position.

**FOURTH POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The occiput is directed to the left sacro-iliac symphysis, and the forehead

to the right cotyloid cavity. The left side of the fœtus is behind, and the right before; the feet are at the fundus of the womb.

*Signs which characterise the position.* The posterior fontanelle is before the left sacro-iliac symphysis, and the anterior behind the right cotyloid cavity. The sagittal suture is directed obliquely, from the left sacro-iliac symphysis to the right cotyloid cavity.

*Manual operation.* Precisely the same as in the first position.

1. If the occiput be turned directly to the left side of the pelvis, and the forehead to the right, the position would be characterised by the presence of the posterior fontanelle on the left and the anterior on the right side. The sagittal suture would then have a transverse direction.

*Manual operation.* Just the same as in the first and fourth positions.

2. If the occiput face directly the right, and the forehead the left side, the position would be characterised by the presence of the posterior fontanelle to the right of the pelvis, and the anterior to the left. The sagittal suture would be situated transversely.

*Manual operation.* You should act in the same manner precisely as in the second and third positions.

3. Should the occiput be found directly behind the pubis, and the forehead before the sacrum, the position would be characterised by the situation of the posterior fontanelle behind the pubis, and of the anterior in front of the sacro-vertebral angle. The sagittal suture would then be directed from the front to the rear.

*Manual operation.* Introduce either hand and reduce to

the first or second diagonal, always observing to direct that side of the fœtus behind which corresponds to the name of the hand introduced into the parts. You must then proceed as you would in the diagonal position.

4. Should the occiput correspond directly to the sacrum, and the forehead to the pubis, you will find the posterior fontanelle before the sacro-vertebral angle, and the anterior behind the pubis. The sagittal suture will be directed as in the preceding position.

*Manual operation.* Introduce either hand, and reduce to the third or fourth diagonal, always observing to direct that side of the child backwards which corresponds by name to the hand introduced. You must then proceed as in these positions.

RECAPITULATION OF THE MANUAL OPERATIONS APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE CROWN OF THE HEAD  
AT THE SUPERIOR STRAIT OF THE PELVIS.

1. In the first position, in the fourth, and in that position where the occiput corresponds to the left side of the pelvis, *the manual operation is the same*; for in all these positions, the left side of the fœtus being behind, you must introduce the left hand, push back into the left iliac fossa, incline the uterus to the right, and terminate in the second position of the feet.

2. In the second, third, and in that position where the occiput corresponds directly to the right of the pelvis, *the manual operation is the same*; for in all these positions, the right side of the fœtus being behind, you must introduce the

right hand, push back to the right, incline the uterus to the left, and terminate in the first position of the feet.

3. In those positions in which the occiput faces the pubis or sacrum, you may introduce either hand, and convert them to a diagonal, to terminate as is usual in these positions.

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### POSITIONS OF THE TRUNK.

Before we speak of the positions of the trunk, it would doubtless appear more rational to study those of the face, as well as those of the occipital and temporal regions; but as these different positions of the head do not present any particular indications, and as they may be blended with those of the trunk, it has appeared to us more simple and more proper to make but one and the same series of all these positions. Thus, we shall include in the regions of the trunk, the face properly so called, as well as the occipital and temporal regions.

*The trunk of the fœtus* presents four great regions; one anterior, one posterior, and two lateral.

If our object was merely to describe the manual operation which is applicable to each of these regions, we might very well dispense with any further subdivisions into other secondary regions. But as this subdivision appears to us indispensable, to enable us to ascertain with greater precision the characters which distinguish the different parts of the same region, we shall retain it as it has been admitted by the majority of authors; but when describing the manual operation, we shall consider the anterior, posterior, and lateral

regions of the fœtus as but one and the same region, which, when it presents at the superior strait of the pelvis, constantly offers the following indications to be fulfilled :

*First indication.* If the bad position of the child be the only obstacle to the natural termination of the labour, the whole manual operation will consist in replacing the fœtus properly; that is to say, you must bring to the centre of the superior strait of the pelvis that extremity of the fœtus which is the nearest to it.

*Manual operation.* When that extremity is on the left of the pelvis, introduce the right hand, push back to the right of the mother, and incline the uterus to the left. If, on the contrary, it be on the right, introduce the left hand, push back to the left, and incline the uterus to the right.

When the child is once properly replaced, the rest must be left to nature.

*Second indication.* Together with the bad position of the child, other accidents may occur, such as inertia of the womb, hæmorrhage, convulsions, &c. We must not then limit our interference to the replacing of the fœtus in a proper position, for the most urgent necessity now requires us to terminate the labour by bringing down the feet.\*

*Manual operation.* Introduce the hand which corresponds by name to the side of the fœtus which you must pass over. This side is behind in the positions of the posterior and anterior regions; it is below when the lateral regions present. Push towards the side of the mother which corresponds to the name of the hand introduced; turn (*pelotonner*) the fœ-

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\* Should the head be found very near to the superior strait, it might, perhaps, be easier to bring it to the centre of the pelvis, and then apply the forceps.

tus, and then pass along the side indicated, until you reach the feet, which you disengage as we have directed in page 51.

#### POSTERIOR REGION OF THE TRUNK.

The posterior region of the trunk comprehends the occipital region of the head, the nape, the back, and the loins.

*Characters which distinguish each of these parts.*

*Occipital region.* This region may be characterised by the posterior fontanelle, by the lambdoidal suture, by the projection of the occipital tubercle, and by its vicinity to the posterior part of the neck.

*The nape.* This region may be known by the projection of the spinous apophyses of the cervical vertebræ, and by the small volume which the neck presents when compared with the head which is found on the one side, and the shoulders which are on the other.

*The back.* The back is characterised by the shoulder blades, by the spinous apophyses of the dorsal vertebræ, by the ribs and intercostal spaces.

*The loins.* The loins are characterised by the spinous apophyses of the lumber vertebræ, by the want of resistance on each side of the spine, by the presence of the last ribs superiorly, and by the bones of the pelvis inferiorly.

*Positions.* The posterior region of the trunk may present in four principal positions, which correspond to the oblique diameters of the pelvis.

### FIRST POSITION OF THE POSTERIOR REGION OF THE TRUNK.

*Principal relations.* The head corresponds to the left cotyloid cavity, and the breech to the right sacro-iliac symphysis. The back is directed downwards, the abdomen upwards, the right side backwards and to the left, and the left side forwards and to the right.

*Signs which characterise the position.* The direction of the spinous vertebral apophysis would alone suffice to distinguish this first position, especially if we take into consideration the different characters which we have assigned to each of these regions in particular. Thus, in this position, you will find forwards and to the left the characters which are proper to the superior regions of the fœtus, and backwards and to the right those which appertain to its inferior parts. The range of the spinous apophyses is obliquely directed in the course of a straight line from the left cotyloid cavity to the right sacro-iliac symphysis.

### *Manual operation.*

*First indication.* If the head be found near the superior strait, as it is on the left side of the pelvis, introduce the right hand; and, grasping it with the thumb placed before and the four fingers behind, push to the right of the mother; then, uniting the fingers upon its summit, bring it down into the pelvis, at the same time that you incline the fundus uteri to the left, with the left hand placed on the abdomen. The position is now changed into the third of the crown of the head, and the rest must be left to nature.

If the breech be found near to the superior strait, as it is on the right of the pelvis, introduce the left hand, grasp it

between the thumb placed before and the four fingers behind, push to the left and bring it to the centre of the pelvis, while, with the right hand placed on the abdomen, you incline the fundus of the uterus to the right. The position is now converted into the first position of the feet, and nature will do the rest.

*Second indication.* The right side of the fœtus being behind, introduce the right hand until you reach the side; first push up above the pubis, then to the right of the mother, and turn the child round on its anterior region so as to bring the child to the left side of the pelvis. That done, pass along the right side of the fœtus, and when you reach the feet, disengage them after the manner explained in page 51. Then terminate as in the first of the feet.

SECOND POSITION OF THE POSTERIOR REGION OF THE TRUNK.

*Principal relations.* The head is at the right cotyloid cavity, and the breech at the left sacro-iliac symphysis. The back is downwards, the abdomen upwards, the right side before and to the left, and the left side behind and to the right.

*Signs which characterise the position.* The range of the spinous apophyses is directed obliquely from the right cotyloid cavity to the left sacro-iliac symphysis; add to this direction of the spine, the signs which may be drawn from the characters which we have assigned to the posterior region of the trunk.

#### *Manual operation.*

*First indication.* If the head be found near the superior strait, as it is on the right of the pelvis, introduce the left

hand; push it to the left and bring its vertex to the centre of the pelvis, at the same time that with your right hand you incline the fundus of the uterus to the right. The position is then reduced to the fourth of the crown of the head, which is to be left to nature.

If the breech be found near the superior strait, as it is on the left side of the pelvis, introduce the right hand, push towards the right and bring it into the centre of the pelvis, while with your left you incline the fundus of the uterus to the left. The position is then reduced to the second of the feet, which is to be left to nature.

*Second indication.* The left side of the fœtus being behind, introduce the left hand, push first above the pubis, then to the left of the mother, and turn the child so as to bring the feet to the right side of the pelvis. Then pass over the left side of the fœtus until you reach the feet, which you disengage as we have explained in page 51, and terminate in the second position of the feet.

### THIRD POSITION OF THE POSTERIOR REGION OF THE TRUNK.

*Principal relations.* The head corresponds to the right sacro-iliac symphysis, and the breech to the left cotyloid cavity. The back directed downwards, the abdomen upwards, the right side forwards and to the right, the left backwards and to the left.

*Signs which characterise the position.* The range of the spinous apophyses of the vertebræ is obliquely directed from the right sacro-iliac symphysis to the left cotyloid cavity. You find behind and to the right the characters which are proper to the superior regions of the fœtus, and before and to the left those which appertain to its inferior parts.

*Manual operation.*

*First indication.* If the head be found near to the superior strait, as it is on the right of the pelvis, introduce the left hand; push towards the left of the mother, and incline the uterus to the right. The labour will then terminate naturally in the first position of the crown of the head.

If the breech be found near the superior strait, as it is on the left of the pelvis, introduce the right hand; push to the right, and incline the uterus to the left. The labour will then terminate naturally in the third position of the feet.

*Second indication.* The left side of the fœtus being behind, introduce the left hand, and act precisely as in the second position.

FOURTH POSITION OF THE POSTERIOR REGION OF THE TRUNK.

*Principal relations.* The head is at the left sacro-iliac symphysis, and the breech at the right cotyloid cavity. The back is downwards, the abdomen upwards, the right side behind and to the right, the left before and to the left.

*Signs which characterise the position.* The range of the spinous apophyses is obliquely directed from the left sacro-iliac symphysis to the right cotyloid cavity. The characters which are peculiar to the superior regions of the child are found behind and to the left, and those which are proper to its inferior parts before and to the right.

*Manual operation.*

*First indication.* If the head is near the superior strait, bring it to the centre of the pelvis with the right hand, and

incline the uterus to the left. The labour then terminates naturally in the second position of the summit of the head.

If the breech be found near the superior strait, bring it to the centre of the pelvis with the left hand, and incline the uterus to the right. The labour will then terminate naturally in the fourth position of the feet.

*Second indication.* The right side of the fœtus being behind, introduce the right hand, and proceed as in the first position.

1. Should the head correspond directly to the left side of the pelvis, and the breech to the right, the position would be characterised by the range of the spinous apophyses, which would then present in a transverse direction. The superior parts of the fœtus would be found on the left, and its inferior parts at the opposite side.

*Manual operation.* The two indications which here present, are to be fulfilled just as in the first and fourth positions. But, in fulfilling the first indication, you must endeavour to replace the extremity which you bring to the centre, in the first diagonal position either of the crown of the head or of the feet.

2. Should the head correspond directly to the right side of the pelvis, and the breech to its left, the position would be characterised by the transverse direction of the spinous apophyses, and by the presence of the superior parts of the fœtus to the right and its inferior to the left.

*Manual operation.* You must fulfil the two indications precisely as in the second and third positions; only, in fulfilling the first indication, endeavour to bring the extremity into the first diagonal either of the crown of the head or of the feet.

3. Should the head be turned directly to the pubis, and the breech to the sacrum, the trunk would be directed from front to rear, and you would find the superior parts of the fœtus before and its inferior behind.

*Manual operation.*

*First indication.—Head.* Introduce either hand; push back, and convert the position into the third of the crown of the head with the right hand, or into the fourth with the left hand.

*Breech.* You may introduce either hand; push forwards, and convert into the second position of the feet if you have introduced the right hand, or into the first of the feet if the left hand has been introduced.

*Second indication.* Introduce either hand, and convert into the first or second diagonal, always taking care to direct behind that side of the fœtus which corresponds by name to the hand introduced into the parts.

4. If the head be found to correspond to the sacrum, and the breech to the pubis, the trunk would have the same direction as in the preceding position; but the superior regions of the fœtus would be found behind, and the inferior before.

*Manual operation.*

*First indication.* If the head be found near the superior strait, introduce either hand; push forwards, and, bringing the extremity to the centre of the pelvis, convert into the second position of the crown with the right hand, and into the first with the left hand.

But should the breech be near the superior strait, introduce either hand; push back, and reduce to the third position of the feet with the right hand, or to the fourth with the left.

*Second indication.* You may introduce either hand, and reduce to the third or fourth diagonal, directing that side of the fœtus backwards which corresponds by name to the hand introduced into the pelvis.

#### ANTERIOR REGION OF THE TRUNK.

It comprehends the face properly so called, the front of the neck, the chest, and the abdomen.

#### *Characters which distinguish each of these parts.*

*The face.* On the mesial line you find the little coronal suture, the nose, the mouth, and the chin; and on its sides, the orbits and the cheeks. All these characters are so striking, that it is almost impossible not to recognise the face, unless the soft parts should be considerably swollen.

*The fore part of the neck.* The proximity of the chin and of the superior part of the chest, and the relative narrowness of the neck, generally suffice to make us recognise that region of the fœtus.

*The chest.* The characters which distinguish the chest are drawn from the presence of the sternum, the clavicles, the ribs, and the intercostal spaces.

*The abdomen.* You may know the abdomen by a soft tumour, bounded on the one side by the lower ribs, on the

other by the bones of the pelvis, and offering in its middle the insertion of the umbilical cord.

*Positions of the anterior region of the trunk.*

The anterior region of the fœtus may present in four principal positions, which correspond to the oblique diameters of the pelvis.

FIRST POSITION OF THE ANTERIOR REGION OF THE TRUNK.

*Principal relations.* The head corresponds to the left cotyloid cavity, and the breech to the right sacro-iliac symphysis. The abdomen is directed downwards, the back upwards, the left side behind and to the left, and the right side before and to the right.

*Signs which characterise the position.* The trunk is in the direction of a line which, beginning at the left cotyloid cavity, terminates at the right sacro-iliac symphysis. The superior parts of the child are found before, and the inferior behind.

*Manual operation.*

*First indication.* When the head presents near to the superior strait, as it is on the left of the pelvis, introduce the right hand; push to the right, and incline the uterus to the left. The position is reduced to the first of the crown of the head, which is to be left to nature.

If the breech be found near to the superior strait, as it is on the right of the pelvis, introduce the left hand; push to the left, and incline the fundus of the uterus to the right. The position is found changed into the third of the feet, which will terminate naturally.

*Second indication.* The left side of the fœtus being found behind, you must introduce the left hand; push to the left of the mother, and then pass your hand along the side which is behind, in search of the feet, which you disengage according to the rules we have laid down in page 51. Terminate the labour in the second position of the feet.

SECOND POSITION OF THE ANTERIOR REGION OF THE TRUNK.

*Principal relations.* The head corresponds to the right cotyloid cavity, and the breech to the right sacro-iliac symphysis. The abdomen is directed downwards and the back upwards, the left side is before and to the left, the right behind and to the right.

*Signs which characterise the position.* The trunk is in the direction of a line from the right cotyloid cavity to the left sacro-iliac symphysis. The superior parts of the fœtus are forwards and its inferior parts backwards.

*Manual operation.*

*First indication.* If the head be found near to the superior strait, bring it to the centre of the pelvis with the left hand, and incline the fundus of the womb to the right. The position is now changed into the second of the crown of the head, and the labour will now terminate by the natural efforts of the mother.

If the breech be found near to the superior strait, bring it to the centre with the right hand, and incline the uterus to the left. The position is then reduced to the fourth natural position of the feet.

*Second indication.* The right side of the fœtus being behind, introduce the right hand; push back to the right, and

pass along the right side of the fœtus in search of the feet, which you then disengage as we have directed in page 51. You terminate the labour in the first position of the feet.

**THIRD POSITION OF THE ANTERIOR REGION OF THE TRUNK.**

*Principal relations.* The head corresponds to the right sacro-iliac symphysis, and the breech to the left cotyloid cavity: the abdomen is directed downwards, the back upwards, the left side forwards and to the right, and the right side backwards and to the left.

*Signs which characterise the position.* The trunk is directed in the course of a line from the right sacro-iliac symphysis to the left cotyloid cavity. You will find the superior parts of the fœtus behind, and the inferior before.

*Manual operation.*

*First indication.* If the head be near the superior strait of the pelvis, bring it to the centre with the left hand and incline the uterus to the right. The position is reduced to the third natural position of the crown of the head.

Should the breech present near the superior strait, you must bring it to the centre with the right hand. The position is reduced to the first natural position of the feet.

*Second indication.* The right side of the fœtus being behind, you should introduce the right hand and act precisely the same as in the second position.

**FOURTH POSITION OF THE ANTERIOR REGION.** *Principal relations.* The head corresponds to the left sacro-iliac symphysis, and the breech to the right cotyloid cavity: the abdomen is turned downwards and the back upwards, the left side

is behind and to the right, and the right side before and to the left.

*Signs which distinguish the position.* The trunk is directed from the left sacro-iliac symphysis to the right cotyloid cavity. The superior parts of the fœtus are behind, the inferior before.

#### *Manual operation.*

*First indication.* The head being to the left of the pelvis, bring it to the centre with the right hand and incline the uterus to the left. The position is now reduced to the fourth natural position of the crown. If the breech be found near to the superior strait, bring it to the centre with the left hand and incline the uterus to the right. The position is now changed to the second natural position of the feet.

*Second indication.* The left side of the fœtus being behind, you must introduce the left hand and proceed in every respect as in the first position.

1. If the head correspond directly to the left of the pelvis and the breech to the right, the position would be characterised by the transverse direction of the trunk, and by the presence of the superior parts of the fœtus to the left, and the inferior to the right.

*Manual operation.* Precisely the same for the two indications as in the first and fourth positions, excepting that in fulfilling the first indications, you must endeavor to replace the extremity which you bring to the centre of the pelvis in one of the first diagonals, either of the crown of the head or of the feet.

2. Should the head be found to correspond directly to the right of the pelvis, and the breech to the left, you may know the position by the transverse direction of the trunk, and by the superior parts of the fœtus which are to the right.

*Manual operation.* Precisely the same for the two indications as in the second and third positions; but in fulfilling the first indication, you must endeavor to bring the extremity immediately into one of the first diagonals, either of the crown of the head or of the feet.

3. In case the head be found directed to the pubis and the breech to the sacrum, the trunk will bear directly front and rear, and the superior parts of the fœtus will be forward.

*Manual operation.*

*First indication.* If the head be found near to the superior strait, introduce either hand; push back and convert, viz. : into the first diagonal of the crown, if you have introduced the left hand, or into the second if you have introduced the right.

If the breech be found near the superior strait, bring it to the centre with either hand and convert into the third diagonal of the feet, should you have introduced the right hand, or into the fourth should you have introduced the left.

*Second indication.* You may introduce either hand, and convert into the first or second diagonal; but always so as to direct backwards the side of the fœtus corresponding in name to the hand introduced into the parts.

4. If the head correspond directly to the sacrum, and the breech to the pubis, the direction of the trunk would be the same as in the preceding position, but you will find the superior parts of the fœtus behind.

*Manual operation.*

*First indication.* If the head be found near to the superior strait, introduce either hand ; push forwards, and convert into the third diagonal of the crown of the head with the right hand, or into the fourth with the left hand.

Should it be the breech which is to be brought to the centre of the pelvis, introduce either hand ; push backwards, and convert into the second diagonal of the feet with the right hand, or into the first with the left.

*Second indication.* Introduce either hand and reduce to the third or fourth diagonal, taking care to direct backwards the side of the foetus corresponding in name to the hand introduced.

LATERAL REGIONS OF THE TRUNK.

The lateral regions of the trunk comprehend the side of the head, the side of the neck, the shoulder, the side of the chest, and the flank.

*Characters which distinguish each of these parts.*

*Side of the head.* It is principally characterised by the ear, whose different relations with the pelvis not only serve to distinguish the side which presents, but also mark its position. Thus we know that the lobule corresponds to the feet, and the great convexity of the helix to the back.

*Side of the neck.* It is most easily recognised by the parts which are contiguous to it ; thus the presence of the ear on

the one side, and that of the shoulder on the other, almost preclude all doubt of the presence of the lateral region of the neck.

*The shoulder.* The shoulder may be known by the round projection which it forms, by the clavicle before and the shoulder blade behind : the presence of the arm, and of the armpit, likewise aid the diagnostic.

*Side of the chest.* This region is characterised by the ribs and the intercostal spaces. Above, you find the axillæ ; below, you have the side of the abdominal parietes ; before, the sternum ; behind, the spinous apophyses of the vertebræ.

*Flank.* This region is recognised by its softness, by the presence of the last ribs above, and by the bones of the ilium below.

### *Positions of the right lateral region.*

The right lateral region of the fœtus presents in four principal positions, which correspond to the oblique diameters of the pelvis.

**FIRST POSITION OF THE RIGHT SIDE.** *Principal relations.* The head corresponds to the left cotyloid cavity, and the breech to the right sacro-iliac symphysis : the right side is downwards, the left upwards, the back before and to the right, the abdomen behind and to the left.

*Signs which characterise the position.* The trunk is directed in the course of a line from the left cotyloid cavity to the right sacro-iliac symphysis. The superior parts of the trunk are before, and the inferior behind.

*Manual operation.*

*First indication.* It requires precisely the same manual operation as in the positions of the back and abdomen.

*Second indication.* The right side of the fœtus being below, you must introduce the right hand, push to the right of the mother, and turn the fœtus upon its anterior surface, so as to bring the abdominal extremities to the left side of the pelvis. That done, pass your hand along the right side of the fœtus, and when you reach the feet disengage them according to the rules which we have laid down, page 51. Terminate the labour in the first position of the feet.

SECOND POSITION OF THE RIGHT SIDE. *Principal relations.* The head corresponds to the right cotyloid cavity, and the breech to the left sacro-iliac symphysis. The right side is downwards, the left side upwards, the back backwards and to the right, the abdomen forwards and to the left.

*Signs which characterise the position.* The trunk is directed from the right cotyloid cavity to the left sacro-iliac symphysis. The superior parts of the trunk are met with before, and the inferior behind.

*Manual operation.*

*First indication.* It should be fulfilled according to the same rules as in the positions of the back and abdomen.

*Second indication.* The right side being downwards, introduce the right hand; push back to the right, and pass along the right side of the fœtus until you discover the feet, which

you disengage as directed in page 51. Terminate the labour in the first position of the feet.

**THIRD POSITION OF THE RIGHT SIDE.** *Principal relations.*

The head is at the right sacro-iliac symphysis, and the breech at the left cotyloid cavity. The right side is down, the left side up, the back behind and to the left, and the abdomen before and to the right.

*Signs which characterise the position.* The trunk is directed obliquely from the right sacro-iliac symphysis to the left cotyloid cavity. You find the superior parts of the trunk behind, and the inferior before.

*Manual operation.*

*First indication.* It requires the same manual operation as in the positions of the back and abdomen.

*Second indication.* It is to be fulfilled in precisely the same manner as in the second position.

**FOURTH POSITION OF THE RIGHT SIDE.** *Principal relations.*

The head corresponds to the left sacro-iliac symphysis, and the breech to the right cotyloid cavity. The right side is below, the left above, the back before and to the left, and the abdomen behind and to the right.

*Signs which characterise the position.* The trunk is directed obliquely from the left sacro-iliac symphysis to the right cotyloid cavity. The superior parts of the trunk are behind, and the inferior before.

*Manual operation.*

*First indication.* The manual operation is the same as in the positions of the back and abdomen.

*Second indication.* Same manual operation as in the first position.

1. Should the head correspond directly to the left side of the pelvis, and the breech to the right, the trunk would present a transverse direction, and you would meet the superior parts of the fœtus on the left side and the inferior on the right.

*Manual operation.* Precisely the same for the two indications as in the first and fourth positions; only, in fulfilling the first indication, you should bring the extremity into the first diagonal either of the crown of the head or of the feet.

2. Should the head be directed to the right of the pelvis, and the breech to the left, the trunk would have, as in the preceding position, a transverse direction; but the superior parts of the fœtus would be found on the right, and the inferior on the left.

*Manual operation.* Precisely the same for both indications as in the second and third positions. But, in fulfilling the first indication, you must act as in the preceding position.

3. Should the head correspond directly to the pubis, and breech to the sacrum, the trunk would be directed from front to rear. The superior parts of the fœtus would be found before, and the inferior behind.

*Manual operation.*

*First indication.* If the head is to be brought to the centre, you may introduce either hand, but by preference the right; push back, and convert into the second diagonal of the crown of the head.

If the breech is to be brought to the centre of the superior strait, introduce either hand, but by preference the right; push forwards and convert into the second of the feet.

*Second indication.* Introduce the right hand, as the right side is below, and convert into the second diagonal, to proceed afterwards as in that position.

4. If the head be directed to the sacrum, and the breech to the pubis, the trunk would assume the same direction as in the preceding position; but the superior parts of the fœtus would be found behind, and the inferior before.

#### *Manual operation.*

*First indication.* If the head be found near the superior strait, introduce either hand, but in preference the left; push forwards and bring the extremity to the first position of the crown of the head.

If the breech be near the superior strait, introduce either hand, but in preference the left; push back and bring down the extremity to the centre of the pelvis: convert into the first of the feet.

#### *Positions of the left lateral region of the trunk.*

The left lateral region, like the right, presents in four principal positions, which correspond to the oblique diameters of the pelvis.

**FIRST POSITION.** *Principal relations.* The head corresponds to the left cotyloid cavity, and the breech to the right sacro-iliac symphysis. The left side is below, the right above, the back behind and to the left, the abdomen before and to the right.

*Signs which characterise the position.* The same as for the first position of the right side.

*Manual operation.*

*First indication.* The same manual operation as for the right side.

*Second indication.* The left side being downwards, you must introduce the left hand ; push to the left of the mother, pass along the left side of the fœtus until you reach the feet, which you must then disengage after the manner pointed out in page 51. You terminate in the second position of the feet.

**SECOND POSITION.** *Principal relations.* The head corresponds to the right cotyloid cavity, and the breech to the left sacro-iliac symphysis. The left side of the fœtus is down, the right up, the back upwards and to the left, the abdomen backwards and to the right.

*Signs which distinguish the position.* The same as for the right side.

*Manual operation.*

*First indication.* The same rules as for the second position of the right side.

*Second indication.* The left side being downwards, you must introduce the left hand ; push to the left of the mother, and turn the fœtus upon its anterior surface, so as to bring the abdominal members to the right side of the pelvis. That done, pass along the left side of the child, until you come in contact with the breech, where you will find the feet, which are to be disengaged according to the rules prescribed in page

51. Then terminate the labour in the second position of the feet.

**THIRD POSITION.** *Principal relations.* The head corresponds to the right sacro-iliac symphysis, and the breech to the left cotyloid cavity. The left side of the fœtus is downwards, and the right upwards, the back before and to the right, the abdomen behind and to the left.

*Signs which distinguish the position.* The same as for the right side.

*Manual operation.*

*First indication.* The same rules as for the third position of the right side.

*Second indication.* The same manual operation as in the second position of the lateral region.

**FOURTH POSITION.** *Principal relations.* The head corresponds to the left sacro-iliac symphysis, and the breech to the right cotyloid cavity. The left side is downwards, the right upwards, the back behind and to the right, and the abdomen before and to the left.

*Signs which distinguish the position.* The same as for the right side.

*Manual operation.*

*First indication.* The same rules as for the fourth position of the right side.

*Second indication.* The same manual operation as in the first position of the left lateral region.

1. If the head be directed to the left side of the pelvis and the breech to the right, you will recognise the position by the same signs as for the right lateral region.

*Manual operation.*

*First indication.* The same rules as for the right side.

*Second indication.* The same manual operation as in the first and fourth diagonal positions of the left lateral region.

2. If the head correspond directly to the right side of the pelvis and the breech to the left, the position would be characterised precisely as the right lateral region.

*Manual operation.*

*First indication.* The same rules as in the corresponding position of the right side.

*Second indication.* The same manual operation as in the second and third diagonals of the same lateral region.

3. If the head be directed to the pubis, and the breech to the sacrum, you may ascertain the position by the same characters as have been assigned to the right lateral region.

*Manual operation.*

*First indication.* If the head be found near the superior strait, introduce either hand, but in preference the left; push back and reduce to the first position of the crown.

If the breech be found near the superior strait, introduce either hand, but in preference the left; push forwards and bring down the extremity to the first natural position of the feet.

*Second indication.* The left side being downwards, intro-

duce the left hand ; push to the left in order to convert into the first diagonal, and then proceed as in that position.

4. If the head be found at the sacrum, and the breech at the pubis, you may know the position by the same signs as have been given for the right side.

### *Manual operation.*

*First indication.* If the head be situated near to the superior strait, introduce either hand, but in preference the right ; push forwards and convert into the second diagonal of the crown.

If the breech be near the superior strait, introduce in like manner either hand, but in preference the right ; push backwards and reduce to the second natural position of the feet.

*Second indication.* Since the left side is downwards, introduce the left hand ; push to the left so as to convert into the fourth diagonal, and then proceed as in that position.

### OF THOSE LABOURS IN WHICH THE HAND OF THE CHILD PRESENTS.

The presence of the hand in the organs of generation (supposing the parts to be well formed) is no obstacle to the termination of labour, whether by the abdominal extremity or by the head.

They have, therefore, greatly erred, who have advised to tear away the arm, to amputate it, to diminish its volume by incisions, or to push it back into the womb. But, were we called when that extremity was still at the superior strait of the pelvis, we should then push it back, or sustain it until the

head of the fœtus or its opposite extremity had taken possession of the opening of that strait.

When, therefore, the arm of the child be found in the vagina, or out of the parts of generation, you must terminate the labour precisely in the same manner as if it were still in the womb; but take care to secure the arm by means of the fillet, so as to prevent its ascending, and to keep it applied to the trunk during the termination of the labour.

Let us give as an example one of the positions of the lateral regions of the fœtus, with the descent of one of the arms out of the parts of generation.

Suppose the first position of the left side with a descent of the left arm.

*Manual operation.* The member being secured by fixing the fillet in the form of a running knot round the wrist, the accoucheur must introduce the left hand, passing it along the arm which is in the parts until he reaches the trunk of the fœtus, which he pushes to the left, and then proceeds to disengage the feet precisely in the same manner as if the arm was still in the womb. When both feet are delivered, terminate the labour as if in the second position of the feet, only taking care to maintain the arm applied to the trunk, in order to disengage them both at the same time.

*Nota.* As the arm which presents in the parts of generation does not always belong to the side of the fœtus which is downwards, it is indispensable, before attempting to bring down the feet, to pass your hand along this member to its articulation with the trunk, in order to know decidedly to which side it belongs. In all cases, when called upon to terminate the labour, you must make use of that hand which corresponds by name to the side of the fœtus which presents.

The direction of the hand which is without may enable us to conjecture the position of the trunk at the superior strait; but it is only by the introduction of the hand that we can acquire certitude.

If simple inspection does not suffice to distinguish the hand which has escaped through the vulva, the accoucheur can dispel all doubt by observing to which of his own hands it will correspond in all its parts.

RECAPITULATION OF THE MANUAL OPERATION APPLICABLE TO  
THE DIFFERENT POSITIONS OF THE TRUNK.

Whichever region the fœtus may present, every position of the trunk offers two indications to be fulfilled.

*The first*, which consists in bringing to the centre of the pelvis that extremity of the fœtus which is nearest to it, requires precisely the same manual operation in all the diagonal positions, as well as in those where the extremity of the fœtus corresponds directly to either side of the pelvis, be it the anterior, posterior, or the lateral regions which present.

The extremity, whichever it may be, if it is to the left of the mother, introduce the right hand, push to the right, and incline the uterus to the left.

If it is to the right, introduce the left hand, push to the left, and incline the uterus to the right.

In the direct positions, you may introduce either hand, push to the side opposite to that where you find the extremity of the fœtus, which is to be brought to the centre, and always convert into a diagonal.

Having fulfilled the first indication, the labour is to be left to the sole efforts of nature.

*The second indication* consists in passing your hand along one of the sides of the fœtus for the purpose of bringing down the feet. This side is directed backwards in all the diagonal positions of the anterior and posterior regions, and in all those where the extremities of the fœtus correspond directly to the lateral regions of the pelvis; it is downwards in the same positions of the lateral regions.

To fulfil this second indication, you must always introduce the hand which corresponds by name to that side of the fœtus along which you are to pass.

The direct positions ought to be converted into diagonal positions, and they then require the same manual operation as these positions.

The presence of the arm without the parts requires no alteration whatever in the manual operation of the different positions of the trunk.

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OF MANUAL DELIVERY WHEN THERE ARE TWO OR MORE  
CHILDREN IN THE WOMB.

When there are two or more children in the womb, their extraction must be performed according to the rules already laid down.

1. If both children present the feet, you should commence by extracting that child first, whose heels correspond to the hand introduced into the parts; and to be assured that you grasp the two feet of the same child, you must extend your fingers up to the groin.

2. If both children present the head, you should rather

turn that child first whose side directed backwards corresponds in name to the hand introduced into the parts. Should the head of the other child happen to engage itself at the superior strait, you must necessarily push it back.

3. If one of the children presents the head and the other the feet, you must begin by extracting the latter, unless (as Capuron remarks) the head of the first child should have so far entered the cavity of the pelvis as to require the application of the forceps.

4. If the two children be placed across the superior strait, and in the same direction, you must extract that child first whose feet are most easily grasped.

Should the head of one child be on the right, and that of the other on the left, extract that child first whose feet are on the left of the pelvis, should you have introduced the right hand, and *vice versa*.



## SECOND SECTION.

### OF THOSE LABOURS WHICH ARE TERMINATED BY THE AID OF BLUNT INSTRUMENTS.

The causes peculiar to this class of labours are the same as those we have assigned to that other class of labours which we terminate by manual aid alone; to which, however, you may add certain defects of conformation which do not exclude the possibility of delivery through the natural passage without a previous operation.

*Instruments in use.* These instruments are three in number, viz.: the *forceps*, the *lever*, and the *blunt hooks*.

## OF THE APPLICATION OF THE FORCEPS.

*Description of the forceps.\** The forceps now in common use resemble a kind of pincers, composed of two branches, united together by means of an articulation.

Each of these branches offers three distinct parts, viz.: two extremities and a middle part.

*The extremity* which is destined to grasp the head, and which is named the blade, (*cuiller,*) presents two curves, one on its edges, the other on its sides. These two curves are so disposed as to accommodate themselves at once to the form of the pelvis as well as to the shape of the child's head.

\*The reader must recollect that the forceps here described are not the short or English forceps, but the long French or Baudelocque forceps. It would be altogether inconsistent with the nature of this manual to swell out a note by the discussion of the respective merits of the two instruments; but I may be allowed simply to remark, that the long forceps very evidently, as it appears to me, possess all the advantages of the short English forceps, and are liable to none of its objections.

The short forceps can only be used when the head is at the inferior strait: the long forceps can be applied in every position in which the head can present. With the latter you can graduate your force with much greater facility than with the former.

The long forceps are used throughout continental Europe, where the short forceps are almost entirely unknown.

The reader will find, in Dr. Dewees' System of Midwifery, plates xxii and xxiii, two accurate delineations; one of the long French forceps, the other of the forceps of professor Siebold of Berlin. I would recommend to him the careful perusal of the 20th chapter of the same work, in which he will find all the information on this subject that he can possibly desire, delivered in a manner not only perspicuous but highly interesting. Should he wish further reference, he may consult Dr. Davis's Operative Midwifery, the latest work of authority published in England.—TRANS.

This part of the forceps is fenestrated and formed by two cheeks, (*jumelles*,) the one anterior and the other posterior.

*The second extremity* constitutes the handle of the instrument. Each branch terminates at this extremity in a blunt hook, which in the one incloses a perforator, in the other a pointed hook.

*The middle part* forms the articulation: one of the branches presents a pivot moveable in every direction, the other a lengthened aperture which is called the mortise. This aperture is destined to receive the pivot which, by the transverse direction which is given to it, serves to fix the two branches one against the other.

We shall call that *the left branch* which offers the pivot, and *the right branch* that which presents the mortise.

The head of the fœtus is the only part upon which the forceps can be applied. This instrument is applicable not only when the head is the first part which presents, but also when it is retained after the delivery of the trunk.

The forceps, when properly applied, ought to grasp the head by its lateral regions, and in the direction of its mento-occipital diameter. When thus applied, the greatest diameter of the head always presents by one of the extremities.

The forceps can be applied at the superior as well as at the inferior strait of the pelvis.

### *General rules for the application of the forceps.*

- I. Whenever the head of the fœtus is placed in a direct\*

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\* We shall always apply the term direct to those positions in which the occipito-frontal diameter of the head is found in the direction of the antero-posterior diameter of the pelvis.

position, you must introduce in the first place the left branch with the left hand, and then the right branch with the right hand.

2. Whenever the head is placed diagonally, you must observe which extremity of its antero-posterior diameter presents forwards. When the occiput or the forehead is in correspondence with the left cotyloid cavity, introduce in the first place the right branch with the right hand, and then the left branch, which must also be introduced by the right hand, for in all the diagonals you must introduce both branches with the same hand.

3. When the occiput or the forehead corresponds to the right cotyloid cavity, first introduce the left branch with the left hand, and then the right branch also with the left hand.

4. The branch ought to be so placed, that the old curve of the blades may correspond by their convexity to the concavity of the pelvis, and by their concavity to the convexity of the head.

The new curve ought to correspond by its concavity to the pubis, and by its convexity to the sacrum.

5. The hand which is free ought always to serve as a guide to the branches, and to be directed backwards towards the sacro-iliac symphysis; it ought likewise to be placed between the womb and the head, when the head is still inclosed in the womb, and between the vagina and the head when it has passed through the neck of the womb; in this manner you will most certainly avoid wounding the womb or the vagina.

6. Each branch of the forceps ought to be held, not as you would hold a pen in writing, but with a firmer grasp and with the whole hand, the thumb extended on the external side of the articulation.

7. The forceps ought to be warmed and lubricated by an unctuous substance, to facilitate its introduction.

8. The patient ought to be placed in the same position as for a manual delivery.

9. The accoucheur, when about to introduce the forceps, ought to be placed between the thighs of the woman ; he directs the blade in the first place back of the head, and afterwards raises it upon its lateral region by means of the hand introduced into the parts. To raise the blade to the place which it should occupy, he glides his index finger behind its anterior cheek, the middle finger behind the posterior cheek, and the thumb under the latter.

10. When the instrument is applied, the accoucheur places himself to the right or left of the handle in the direct position, but constantly behind it in the diagonal position.

11. The hands of the accoucheur, in grasping the forceps when applied, ought to be placed differently in the positions of the superior and inferior straits. At the inferior strait, the hand which grasps the handle of the forceps ought to be first placed under the instrument, while the other which is near the genitals ought to be placed upon it.

At the superior strait it is the contrary ; moreover, the index finger of the hand which is near the genitals ought to be carried up to the head, in order to ascertain if it follow the movements which you are endeavoring to execute with the forceps.

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POSITIONS OF THE CROWN OF THE HEAD AT THE INFERIOR  
STRAIT OF THE PELVIS.

In relation to the application of the forceps, we general-

ly admit six principal positions of the head at the inferior strait of the pelvis, viz. : *two direct* and *four diagonal*. We shall first consider the relations of the direct positions.

**FIRST DIRECT POSITION OF THE CROWN OF THE HEAD AT THE INFERIOR STRAIT.** *Principal relations.* The occiput corresponds to the pubis, and the forehead to the curve of the sacrum.

We shall not here repeat the signs which designate the different positions of the head, having already exposed them in detail under the article manual labour.

*Application of the forceps.* The accoucheur seizes the left branch with the left hand, inclining its handle towards the right groin of the woman, and glides the blade on the right hand, which directs it to the side of the head which corresponds to the left of the pelvis : as soon as the branch begins to penetrate into the parts, it ought to be supported by the thumb, which you apply behind the posterior cheek. When well placed, this branch ought to be parallel to the axis of the inferior strait, and its pivot should be opposite to the centre of the vulva.

An assistant is charged to maintain this first branch steadily.

The accoucheur then grasps the right branch with the right hand, inclines its handle towards the left groin of the woman and glides it on the side of the head which corresponds to the right of the pelvis, directing it with the left hand previously introduced into the parts.

That done, he articulates the instrument and places himself on its right or left side. Then seizing the forceps, as before explained in page 103, he extracts the head by lateral movements, and by pressing downwards in the first place in

order to disengage the occiput from beneath the pubis, then upwards so as to follow the axis of the inferior strait. You must take care to push back the head from time to time into the pelvis, for fear of dilating the parts too roughly.

When the perineum is much distended, support it with the hand which is nearest to the genital parts, while with the other you turn the forceps back upon the abdomen of the mother.

When the head is disengaged, support the handle of the instrument on your chest; and after unlocking the branches, remove them carefully one after the other.

If, after the head is delivered, the trunk does not disengage itself naturally, seize hold of the child by the two shoulders and extract it in the direction of the axis of the inferior strait.

If the fingers do not suffice, apply a crochet to the axilla which is behind, conforming to the rules which we shall hereafter deliver when treating of the application of the crochets.

**SECOND DIRECT POSITION OF THE CROWN OF THE HEAD AT THE INFERIOR STRAIT.** *Principal relations.* The occiput corresponds to the curve of the sacrum, and the forehead to the symphysis of the pubis.

*Application of the forceps.* The application of the forceps is precisely the same as in the preceding position, except that the handle ought to be held less elevated, in order that it may the better embrace the head in the direction of its long diameter.

The extraction of the head must likewise be effected according to the same rules as in the first direct position; but, as the face is uppermost, you must, after having delivered the occiput by lateral and elevating motions, pass the hand

which grasps the handle of the forceps upon it, and depress the instrument strongly in order the more easily to disengage the face from under the pubis.

Here it is not necessary to unlock the forceps ; it suffices to let loose its branches, to be able to withdraw it easily and without fear of wounding the parts of the mother.

DIAGONAL POSITIONS OF THE CROWN OF THE HEAD AT THE  
INFERIOR STRAIT.

FIRST DIAGONAL POSITION OF THE CROWN OF THE HEAD AT THE INFERIOR STRAIT. *Principal relations.* The occiput corresponds to the left cotyloid cavity, and the forehead to the right sacro-iliac symphysis.

*Application of the forceps.* The occiput being at the left cotyloid cavity, the accoucheur must seize the right branch with the right hand, and inclining the handle of it towards the left groin, he glides it, by the aid of the left hand placed in the parts, on the side of the head which is in front. The thumb should be placed under the posterior cheek as soon as the branch begins to penetrate. This first branch being steadily held by an assistant, the accoucheur, without withdrawing his left hand from the vagina, carries it backwards.

Then taking the left branch in his right hand, he makes it glide under the branch first introduced, and conducts it by the assistance of the left hand on the side of the head which is backwards.

The two branches being placed, the accoucheur withdraws his left hand from the parts and proceeds to lock the instrument, behind which he places himself; grasping the forceps

as we have prescribed for the inferior strait, he turns the head as on a pivot, and as soon as the occiput is brought under the pubis and the face into the sacrum, he terminates the delivery as in the first direct position.

**SECOND DIAGONAL POSITION OF THE CROWN OF THE HEAD AT THE INFERIOR STRAIT.** *Principal relations.* The occiput at the right cotyloid cavity, and the forehead at the left sacro-iliac symphysis.

*Application of the forceps.* The occiput corresponding to the right cotyloid cavity, the accoucheur seizes the left branch with the left hand, and inclining the handle towards the right groin, he glides it, by the aid of the right hand placed in the parts, on the side which is forwards, taking care to place the thumb under the posterior cheek as soon as the branch begins to penetrate. This first branch being supported by an assistant, the accoucheur, without withdrawing his right hand from the vagina, carries it backwards. Then seizing the right branch with the left hand, he glides it above that which has been first applied, and conducts it by means of the hand that is in the parts to the side of the head which is behind.

The two branches being introduced, the accoucheur withdraws his right hand from the parts, and having articulated the instrument, he places himself behind it. Then placing his hands as prescribed for the inferior strait, he turns the head, and proceeds precisely as in the first direct position.

**THIRD DIAGONAL POSITION OF THE CROWN OF THE HEAD AT THE INFERIOR STRAIT.** *Principal relations.* The occiput at the right sacro-iliac symphysis, and the forehead at the left cotyloid cavity.

*Application of the forceps.* The forehead corresponding to the left cotyloid cavity, the application of the forceps ought to be made according to the same rules as in the first diagonal ; only, the face being uppermost, the handle of the instrument ought to be held less elevated than in the preceding positions, in order that the head may be more conveniently seized in its long diameters.

The instrument being applied, the accoucheur places himself behind it, turns the head, and after bringing the occiput into the hollow of the sacrum and the face under the arch of the pubis, he proceeds with the delivery as in the second direct position.

FOURTH DIAGONAL POSITION OF THE CROWN OF THE HEAD AT THE INFERIOR STRAIT. *Principal relations.* The occiput at the left sacro-iliac symphysis, and the forehead at the right cotyloid cavity.

*Application of the forceps.* The forehead corresponding to the right cotyloid cavity, the application of the forceps ought to be made according to the rules laid down in the second diagonal position ; only, the handle of the instrument ought to be held less elevated. The accoucheur, placed behind the forceps, executes the rotary motion of the head, and proceeds as in the second direct position.

1. If the occiput be directed to the left of the pelvis and the forehead to the right, manœuvre precisely as in the first and third diagonals ; only, one of the branches must be placed under the pubis and the other before the sacrum.

2. If the occiput be found directed to the right of the pelvis and the forehead to the left, proceed as in the second and fourth diagonals.

POSITIONS OF THE CROWN OF THE HEAD AT THE SUPERIOR  
STRAIT OF THE PELVIS.

The head may assume at the superior strait the same positions as at the inferior.

**FIRST DIRECT POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The occiput is above the symphysis of the pubis, and the forehead in front of the sacro-vertebral angle.

*Application of the forceps.* The branches of the forceps ought to be applied precisely in the same manner as in the first direct position of the inferior strait, except that they must be made to penetrate farther, and that the hand which is to guide them should be placed between the womb and the head of the child.

When the forceps are applied, the accoucheur grasps them as directed for the superior strait; and according as he places himself to the right or left, so he reduces the position to the first or second diagonal of the superior strait. To effect this conversion, it is often useful to push up a little above the superior strait. As soon as the head is placed diagonally, you bring it down into the cavity, following the axis of the superior strait, and inclining the handle of the instrument to the side of the corresponding thigh. The position is now reduced to the first diagonal of the inferior strait. Replace your hands as required for this strait, turn the occiput towards the pubis, and proceed as in the first direct position of the inferior strait.

**SECOND DIRECT POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The occi-

put answers to the sacro-vertebral angle, and the forehead to the symphysis of the pubis.

*Application of the forceps.* Precisely the same as in the preceding position; but the handle of the instrument ought to be held less elevated, in order that the head may be better grasped in the direction of its length.

When the instrument is applied, place yourself on its left or right side; push a little above the superior strait, and convert into the third or fourth diagonal. Draw the head down into the cavity, making it follow the axis of the superior strait, and inclining the handle of the forceps towards the side of the corresponding thigh. You can then proceed in every respect as in the diagonals of the inferior strait.

FIRST DIAGONAL POSITION OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT. *Principal relations.* The same as at the inferior strait, but the head is less engaged.

*Application of the forceps.* Precisely the same as at the inferior strait; only that the branches, and the hand which conducts them, ought to be carried higher up into the womb. The instrument being applied, you place yourself behind it, and draw down the head into the cavity of the pelvis, always following the axis of the superior strait and directing the handle of the forceps to the side of the left thigh. The position being now reduced to the first diagonal of the inferior strait, replace your hands as prescribed for this strait, and proceed precisely in the same manner as in this first diagonal.

SECOND DIAGONAL OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT. *Principal relations.* The same as at the inferior strait, only the head is less engaged.

*Application of the forceps.* The same precisely as at the

inferior strait; except that the branches, and the hand which conducts them, ought to be introduced farther into the parts. Draw the head to the second diagonal of the inferior strait, following the axis of the superior strait and inclining the handle of the forceps to the right thigh; then, changing the position of your hands, convert into the first direct position, and terminate the labour as in that position.

**THIRD DIAGONAL OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The same as at the inferior strait.

*Application of the forceps.* Precisely as at the inferior strait; but the instrument ought to be carried higher up into the womb. Place yourself behind it, and draw the head down to the third diagonal of the inferior strait; make it execute its rotary motion, and then terminate the labour as in the second direct position of this strait.

**FOURTH DIAGONAL OF THE CROWN OF THE HEAD AT THE SUPERIOR STRAIT.** *Principal relations.* The same as at the inferior strait.

*Application of the forceps.* The same as in the corresponding position of the inferior strait. When the instrument is applied, place yourself behind it; draw the head into the fourth diagonal of the inferior strait, and proceed precisely as in that position.

1. Should the occiput correspond directly to the left side of the pelvis and the forehead to the right, you must proceed as in the first and third diagonals; but the first branch ought to be placed under the pubis, and the second in the curve of the sacrum. In executing the movement of rotation on the head, you should always endeavor to bring the occiput under the pubis and the face into the sacrum.

2. Should the occiput correspond directly to the right side of the pelvis, and the forehead to the left, you are to proceed as in the second and fourth diagonals; only the branches ought to be placed in the same manner as in the preceding position, one before and the other behind. You should then bring the occiput under the pubis, and the face into the curve of the sacrum.

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OF THE LOCKED HEAD AT THE SUPERIOR STRAIT, THE CROWN  
PRESENTING.

Authors generally admit of *two kinds of locked head* at the superior strait.

*In the first kind*, the antero-posterior diameter at the superior strait is less than 4 inches, and the head of the fœtus is locked by its occipito-frontal diameter.

*In the second kind*, the antero-posterior diameter of the superior strait is less than  $3\frac{1}{2}$  inches, and the head of the fœtus is locked by its bi-parietal diameter.

FIRST KIND.

*The head is locked lengthways.*

The head of the fœtus may be locked lengthways in two different positions.

**FIRST POSITION.** *Relations.* The occiput corresponds to the pubis, and the forehead to the sacrum.

**SECOND POSITION. Relations.** The occiput corresponds to the sacrum, and the forehead to the pubis.

*Indications to be fulfilled.* You must push up the head, which is always possible in these positions, and then replace it in the diagonal.

*Application of the forceps.* The forceps, in these two positions, ought to be applied precisely in the same manner as in the first and second positions of the crown of the head at the superior strait, excepting that the branches ought not to be introduced quite so high. The accoucheur, placed to the right or to the left of the instrument, must push the head up, impelling it by slight lateral motions, and should then bring it to a diagonal of the superior strait, acting afterwards as in that position.

#### SECOND KIND.

##### *The head is locked in its breadth.*

The head of the foetus may be locked in its breadth in two different positions.

**FIRST POSITION. Relations.** The occiput is directed to the left of the pelvis, and the forehead to the right.

**SECOND POSITION. Relations.** The occiput is directed to the right of the pelvis, and the forehead to the left.

*Indications to be fulfilled.* 1. If the child be dead, it is better to open its cranium, in order to diminish its volume, and to extract it afterwards by means of crochets.

2. If the child be living, you must by all means extract it by the aid of the forceps. But on what part of the head must the forceps be applied?

M. Capuron, well convinced that it is always in our power to push up the head, rejects the application of the forceps upon the face and occiput, and advises in all cases to push upwards and then apply the branches upon the lateral regions. He thinks that the instrument adds but little to the breadth of the head, which besides undergoes a sufficient reduction to make it possible to bring it down into the cavity of the pelvis.

Should we succeed in pushing up the head above the superior strait, we think with Capuron that the branches of the forceps ought to be applied on the lateral regions of the head, and in introducing them attention must be paid to the relations of the occiput with the pelvis. Should it be directed to the left, introduce the branches in the same manner as in the first and third diagonals. But if to the right, you must act as in the second and fourth diagonals.

However, should it be impossible to push the head above the superior strait, in that case we are of the opinion of Baudelocque, that the branches of the forceps should be placed, the one upon the face, the other upon the occiput.

You must be guided in the application of the instrument by the rules which we have prescribed when treating of the direct positions; draw down the head into the excavation of the pelvis, following the axis of the superior strait, and then replace the branches upon its lateral regions.

To simplify as much as possible this second application of the forceps, you should only withdraw from the parts that branch which from the relations of the occiput ought to be applied the last; it being otherwise well understood, that in replacing the two branches, you must conform to the rules prescribed for the transverse positions.

## POSITIONS OF THE FACE.

The face of the fœtus may assume six principal positions at the inferior and superior straits of the pelvis.

Of these six positions, two are direct, the other four diagonal.

*Indications to be fulfilled.* The positions of the face present two indications to be fulfilled; the one consists in turning the fœtus in order to extract it by the feet, the other in rectifying the position of the head.

If the version of the child be feasible, manœuvre as in the positions of the crown of the head; and in the contrary supposition, endeavor to bring down the occiput, so that the head may present one of the extremities of its longest diameter.

You may rectify the position of the occiput by the aid of the hand alone; we have treated of it when on the subject of the presentations of the anterior region of the trunk.

It may likewise be done by means of the lever, as we shall soon indicate in treating of the application of this instrument.

When you have succeeded in rectifying the position of the head by one or the other of these means, leave the delivery to the efforts of nature, unless accidents should oblige you to have recourse to the forceps, which ought then to be applied as in the positions of the crown.

But it may so happen that the occiput can neither be brought down by the hand, nor by the lever; you must then by all means have recourse to the forceps.

## POSITIONS OF THE FACE AT THE INFERIOR STRAIT.

**FIRST DIRECT POSITION OF THE FACE AT THE INFERIOR STRAIT.** *Principal relations.* The forehead corresponds to the symphysis of the pubis, and the chin to the curve of the sacrum.

*Signs which characterise the position.* We have described them when treating of the anterior region of the trunk; we shall not, therefore, revert to them.

*Application of the forceps.* Introduce the branches, observing the rules prescribed for the direct positions; but here the head can only be seized by its occipito-frontal diameter. As soon as the forceps are applied, grasping the handle with one hand, you press down the occiput, at the same time that, with the other hand placed under the blades, you push the face up into the cavity of the pelvis. When you have succeeded in rectifying the position of the head, separate the blades without unlocking them, and make them pass in the direction of the mento-occipital diameter, by raising the handle of the instrument; then terminate as in the first direct position of the crown of the head.

**SECOND DIRECT POSITION OF THE FACE AT THE INFERIOR STRAIT.** *Principal relations.* The forehead corresponds to the curve of the sacrum, and the chin to the symphysis of the pubis.

*Application of the forceps.* The same as in the preceding position; except, that as it is possible to lay hold of the head immediately by its mento-occipital diameter, by keeping the handle of the instrument much elevated, it would be altogether useless to endeavor to bring down the occiput, since the chin may be first disengaged.

The accoucheur may place himself to the right or left of the forceps, disposing of his hands as prescribed above for the inferior strait. Acting on the head by lateral motions, he first presses down the handle of the instrument to disengage the chin from beneath the pubis, after which he turns it back upon the abdomen of the mother, in order to disengage the occiput which is behind.

**FIRST DIAGONAL POSITION OF THE FACE AT THE INFERIOR STRAIT.** *Principal relations.* The forehead is to the left cotyloid cavity, and the chin to the right sacro-iliac symphysis.

*Application of the forceps.* The face being placed in the diagonal, the two branches of the forceps ought to be introduced according to the rules established for these positions. But here, as in the first direct, the head can only be grasped by its occipito-frontal diameter; therefore, the accoucheur, after having reduced the face to its first direct position, must terminate precisely as in that position.

**SECOND DIAGONAL POSITION OF THE FACE AT THE INFERIOR STRAIT.** *Principal relations.* The forehead is to the right cotyloid cavity, and the chin to the left sacro-iliac symphysis.

*Application of the forceps.* Precisely the same as in the second diagonal of the vertex; except that the head, as in the preceding position, can only be seized by its occipito-frontal diameter.

The accoucheur, placed behind the instrument, must reduce the face to its first direct position, and proceed as in that position.

**THIRD DIAGONAL OF THE FACE AT THE INFERIOR STRAIT.** *Principal relations.* The forehead is to the right sacro-iliac symphysis, and the chin to the left cotyloid cavity.

*Application of the forceps.* The branches of the instrument ought to be placed according to the same rules as for the first diagonal; but here the head may be immediately grasped in the direction of its mento-occipital diameter, and to effect this, it will suffice to keep the handle of the forceps elevated.

The accoucheur, placed behind the instrument, must turn the face into the second direct position, and terminate as usual in that position.

#### FOURTH DIAGONAL OF THE FACE AT THE INFERIOR STRAIT.

*Principal relations.* The forehead is directed towards the left sacro-iliac symphysis, and the chin towards the right cotyloid cavity.

*Application of the forceps.* The same as in the second diagonal; but here the head may be seized immediately in its mento-occipital diameter. The accoucheur, placed behind the instrument, reduces the face to the second position direct, and terminates as in that position.

1. If the forehead be turned directly to the left side of the pelvis and the chin to the right, proceed as in the first and third diagonals.

2. If the forehead be turned directly to the right of the pelvis and the chin to the left, proceed as in the second and fourth diagonals.

#### POSITIONS OF THE FACE AT THE SUPERIOR STRAIT.

The face may present at the superior strait in the same positions as at the inferior strait.

The relations of the head with the pelvis being precisely the same as at the inferior strait, with this exception, that the

parts are less engaged, we think it altogether useless to repeat them at each position.

**FIRST DIRECT POSITION OF THE FACE AT THE SUPERIOR STRAIT.** *Application of the forceps.* Precisely the same as in the corresponding position of the vertex. Here, as at the inferior strait, the head can only be seized by its occipito-frontal diameter.

The accoucheur, placed to the right or to the left of the instrument, pushes up the head a little above the superior strait, and converts the position into the first or second diagonal of this strait. He is then to act as we shall soon indicate in treating of these positions.

**SECOND DIRECT POSITION OF THE FACE AT THE SUPERIOR STRAIT.** *Application of the forceps.* The same as in the corresponding position of the vertex. Here the head may be immediately grasped by its mento-occipital diameter. Push it up a little above the superior strait, convert into the third or fourth diagonal, and then proceed as in these positions.

**FIRST AND SECOND DIAGONALS OF THE FACE AT THE SUPERIOR STRAIT.** *Application of the forceps.* The same as in the corresponding positions of the inferior strait; only, the branches, as well as the hand which conducts them, must be carried higher up.

The instrument once fixed, bring down the face into the first or second diagonal of the inferior strait, by inclining the forceps to the corresponding thigh, and then terminating precisely as in that position.

**THIRD AND FOURTH DIAGONALS OF THE FACE AT THE SUPERIOR STRAIT.** *Application of the forceps.* The same as in the corresponding positions of the inferior strait; only,

the branches ought to be carried up higher. When the forceps are applied, draw down the face to the inferior strait, and terminate precisely as in the corresponding positions of this strait.

1. If the forehead correspond directly to the right or to the left of the pelvis, apply the forceps, and having brought the head into the cavity of the pelvis, terminate as in the corresponding positions of the inferior strait.

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APPLICATION OF THE FORCEPS, THE TRUNK BEING DELIVERED.

The head, after the delivery of the trunk, may be arrested at the superior or at the inferior strait of the pelvis.

At both these straits it may present in six principal positions, viz.: two direct and four diagonal.

In all these positions the principal relations of the head of the fœtus with the pelvis of the mother are the same as in the positions of the vertex; with this exception, that instead of the occiput it is the chin which presents the first.

The forceps ought therefore to be applied according to the same rules, the positions being the same.

POSITIONS OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED.

FIRST DIRECT POSITION OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED. *Principal relations.*

The occiput corresponds to the arch of the pubis; the face is in the hollow of the sacrum.

*Application of the forceps.* An assistant is charged to raise the trunk and the arms of the fœtus. In the meanwhile the accoucheur introduces the branches of the forceps beneath the trunk, in order to grasp the head in the direction of its longest diameter. When the instrument is locked, he moves it from side to side, and terminates the delivery of the head by turning the handle of the forceps back upon the mother's abdomen. During this last period of the labour, the perineum ought to be strongly supported by one hand.

SECOND DIRECT POSITION OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED. *Principal relations.* The occiput is in the curve of the sacrum, and the forehead under the arch of the pubis.

*Application of the forceps.* In this position you must apply the forceps above the trunk, in order to seize the head by its mento-occipital diameter.

An assistant is charged to support the trunk of the fœtus.

When the instrument is applied, the accoucheur supports the perineum firmly with the one hand, while with the other he depresses the handle of the instrument, in order to disengage the face from under the pubis.

FIRST DIAGONAL POSITION OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED. *Principal relations.* The occiput corresponds to the left cotyloid cavity, and the forehead to the right sacro-iliac symphysis.

*Application of the forceps.* The branches must be introduced beneath the trunk of the fœtus, which an assistant is to raise up and support. You are to bring the head to its first direct position, and terminate as in that position.

SECOND DIAGONAL POSITION OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED. *Principal relations.* The occiput is at the right cotyloid cavity, and the forehead at the left sacro-iliac symphysis.

*Application of the forceps.* You must, as in the preceding position, introduce the branches from beneath the fœtus, convert into the first direct, and terminate as in that position.

THIRD DIAGONAL POSITION OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED. *Principal relations.* The occiput at the right sacro-iliac symphysis, and the forehead at the left cotyloid cavity.

*Application of the forceps.* In this position you must introduce the branches above the fœtus, in order to seize the head in the direction of its long diameter. Execute the movement of rotation, which brings the face under the pubis and the occiput in the curve of the sacrum, and terminate as in the second direct position.

Should you experience much difficulty in introducing the branches above the fœtus, you must introduce them under the trunk, and then proceed as we shall shortly describe in treating of these same positions at the superior strait.

FOURTH DIAGONAL POSITION OF THE HEAD AT THE INFERIOR STRAIT, THE TRUNK BEING DELIVERED. *Principal relations.* The occiput at the left sacro-iliac symphysis, and the forehead at the right cotyloid cavity.

*Application of the forceps.* You must here, as in the preceding position, apply the forceps above the fœtus, in order that you may grasp the head in the direction of its mento-occipital diameter. You then cause the head to execute its rotary motion, and terminate as in the second direct.

If you experience much difficulty in introducing the for-

ceps above the fœtus, you should, as in the preceding position, introduce them from beneath.

1. Should the occiput correspond directly to the left of the pelvis and the forehead to the right, apply your forceps as in the first and third diagonals.

2. But should the head be in an inverted position, act as in the second and fourth diagonals.

POSITIONS OF THE HEAD AT THE SUPERIOR STRAIT, THE TRUNK BEING DELIVERED.

The head of the fœtus may present at the superior strait in the same positions as at the inferior. Its relations with the pelvis being the same, with the sole exception that the parts are less engaged, we shall refrain from repeating them at each position.

FIRST DIRECT POSITION OF THE HEAD AT THE SUPERIOR STRAIT, THE TRUNK BEING DELIVERED. *Application of the forceps.* The branches are to be introduced beneath the fœtus, which is to be raised and supported by an assistant. When the forceps are applied, push up the the head above the superior strait, convert into the first or second diagonal, according as you may happen to be placed to the right or to the left side of the instrument; draw down the head to the inferior strait, and terminate as in the positions of this strait.

SECOND DIRECT POSITION OF THE HEAD AT THE SUPERIOR STRAIT, THE TRUNK BEING DELIVERED. *Application of the forceps.* Here, although the face be directed forwards, you are nevertheless obliged to apply the branches beneath the fœtus. The head must consequently be seized by its occipito-frontal diameter; push it up above the superior

strait, and convert the position into the third or fourth diagonal. Draw the head down to the inferior strait; make it execute the movement of rotation, which will reduce it to the second direct. But the head is badly seized to enable it to pass the inferior strait; you must, therefore, unless the pelvis be very large or the head very small, disunite the forceps, without, however, withdrawing them from the parts; raise the right branch, lower the left, and pass the trunk of the fœtus between them. Reunite the instrument in front, and by this single manœuvre the head is now seized in the direction of its mento-occipital diameter. You then terminate the labour as in the second direct position.

FIRST AND SECOND DIAGONALS OF THE HEAD AT THE SUPERIOR STRAIT, THE TRUNK BEING DELIVERED. *Application of the forceps.* The forceps ought to be applied in the same manner as in the corresponding positions of the inferior strait; except that the branches, and the hand which conducts them, ought to be introduced farther in. The accoucheur places himself behind the instrument and draws the head down to the inferior strait, bearing the handle of the forceps towards the corresponding thigh. He causes the head to execute its rotary motion, and terminates precisely as in the first position direct of the inferior strait.

THIRD AND FOURTH DIAGONALS OF THE HEAD AT THE SUPERIOR STRAIT, THE TRUNK BEING DELIVERED. *Application of the forceps.* Here, it is indispensable to apply the branches only beneath the fœtus. Draw the head down to the inferior strait, bearing the handle of the forceps towards the corresponding thigh; cause it to execute a rotary motion, which brings the face under the pubis and the occiput into the hollow of the sacrum. Unlock the forceps without with-

drawing them from the parts, pass the foetus between its branches and reunite the instrument above it. The head is now seized in its long diameter, and you must terminate the rest of the labour as in the second position direct of the inferior strait.

1. Should the occiput correspond directly to the left or to the right side of the pelvis, apply the forceps, and terminate precisely in the same manner as in the corresponding positions of the inferior strait, after having drawn down the head into the cavity of the pelvis.

#### RECAPITULATION OF THE DIFFERENT APPLICATIONS OF THE FORCEPS.

In whatever manner the head may present, be it by its vertex, by its face, or by its base ; be it arrested at the inferior or at the superior strait, the application of the forceps must always be made according to the same rules.

When well placed, the instrument should seize the head by its lateral parts and in the direction of its long diameter, so that the occiput or chin may be first delivered.

#### *Positions of the inferior strait.*

*Direct positions.* In all the direct positions of the inferior strait, whatever part the head may present, apply, in the first place, the left branch with the left hand, and, in the second place, the right branch with the right hand ; lock the instrument, whose pivot ought to correspond to the centre of the vulva, and place yourselves indifferently on its

right or left side. Then, grasping the forceps with both hands, the one placed under the handle, and the other upon the blades, near the genitals, we act on the head by lateral movements and disengage it, by turning the instrument back upon the abdomen of the mother, if the face is beneath, and by depressing it strongly if it be above. The hand which is near the genitals ought to be carried before the perineum, when the head is on the point of escaping.

*Diagonal positions.* In all the diagonal positions of the inferior strait, whichever part the head may present, you must be guided in the application of the forceps, by the relation of the occiput or of the forehead with the cotyloid cavities of the pelvis.

Whenever the occiput or the forehead corresponds to the left cotyloid cavity, introduce the two branches with the right hand, always commencing, however, with the right branch.

Whenever, on the contrary, the occiput or the forehead corresponds to the right cotyloid cavity, introduce the two branches with the left hand, commencing always with the left branch.

Lock the instrument, and always place yourself behind it. Then, grasping the forceps with both hands, placed, the one under the handle and the other upon the blades near the genitals, make the head execute its movement of rotation, and terminate as in the first or second position direct, according as the occiput or forehead may have been brought under the arch of the pubis.

1. Should the occiput correspond directly to the left side of the pelvis, manœuvre as in the first diagonal.

2. Should it be directed to the right side of the pelvis, act in the second diagonal.

*Positions of the superior strait.*

*Direct positions.* In all the direct positions of the superior strait, whichever be the presenting part of the head, apply the forceps as at the inferior strait ; except that the branches, and the hand which conducts them, ought to be introduced farther into the parts. The instrument being applied, seize it with both hands, placed, the one upon the handle, the other under the blades, the index extended up as high as the head ; which you push upwards, impelling it by slight lateral movements, and replace in one of the diagonals of the superior strait. That accomplished, you draw it down in the diagonal of the inferior strait, inclining the handle of the forceps to the corresponding thigh, and terminate as in the positions of this strait.

*Diagonal positions.* In all the diagonals of the superior strait, whichever be the presenting part of the head, introduce the forceps in the same manner as at the inferior strait ; except that the branches, as well as the hand which conducts them, ought to be carried farther up. The instrument being locked, place yourself behind it, and grasp it with both hands applied, the one upon the handle, the other below the blades, the index finger upwards into the parts. Draw the head down to the diagonal of the inferior strait, and then terminate as in the positions of this strait.

1. If the occiput correspond directly to the left side of the pelvis, you must manœuvre as in the first diagonal.

2. If it correspond directly to the right side, proceed as in the second diagonal.

## THE LEVER.

Accoucheurs, as professor Desormeaux remarks, designate by this name, borrowed from mechanics, an instrument destined by its inventors to act as a lever upon the head of the fœtus, and to force it to descend through the canal formed by the pelvis and the genital organs.

The origin of this instrument is still in great obscurity.

The opinion most commonly received attributes its invention to Roger Roonhuisen.

The lever which is in most general use at present bears a striking resemblance to the branch of a forceps without any curve on its edges.

One of its extremities, which we may call its blade, (*cuil-ler*,) is constructed similarly to that of the forceps, by two cheeks, separated by a lengthened fenestra. These two cheeks are curved on their surface, so as to represent on the one side a concavity destined to accommodate itself to the convexity of the head of the fœtus, and on the other, a convexity which is meant to correspond to the concavity of the pelvis.

The other extremity of the lever is furnished with a wooden handle.

*Nota.* One of the branches of the forceps, notwithstanding its new curve, may very well replace the lever; however, as professor Desormeaux very judiciously remarks, the lever, properly so called, is to be preferred when you are to make direct tractions upon the occiput.

If you make use of a branch of the forceps, you must take care in the diagonal positions to use the right branch, when

the occiput is to the right of the pelvis, and the left branch when it is to the left. In the direct positions, you may indifferently use either branch; and in all cases it ought always to be introduced by the hand which corresponds to it in name.

*Use of the lever.*

The use of the lever is principally confined to redress the occiput, and to act upon it by direct tractions so as to bring it to the centre of the pelvis, when it is strongly reflected on the back of the fœtus, as it happens in the positions of the face.

The lever may be applied at the inferior and superior straits.

We shall now proceed to study its application in each particular case.

POSITIONS OF THE FACE AT THE INFERIOR STRAIT.

**FIRST DIRECT POSITION.** The reflected occiput corresponds to the pubis.

*Application of the lever.* One of the hands being introduced into the vagina, you are first to direct the lever upon the side of the head, and then to carry it up by means of the fingers upon the occiput, strongly depressing the handle of the instrument. When the lever is applied, you raise its handle, grasping it in one hand, while you place the other upon it, and near to the pubis; with the first you draw towards you and downwards; with the second you press upon the head with considerable force from before backwards.

Should you not succeed in this manner to rectify the posi-

tion of the occiput, you must, at the same time that you are acting on the lever, push the face backwards with some fingers of the hand placed nearest to the pubis. When you have once succeeded in redressing the head, the labour generally terminates by the efforts of nature, or else you have recourse to the forceps, if circumstances should require it.

**SECOND DIRECT POSITION.** The occiput corresponds to the sacrum.

*Application of the lever.* In this position, you must pass the lever in front of the sacrum and above the occiput; and when you feel assured that it is properly fixed, seize it near the perineum with one hand, and with the other draw upon its extremity, raising it by degrees.

Should you experience much difficulty in bringing down the occiput, you must endeavor to assist the action of the lever, by pushing up the face with some fingers of the hand placed near the parts.

*Nota.* In this position it is preferable to make use of the forceps; for you can at once seize the head in the direction of its long diameter, and deliver the chin first.

**FIRST AND SECOND DIAGONALS.** In the first, the reflected occiput corresponds to the left cotyloid cavity; in the second, to the right cotyloid cavity.

*Application of the lever.* One hand being introduced into the parts, you glide the lever upon the side of the head, and then carry it behind the occiput, which you depress in the same manner as in the first direct position.

As soon as the head is redressed, you abandon the labour to nature, or else you apply the forceps, if the case require it.

**THIRD AND FOURTH DIAGONALS.** In the first case, the

reflected occiput corresponds to the right sacro-iliac symphysis, and in the second to the left sacro-iliac symphysis.

*Application of the lever.* In these positions, you introduce the lever, and proceed precisely as in the second direct position.

*Nota.* In these two last positions, the forceps are much to be preferred to the lever, since it is possible to seize the head immediately by its mento-occipital diameter, and to disengage the chin first.

1. If the reflected occiput should correspond directly to the right or to the left of the pelvis, act as in the third and fourth diagonals.

#### POSITIONS OF THE FACE AT THE SUPERIOR STRAIT.

**FIRST AND SECOND DIRECT.** The same relations exist here as at the inferior strait, only the head is less engaged.

*Application of the lever.* Precisely the same as at the inferior strait; but, in proportion as you depress the occiput, endeavor to bring the head to a diagonal position.

**DIAGONAL POSITIONS.** The relations are the same as at the inferior strait, excepting that the head is less engaged.

*Application of the lever.* In all the diagonal positions of the face at the superior strait, you must introduce the lever, and proceed in the same manner as at the inferior strait.

1. Should the occiput correspond directly to the right or to the left of the pelvis, you must operate as in the third and fourth diagonals.

*Nota.* The lever is less advantageous at the superior than at the inferior strait, and many accoucheurs give the preference to the forceps; however, professor Desormeaux has

used it with success in two cases, where the head, being in a transverse situation, could only be seized by the forceps in an unfavorable manner, that is, from the face to the occiput.

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#### OF THE BLUNT HOOKS.

The blunt hooks, which are used to extract the fœtus, are not all of the same form; some forming nearly right angles with the principal branches of the instrument—others representing angles more or less acute.

The extremity of all these hooks is generally furnished with a wooden handle.

*Nota.* The two blunt hooks which terminate the handle of the forceps, may in all cases replace these isolated hooks, since they are precisely of the same form.

#### *Use of the blunt hooks.*

The curved hook, with an acute angle, is destined to be applied to the hollow of the armpit, when, the shoulders being retained in the pelvis, the fingers do not suffice to extract them.

This same crochet may serve to extract the knees at the inferior strait.

It may also be fixed in the mouth, to complete the extraction of the head after the version of a dead child.

The hook which forms a right angle with the principal branch is exclusively destined to be applied to the groin, in the positions of the breech at the inferior strait. Professor

Desormeaux thinks that in the greater number of cases, where the blunt crochet is indicated, the finger replaces it with the greatest advantage.

*Introduction of the blunt crochet.* There are no very precise rules for the introduction of the blunt crochet; the only indispensable precaution is to precede it by a finger, in order to ascertain previously the disposition of the part to which it is to be applied. When the crochet is introduced, if it embraces an extremity, it ought always to be grasped by that hand which corresponds in name to that extremity; and in the extraction of the fœtus, you must always take care to guide it in the direction of the different axes of the pelvis.



### THIRD SECTION.

#### LABOURS WHICH CANNOT BE TERMINATED WITHOUT THE AID OF CUTTING INSTRUMENTS.

##### *The peculiar causes of this class of labours.*

Among the labours which demand the aid of cutting instruments, some assign as their cause the diseases or the deformities of the fœtus, which so much augment its volume as to render delivery altogether impracticable without an operation. While others are to be attributed to the contracted state of the pelvis of the mother and to certain defects in the conformation of her genital organs.

Before entering upon the consideration of these different

kinds of labours, we shall say a few words on the instruments which are employed for their termination.

#### OF THE PERFORATOR.

Any instrument may be called a perforator, by which an opening may be made into the cavity of the cranium. Mauriceau, Smellie, Deventer, and others have imagined different perforators, but all these instruments may be very well replaced by an ordinary knife, a bistoury, a trocar, or by that kind of blade inclosed in the branch of the forceps, whose handle is bent at a right angle.

*Choice of the perforator.* The knife or the bistoury are to be preferred, when it becomes necessary to make a large angular opening into the cranium, through which we may mash and extract the brain.

The trocar would answer very well, if it were required to puncture the cranium for the purpose of giving issue to an extravasated liquor, as in the case of hydrocephalus.

*Place of election for the operation.* When the head presents, you must perforate the cranium either at the superior fontanelle or in the course of the sagittal suture.

If the trunk has made its exit before the head comes to present, you must apply your perforator to the occipital region, to the lambdoidal suture, or to the coronal suture, if it be in your reach.

*Introduction of the perforator.* The instrument, whichever it be, ought always to be directed by means of several fingers introduced into the parts of the woman.

## OF THE SHARP CROCHET.

The ancients have imagined many kinds of sharp crochets; but all of them may be advantageously replaced by that which is found in the handle of the forceps in present use. For, the last mentioned crochet possesses all the advantages which can be desired, and has none of the inconveniences of those formerly in use.

*Use of the sharp crochet.* The sharp crochet having no power to diminish the volume of the parts upon which it is applied, it is evident that it ought only to be employed when these parts do not exceed the size of the mother's pelvis.

*Place of election for the application of the sharp crochet.* The sharp crochet may be applied to all those parts which offer any resistance, as the head, the chest, the pelvis, &c.; but, of all these parts, the head is that which most commonly requires its application.

When you apply the crochet for the purpose of extracting the head, you ought always to apply it so as to deliver in the first place one of the extremities of its longest diameter. Thus, in the presentations of the head, the crochet ought to be implanted on the occiput; when it does not present until the trunk has been delivered, it should be applied either on the superior maxilla or on the forehead.

*Application of the sharp crochet.* Whenever an accoucheur carries a crochet into the womb, says professor Desormeaux, he should guide it with his fingers; he covers its point to defend the parts of the mother from its contact. He must then proceed precisely in the same manner as if he were introducing a branch of the forceps. Thus, having passed one

of his hands into the vagina, or even into the womb, he glides the crochet upon it; and when it has reached the head, he inclines it in such a manner as to make it penetrate through the cranium.

#### OF THE EMBRYOTOME.

Any instrument may be thus called which serves to divide the fœtus in the womb, so as to enable the accoucheur to extract it by pieces. As these instruments do not merit a particular description, we shall confine ourselves to point out their uses.



#### LABOURS WHICH REQUIRE CUTTING INSTRUMENTS TO BE APPLIED TO THE CHILD.

*Causes.* The fœtus may be affected with diseases or deformed by irregular conformation increasing its bulk to that degree as to render delivery altogether impracticable without the aid of cutting instruments. The diseases most frequently occurring are hydrocephalus, hydrothorax, and ascites. The most common irregularities of conformation are the unnatural union of twins, and the presence of certain fungous steatomatous tumours, on some point of the fœtal surface.



#### HYDROCEPHALUS.

*Principal signs.* When hydrocephalus exists to such an extent as to require the use of cutting instruments, its exist-

ence may be ascertained by the augmented size of the fontanelles and sutures, by the general softness of the head, and by the fluctuation, which becomes very manifest, &c.

*Indications to be fulfilled.* Be the child dead or alive, you must open its cranium and give issue to the liquid which it contains, so as to obtain such a reduction of its volume that the delivery may be effected through the natural passages. Certain accoucheurs have not feared to assert that you should operate on the mother if the child was living; but would it not be worse than ignorance thus to expose the life of the mother to save that of a child already devoted to certain death?

As soon as the cranium is opened, the serosity flows, the head returns to its wonted dimensions, and the labour terminates without farther assistance, or else you have recourse to the crochet or the forceps, as the case may require.

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#### OF HYDROTHORAX AND OF ASCITES.

*Principal signs.* The volume and the fluctuation are the only signs which can enable us to discover the dropsies of the chest or of the abdomen.

*Indications to be fulfilled.* You must puncture with the trocar, to give issue to the extravasated liquor, and then terminate the labour with the assistance of the forceps or crochet, should it not terminate naturally.

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#### OF DETRUNCATION.

When the head separated from the body still remains in the womb, you must endeavor, by the means of your hand,

to bring it to a good position, and to extract it with your fingers fixed on the inferior maxilla.

Should you not succeed in this attempt, and should the volume of the head exceed the dimensions of the mother's pelvis, you must, after having fixed it by its vertex to the entrance of the superior strait, by the means of a hand introduced into the womb, pierce the cranium, empty it of its contents, and then terminate with the sharp crochet. Professor Desormeaux remarks, that in this case it is to be feared, that the head happening to roll on its axis in consequence of the tractions of the operator, the crochet might slip; and, to avoid this accident, he is of opinion that the forceps should be preferred.

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OF THE DECOLLATION OF THE CHILD.

When the trunk alone remains in the womb, you may extract it in different ways: first, by applying the blunt crochets in the hollow of the axillæ; second, by first disengaging the arms, in order to pull upon them afterwards; third, by fixing the sharp crochets at the top of the vertebral column or between two ribs; professor Desormeaux prefers to fix them upon the vertebral column, fearing that the ribs happening to break away successively, the crochet might slip; fourth, by turning the child and delivering by the feet.

In whatever manner you operate, take care always to preserve the longest diameters of the fœtus in relation with those of the mother, and to direct the child in the course of the axes of the pelvis.

## OF THE EXTRACTION OF MONSTERS.

1. Living twins may be united together at certain points of their surface, and that by means of the integuments only. In this case, you must effect their separation by the aid of a cutting instrument, and then extract them, conforming to the rules of the art.

2. Twins may be united by the crown of the head, instances of which are related by Baudelocque and Capuron from Ambrose Pare. In this case, you must deliver the one by the feet; the other will necessarily present the head, and should it be retained too long in the pelvis, you must effect its delivery by means of the forceps.

3. Two heads belonging to the same trunk may also present at the same time at the superior strait of the pelvis. In this case we think with Gardien that you should first diminish their volume by opening them, and then extract the foetus by means of the crochet.

4. Two trunks may be found attached to one head, and they may present both together at the entrance of the superior strait. Here, again, it is evident that you must separate the two trunks, so as to be able to extract them one after the other.

5. Voluminous tumours may arise from any point of the foetal surface and prevent the termination of labour. In this case, you must, according to the advise of the greater number of accoucheurs, reduce the volume of these tumours, or amputate them, and refrain from every operation on the mother.

LABOURS WHICH REQUIRE THE APPLICATION OF CUTTING INSTRUMENTS TO THE MOTHER.

*General causes.* We shall reduce them with professor Baudelocque: first, to the malconformation of the soft parts of the mother, destined to form the passage; second, to the deformity of the pelvis; third, to the rupture of the womb and of the vagina; fourth, to extra-uterine conceptions.

OF THE MALCONFORMATION OF THE SOFT PARTS.

The malconformation of the soft parts may be *natural* or *accidental*. "In the first case," says professor Baudelocque, "the malconformation consists in the agglutination of the great lips; in the narrowness of the entrance into the vagina, caused by the form or toughness of the membrane hymen; in the contracted state of this canal, or in the membranous intersections which it may present; in an incomplete closure of the neck of the womb; finally, in the privation of all the external parts which form the vulva.

"The accidental malconformation of all these parts may be the effect of the existence of a tumour, or the consequence of certain ulcerations which have given rise to unnatural adhesions."

*Indications which these different malconformations present.*

1. You may, according to the same author, without much danger to the mother, or much difficulty in the execu-

tion, separate the great lips, when they are united; incise the hymen, when it presents an obstacle to the delivery, as also the membranous partitions which are sometimes met with in the interior of the vagina, or in the neck of the womb, and cut the bands which prevent the canal from dilating.

2. When the orifice of the womb is too narrow, or completely obliterated; when it is schirrous, or rather cartilaginous, you must incise it in different directions by means of a bistoury enveloped in linen to within half an inch of its point, and conducted on the finger.

3. When the woman is imperforate or without a vulva, you must make, in the direction of the raphe, an opening which extends from the pubis to within an inch and a half of the anus.

4. The swelling of the genitals must be treated by scarifications made on the lower part of the inside of the great lips; the parts disgorge themselves, and the passage becomes free.

5. The varicose tumours which develope themselves in the organs of generation, sometimes acquire a considerable volume; nevertheless they scarcely offer any obstacle to the termination of labour; but they are liable to burst and to give rise to sanguinous infiltrations more or less considerable: to prevent this accident, it is generally advised to open one of these tumours situated on the outside.

6. Should the external parts of generation be the seat of a voluminous abscess, you must give issue to the pus by an incision.

7. The vagina is sometimes filled by polypous or schirrous tumours: when these tumours are pediculated, it is in

general easy enough to rid the woman of them ; but when they have a large base, the cæsarean operation is sometimes preferable to their extirpation.

8. The bladder may contain a voluminous calculus ; if you are called in time, you must push it up, and support it above the superior strait, until the head be disengaged ; but if the tumour formed by the stone is at the vulva, and the head of the child has been some time in the excavation, you must by all means incise the vagina and the bladder so as to be able to extract the calculus, and thus render the delivery possible.

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OF THE DEFORMITIES OF THE PELVIS OF THE MOTHER, AND OF  
THEIR EFFECTS ON THE TERMINATION OF LABOUR.

The pelvis of the mother may be defective in all its parts ; but as the obstacles to labour occur more frequently at the superior strait and in the direction of its sacro-pubic diameter, (antero-posterior,) it is on the different dimensions of this diameter that we shall base the mode of termination applicable to each kind of labour. At all events we shall only treat especially in this article of those cases which require the application of cutting instruments to the mother, having already treated of those which require them to be applied to the fœtus.

PRINCIPAL DEGREES OF DEFORMITY IN THE SACRO-PUBIC DIAMETER—INDICATIONS WHICH THEY PRESENT.

*Natural extent of the sacro-pubic diameter—4 inches.*

FIRST DEGREE OF DEFORMITY ; *from four inches to three inches and a half.* In this first degree of deformity, natural labour is still possible, for the fœtal-head presents, from one parietal boss to the other, but three inches and a quarter, three inches and a half at most.

SECOND DEGREE OF DEFORMITY ; *from three inches and a half to three inches.* In this second degree of deformity, natural labour is impossible ; but it may be terminated with success by means of the forceps. The version of the fœtus, proposed by some accoucheurs, cannot have the same advantages, and it might give rise to serious accidents, such as the distention of the spine, the luxation of the head, detrun- cation, &c.

THIRD DEGREE OF DEFORMITY ; *from three inches to two inches and a half.* The application of the forceps cannot be effected in this third degree of deformity : you must practise the operation of symphysiotomy, if the child be living, or open the cranium if it has ceased to live.

FOURTH DEGREE OF DEFORMITY ; *from two inches and a half to two inches.* Whenever an attempt is to be made to extract the child alive, the cæsarean operation is indispensable. But should the child be dead, you might still have recourse to embryotomy.

FIFTH DEGREE OF DEFORMITY ; *less than two inches.* Whether the fœtus be living, or whether it may have ceased

to live, you must necessarily practise the cæsarean operation; for, in this degree of deformity, the dismemberment of the child in the womb would be more dangerous for the mother than the cæsarean operation itself.

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OF SYMPHYSIOTOMY.

*Definition.* Symphysiotomy is the name given to that operation, which consists in the section of the fibrous cartilage which unites the bones of the pubis together.

*Necessary instruments.* A sound and a bistoury suffice to practise this operation. The bistoury ought to be convex on its cutting edge and blunt at its extremity.

*Time of election.* Before you attempt to practise this operation, you must wait until the neck of the womb be sufficiently dilated to permit the easy introduction of the hand, and the pains be sufficiently strong to expel the fœtus.

*Position of the woman.* The woman ought to be placed upon the edge of the bed or upon a table of convenient height, the breech raised by means of pillows which should be rather firm, the thighs bent upon the pelvis and separated at a moderate distance from each other. The legs are to be supported on chairs.

*Position of the assistants—their duty.* Two assistants are to be placed on the outside of the abdominal members, which they are charged to preserve in the position above indicated. They must be particularly careful, when the operation is nearly completed, to support the thighs very firmly, so as to prevent a too sudden separation of the bones of the pubis. A third

assistant is charged to present the instruments to the operator, and to aid him when necessary.

*Method of operating.* You must in the first place shave the pubis, introduce a sound into the bladder to evacuate the urine, and then depress the canal to the right of the woman, so as to place it out of the reach of the cutting instrument. The sound is intrusted to an assistant. The operator, pushing up the integuments towards the umbilicus, commences his incision at the superior margin of the pubis and prolongs it to the clitoris, without touching the anterior commissure of the vulva. He then divides the fibro-cartilage very slowly, carrying his bistoury from above downwards, or from before backwards, according to the advice of Plenck; in the first case he should support the point of the bistoury on the nail of his left index finger, so as to prevent its touching the bladder or the canal of the urethra. The section of the cartilage being accomplished, you must divide the superior and inferior ligaments, and a separation then takes place, which ought always to be moderated, so as to avoid any great disorders in the sacro-iliac symphyses. You then abandon the labour to nature, or should the case require it, you terminate it by the aid of the hand or of the forceps.

As soon as the labour is completed, you bring the bones together and keep them in immediate contact, by means of a bandage applied round the pelvis. Experience has proved that a linen band, lined with flannel, six or seven inches in breadth, furnished at one extremity with buckles, and at the other with leather straps, is the best means that can be employed.

The woman ought to observe absolute repose until there is a perfect consolidation; and, although the bones be generally

reunited at the expiration of a month or six weeks, she ought not to be allowed to walk before two months have expired.

As to the external wound, that will soon heal by the aid of simple dressing. Alphonse Leroy advises lint dipped into the white of an egg beat up with brandy to be applied upon it.

WHAT SEPARATION IS FEASIBLE WITHOUT THE LESION OF  
THE SACRO-ILIAC SYMPHYSIS?

In general, the bones of the pubis may be separated as much as two inches without any consequent rupture of the sacro-iliac symphysis; but beyond this point lacerations are constant, according to the experiments of Baudelocque, and the most serious accidents occur. Among these, the most frequent are inflammation, abscesses, &c. However, if credit is to be given to Gardien, who founds his assertions on the experiments of Giraud and Ansiaux, the separation of the pubis may be extended to four inches, without apprehending any danger from the posterior articulations of the pelvis.

BENEFITS TO BE DERIVED FROM THE OPERATION IN RELATION  
TO LABOUR.

1 <i>inch of separation</i> between the ossa pubis gives to the sacro-pubic diameter an increase of.....	2 lines.
2 <i>inches of separation</i> give.....	4
2 <i>inches and a half</i> should give, according to Baudelocque .....	6
3 <i>inches</i> should give, according to Giraud.....	8
4 <i>inches</i> , according to the same author, should give	12

RESULTS OF THE OPERATION IN RELATION TO THE MOTHER  
AND THE CHILD.

Of 41 women who have been operated upon, says Baudelocque, 14 have succumbed, and 27 only have been preserved.

Of 41 children, 13 have come into the world alive, and 28 were born dead.

Among the women who have succumbed, some of them appear to have fallen victims only because they were operated on too late.

Among those who have survived, many had previously had one or more children; which proves at least that their pelvis was not very defective.

Symphysiotomy is, then, one of the most important operations, and it should never be practised but in a case of the greatest necessity.

OF THE CÆSAREAN OPERATION OR GASTRO-HYSTEROTOMY.

*Definition.* Professor Desormeaux defines the cæsarean operation, an incision made through the parietes of the abdomen and of the uterus with the view of extracting the fœtus.

The origin of this operation remounts to an epoch far remote, and which it would be impossible to determine. For a long time it was only performed on the womb after death. In 1500, it was performed, for the first time, on the living subject.

*Necessary instruments and dressings.*

Two bistouries, the one of the common convex shape, the other strait and buttoned at its extremity, a ligature forceps, and a few threaded needles suffice for the performance of the operation.

The articles required for the dressing are a fine sponge, lint, long compresses, others of a square form, a body bandage with its scapulary, and vases of cold water to which you add a few drops of vinegar.

*The place of election for practising the operation.*

The most ancient method consists in opening the abdomen on one side or the other, but that side is to be preferred to which the fundus of the uterus is inclined. Accoucheurs are not unanimous as to the direction to be given to the incision; some think it should be oblique, in the direction of a line which is to begin at the cartilaginous extremity of the third asternal rib, and to terminate at the pubis; others propose a semi-lunar incision; Levret is of opinion that it should be parallel to the external edge of the rectus muscle; finally, Lauerjat has advised the incision to be made in a transverse direction.

*Inconveniences of the lateral method.*

The lateral method has the inconvenience, first, of dividing three layers of muscles, whose different directions offer great obstacles to cicatrisation; second, of exposing some of the

branches of the epigastric artery to be wounded, as well as the principal arteries of the womb, which would be cut on its edge; third, as the fibres of the uterus are cut obliquely or across, they cannot contract without the wound gaping and without giving rise to the effusion of the lochia into the abdomen.

Struck with the inconveniences of the lateral method, the moderns, such as Mauriceau, Platner, Solayres, and others, have preferred to make their incision upon the linea alba.

This method has also its inconveniences; however, it is generally preferred, and to it only shall we here direct our attention.

*The proper time for performing the operation.*

This time, says professor Desormeaux, is of *necessity* or of *election*; of necessity, when we are called after the labour has been more or less protracted, and when the life of the mother or that of the child would be compromised by a longer delay; of election, when, during the course of pregnancy, we have had time to distinguish the obstacles which oppose the delivery, and to determine the course which ought to be followed. It is generally agreed upon that in these cases you should wait until the labour be well decided, the neck of the womb effaced and its orifice sufficiently opened to give issue to the blood which will flow from the surface of the uterus, to the clots which may be formed in its cavity, and afterwards to the lochia; it being well understood, moreover, that the operation ought always to be performed before the flowing of the waters of the amnios, in order that the incisions may be reduced by the contraction of the womb to a

trifling extent, as also that the danger of wounding the child may be diminished.

*Preliminary treatment.* If the woman be robust, plethoric, you must bleed her by way of precaution. If she be excessively nervous and irritable, let her take a few baths, and administer some anti-spasmodic potions.

The bladder ought to be emptied of the urine it contains; the rectum evacuated by means of enemas or gentle purgatives; the region of the pubis is to be shaved.

*Position of the woman.* The woman ought to be placed on the edge of the bed, which has been previously furnished with thickly folded sheets; lying on her back, the head and chest moderately raised; the abdominal members extended during the time of incision, and half bent during the extraction of the child. To render the abdomen more prominent, place a cushion under the loins.

*Position of the assistants.* Two assistants are charged to circumscribe the womb with their hands, and thus to remove the intestines from the spot where the operation is to be performed. Other assistants are directed to present the instruments to the operator, and to second him in case of need. Others, also, are required to keep the patient in the position in which she has been placed.

*Method of operating.* The accoucheur, armed with a convex bistoury, makes an incision in the direction of the linea alba, which, according to professor Baudelocque, ought to extend from the umbilicus, and even above it, to within an inch and a half of the pubis. Professor Desormeaux observes that, when the incision is to be commenced above the umbilicus, you must direct the bistoury to the left of this cicatrix.

By prolonging the incision to this height, it becomes possible to incise the womb in its most elevated part, and by this means to prevent the extravasation of the lochia into the abdomen. This first incision ought to extend no farther than the skin and the sub-cutaneous cellular tissue. The *linea alba* is then divided with precaution towards its inferior part, and, by means of a buttoned bistoury conducted on the left index finger, the incision is to be extended from below upwards as far as the superior angle of the wound of the integuments. The peritoneum is to be opened with the same precautions, and precisely in the same manner.

The abdominal parietes being divided, one of the aids charged to circumscribe the womb depresses this organ as much as possible, in order to bring its fundus nearer to the superior angle of the abdominal wound; you then incise its anterior parietes, to within an inch of the inferior angle of the abdominal wound, that is, in an extent of about six inches. This incision ought to extend through the anterior portion of the organ to the membranes. You commence it with the convex and terminate with the buttoned bistoury, with which you are to cut from inside outwards and from above downwards. You then pierce the membranes with great caution, and incise them precisely in the same manner as the parietes of the womb.

Should the placenta be found to correspond to the opening made into the womb, you must separate it, as *Baude-locque* advises, and pierce the membranes near its circumference. But, as professor *Desormeaux* observes, it is not possible to know in advance the spot of its insertion, unless the new application of auscultation, made by *M. de Kerga-*

radec, contribute to its elucidation; and even did we know it, it would not be possible to avoid it.

The operation once terminated, you proceed to grasp the feet with one hand, and terminate the extraction of the fœtus precisely as if you were about to deliver by the natural passages.

Should the head present naturally at the wound, and were it not expelled by the contractions of this organ, you must favor its exit, by pressing the abdomen gently on both sides and at some distance from the incision, or by insinuating the fingers under the angles of the inferior jaw. You must act in a similar manner should the buttocks present themselves at the incision.

As to the after birth, it is expelled naturally through the womb, or else you must extract it by pulling on the umbilical cord, or, what is more sure, by seizing its border with the end of your fingers, so as to make it present a smaller volume to the wound.

As soon as the after birth has been delivered, you empty the womb of the clots which it may contain, and pass your finger through its neck, to favor the exit of those which may be found there. Gentle injections, with a tepid emollient decoction, may also be very proper.

Should the womb become torpid, or should a hemorrhage succeed, you must, with the view of exciting the organ to contraction, press it exteriorly: stimulate the lips of the wound by tickling them with the extremity of your fingers or by washing them with vinegar and water. You should likewise inject cold water, vinegar and water, or even pure vinegar.

*Treatment after the operation.*

The treatment which the woman requires after the caesarean operation, may be divided into local and general.

*Local treatment.* The local treatment consists in covering the wound with a proper dressing; but above all you must take care to cleanse the abdominal cavity of the blood and water which may have extravasated into it. For which purpose it suffices to give the woman a proper position, to make gentle pressure on the sides of the abdomen or to administer tepid injections.

The wound of the uterus demands but little care; it is reduced to a slight extent by the contraction of the organ, and soon heals.

As to the exterior wound, professor Desormeaux advises to unite it by means of two or three points of the quilled sutures, taking care to leave a vacant space at its inferior extremity, for the issue of the fluids which may have extravasated into the abdomen. Some persons even place at this spot a strip of unravelled linen, to serve as a filter to these liquids. Baudelocque joins Desormeaux in this opinion, and also advises a second strip of unravelled linen to be placed in the neck of the womb, to favor the passage of the lochia through the natural channel.

The use of the suture has not obtained general approbation. Capuron considers it hurtful, in as far as it must add to the causes already so powerful of peritoneal inflammation; and as useless, because the swelling, which most generally ensues as an effect of the peritoneal inflammation, obliges us almost always to slacken the points of the suture or to cut them loose. It has been proposed to substitute strips

of adhesive plaster for the suture, and even to reject all other means of union except the uniting bandage; but, as M. Desormeaux observes, such means are certainly insufficient to keep together the lips of so large a wound, made in a structure as moveable and flabby as the parietes of the abdomen after delivery.

*Dressing.* The whole dressing consists in placing a long compress each side of the womb, and in covering it with a fenestrated linen, to which a pledget of lint and square compresses are to be added. The whole of which is to be kept together by means of a body bandage supported by a scapulary.

The dressing should be frequently renewed during the first four and twenty hours; then every day, and even morning and evening, should there be reason to suspect an extravasation.

Should the womb happen to contract adhesions with the lips of the wound, you should, according to the advice of Bacqua, of Capuron, Gardien, &c., destroy them with caution; for, while they would prevent the issue of the extravasated fluids into the abdomen, on the other hand they would equally expose the woman to painful contractions, to the cutting pains of the uterus, to hemorrhagies, &c.

*General treatment.* It should be the same as in all the capital operations. Thus, bleeding more or less, in proportion to the strength of the patient and the intensity of the symptoms; the most perfect repose, the strictest diet, the use of diluent drinks, such as nitrated veal tea, chicken broth, decoctions of dog's grass, of parietary, of linseed; injections to keep the bowels open, &c.; such are the general means which it is proper to employ.

The woman ought to suckle her child as much as possible, or at least to have her breast drawn during the first weeks, with the view, as Baudelocque says, of attracting the milky humour to the breasts, so as to derive it from the uterus and to dry up more quickly the source of the fluids which issue from the wound of this viscus.

After the cure is effected, the woman ought to subject herself to wearing a bandage, for the purpose of preventing a consecutive hernia, which sometimes becomes very considerable.

#### RESULTS OF THE CÆSAREAN OPERATION, IN RELATION TO THE MOTHER AND THE CHILD.

*In relation to the mother.* The inflammation of the uterus, of the peritoneum, and of the intestines; suppuration, gangrene, extravasations into the abdomen; such are the accidents which most commonly render the cæsarean operation fatal to the mother. Nevertheless, authors mention a great number of successful cases. Baudelocque relates, that out of a hundred and eleven women, who had been operated upon, forty-eight were saved.

*In relation to the child.* The cæsarean operation is the mildest and most certain means which can be employed to effect its extraction; that is to say, it never runs any risk from the performance of this operation.

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#### OF THE RUPTURE OF THE WOMB AND OF THE VAGINA, IN RELATION TO LABOUR.

When, in the course of labour, the womb is ruptured in some point of its circumference, the child passes most com-

monly, either in part or in whole, into the abdominal cavity. We shall only treat in this place of those cases, where, not being able to deliver the child by the natural passages, we are obliged to apply cutting instruments to the mother. These cases may be reduced to the following :

1. When only the head of the fœtus has passed through the rent, and when the womb has strongly contracted round the neck of the child.

2. When the head and the superior part of the trunk has penetrated into the abdominal cavity, unless, however, that the womb, struck with torpidity, should allow of the child's being delivered by the natural passages.

3. Finally, when the whole child has fallen into the abdominal cavity.

*Nota.* If the abdominal extremities and the inferior part of the trunk had alone escaped into the abdomen, you should terminate the labour with the forceps ; or by the aid of the crochet, should the child be dead, supposing, however, that the conformation of the pelvis will allow of the delivery of the fœtus by the natural passages.

*Signs which indicate the rupture of the uterus and the passage of the child and its appendages into the cavity of the abdomen.*

*Rational signs.* Professor Deneux expresses himself thus :  
 “ The noise of the rent is sometimes heard by the assistants. A fixed and acute pain is felt in the spot where the rent has been effected ; the pain has this peculiarity, that it is at first pungent and shortly after benumbing. Those who experience it are in the habit of designating it by the term of

cramp." A feeling of gentle warmth diffuses itself throughout the abdomen, the pulse weakens, the face becomes discolored, syncope supervenes, a cold sweat spreads all over the body, &c.

*Sensible signs.* They result from an examination per vaginam, (*le toucher.*) If the entire child has passed with its appendages into the abdominal cavity, you will discover, by introducing your finger into the vagina, that the part which the fœtus presented has disappeared, that the orifice of the womb is closed, and that the whole organ has contracted as is usual after natural labour. The fœtus may be easily distinguished through the abdominal parietes; and if it still move, the woman feels its motions in a different spot from that where she felt them before.

*Indications to be fulfilled.* As soon as it is ascertained that the child and its appendages have escaped from the womb into the abdomen, you must hasten to perform the operation of *gastrotomy*, (see page 159,) and to extract all its parts; unless the womb becoming torpid, should render it feasible to go in search of the child's feet, and to return them through the rent, as in the case recorded by Gardien, and of which professor Deneux and Roux were witnesses. This precept of practising *gastrotomy*, as soon as the child has passed into the abdomen, is not invalidated by certain observations which prove that nature in some cases had succeeded in forming an artificial passage for the fœtus, and that, in other cases, the fœtus had sojourned more than twenty years in the interior of the abdomen.

#### *Of the rupture of the vagina.*

The rupture of the vagina, according to professor Dubois,

is certainly more frequent than that of the womb, with which it is very frequently confounded, although it be very easy to distinguish them. For, the rupture of the womb diminishes as the organ contracts, while that of the vagina always preserves the same form and extent.

The rupture of the vagina most commonly occurs at the place of its union with the uterus. Its rupture is most frequently transverse.

Should the foetus have passed through this rent, into the abdomen, you will be able, since the opening always remains the same, to introduce the whole hand into the cavity of the peritoneum, to return the child, and deliver by the feet.

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#### OF EXTRA-UTERINE PREGNANCIES.

*Definition.* Those pregnancies are called extra-uterine which occur out of the cavity of the womb.

*Kinds.* We generally distinguish three kinds, viz.: that of the tubes, of the ovaries, and of the abdominal cavity. Professor Desormeaux admits a fourth, which takes place in a cavity formed in the body of the uterine tissue.

*Signs by which they are to be distinguished from uterine pregnancy.*

They are divided into *rational* and *sensible*.

*The first* are not to be depended upon, since they may be the same as in uterine pregnancy.

*The second* can only be perceived in the fourth or fifth

month; they are acquired by an examination per vaginam, and are principally drawn, first, from the development of the abdomen, which sometimes presents certain peculiarities; it is more elevated towards one of the iliac fossæ or towards the umbilicus; its distention is unequal; secondly, from the movements up the fœtus, which may be felt through the pariete; thirdly, and above all, from the small volume which the womb presents considered in relation to the presumed period of the pregnancy.

*Can extra-uterine pregnancies be distinguished from one another?* Professor Desormeaux thinks it is impossible to distinguish whether the fœtus be in the tube, in the ovary, or in the cavity of the peritoneum. Happily this distinction is of little importance, for the conduct to be observed in all these cases is precisely the same.

*Termination.* Nature has sometimes sufficed to rid the woman of an extra-uterine pregnancy; but, for a few fortunate cases which there are on record, how many are there not which attest that these pregnancies for the most part terminate fatally both for the mother and the child!

*Indications to be fulfilled.* Some surgeons, among whom we remark Sabatier and Levret, fearing the hemorrhage, which is the inevitable consequence of the separation of the placenta, have advised us to abandon the woman to the resources of nature. But is it not more reasonable to have recourse to the operation of gastrotomy, since numerous observations prove that, by means of this operation, we have been enabled to save both mother and child?

#### OF GASTROTOMY.

*Definition.* The name of gastrotomy is generally given

to an incision of the abdominal parietes in some part of their extent.

*Necessary instruments and dressings.* The same as for the cæsarean operation.

*Place of election for practising the operation.* The spot where gastrotomy ought to be performed is determined by the kind of extra-uterine pregnancy. Has the child taken its growth in the abdominal cavity, you must cut, says M. Capuron, in the spot which corresponds to the linea alba. Has it developed itself in the tube or in the ovary, you must cut on the side where the extra-uterine tumour is found. But if the head, after being engaged in the excavation of the pelvis, should happen to project into the vagina, you must cut on the tumour, through the corresponding part of the canal, and extract the fœtus and its appendages through the natural passages.

*The proper time for performing the operation.*

*Time of necessity.* The sudden passage of the fœtus into the abdomen through a rent in the womb, its death, and the accidents which it may occasion, obliges us to the immediate performance of the operation.

*Time of election.* If none of those accidents that we have just mentioned should occur, which is the desirable moment for performing the operation? Must we wait the efforts which nature makes at a certain period? Or should we rather anticipate them? Opinions are divided on this point. However, it seems more natural to anticipate the efforts of nature, and thus prevent the accidents which are so frequently the consequence.

*Method of operating.* It is precisely the same as for the cæsarean operation; but instead of opening the womb, we penetrate into the kind of cyst, which contains the product of conception. The fœtus ought to be extracted in the same manner as after the cæsarean operation.

The extraction of the placenta is without doubt the most difficult as well as the most dangerous part of the whole operation; for its separation must necessarily give rise to a hemorrhage which could not be staunched like that of the womb, by the contraction of the part upon which this body was implanted. However, if we reflect, as professor Desormeaux remarks, that in certain cases the placenta has been found so thin that it might be taken for a membrane, and its vessels so small, that it was scarcely possible to trace their course with the scalpel, you may imagine that this separation is not always so dangerous as it is thought; and besides, there can be no objection to leave this body and wait its natural separation, when it presents at the wound of the abdominal parietes.

*Treatment after the operation.*

When you practise this operation, it is of the greatest importance to induce the woman to nurse; by this means you counterbalance the irritation which almost always takes place towards the peritoneum as the consequence of this operation; for, this inflammation constitutes one of the most grievous accidents which we have to encounter. You must take care to keep the wound open, so that the extravasated fluids of the abdomen may escape, and to inject from time to time into the cavity, so as to force them out and thus prevent their absorption.

*The general treatment* is the same as after the cæsarean operation.



#### FOURTH SECTION.

#### OF THE ARTIFICIAL OR PRETERNATURAL DELIVERY OF THE AFTER-BIRTH.

*Definition.* We call that deliverance\* artificial which cannot be confided to the efforts of nature, and which requires the aid of art.

To facilitate the understanding of what we shall have to say in relation to this deliverance, we mean in the first place to make a few remarks on the mechanism of natural deliverance.

The mechanism of deliverance, according to professor Desormeaux, presents three distinct periods. In the first, the placenta is detached from the internal surface of the womb; in the second, it is pushed out of the cavity of this organ into the vagina; in the third, it is expelled altogether.

#### MECHANISM OF NATURAL DELIVERANCE.

Natural deliverance is labour on a smaller scale.

In the happiest cases, in proportion as the placenta is detached, it rolls on its axis in the form of a convalated wafer, and comes to present, at the orifice of the womb, the summit

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\* DELIVERANCE means the passage or the exit of the after-birth.

of the cone which it represents. Impelled by the contractions of the uterus, it soon escapes through the neck, following the axis of the superior strait. Arrived in the vagina, it is quickly expelled out of the vulva, following the axis of the inferior strait. Here it is no longer the contractions of the womb which force the placenta out of the parts, but simply, as observes professor Desormeaux, the falling down of this organ. The membranes are the last to escape.

Sometimes the placenta, instead of offering its edge, presents its foetal surface; in this case the deliverance is a little more difficult.

#### OF ARTIFICIAL DELIVERANCE.

*General causes.* Hemorrhage, convulsions, syncopes, inertia of the uterus; spasmodic contractions of its neck, unnatural adherence of the placenta, encysted placenta, its insertion upon the neck of the uterus, abortion, plurality of children.

Among all these causes, some, such as hemorrhage, convulsions and syncopes, require a prompt deliverance; while others, such as inertia of the womb, unless it be accompanied by hemorrhage, spasmodic constriction of its neck, preternatural adhesions of the placenta, &c., permit or oblige us to retard deliverance.

#### *Of the manner of effecting artificial deliverance.*

One of these two cases must occur: either the placenta is detached, or it is still adhering to the womb.

*In the first case,* if the umbilical cord still exists and possesses sufficient strength, the deliverance is in general easy

enough. To effect it, it will suffice to pull on the cord in the direction of the axes of the pelvis; and for this object, at the same time that you are pulling with one hand upon the portion of the umbilical cord which is without, you are to introduce into the vagina, and above the cord, the index and middle fingers of the other hand, for the purpose of forming with the cord a pulley which will enable you to direct your first tractions in the course of the axis of the superior strait.

When the placenta gets into the vagina, you must begin to direct it in the axis of the inferior strait, by raising your hand, and by carrying it alternately from one thigh to the other. When it presents at the vulva, the accoucheur is to place one of his hands on the perineum, to support it, as well as to receive the after-birth, which he rolls on its axis, and without removing it from the parts of generation. By this last manœuvre, he obliges the membranes to form themselves into a kind of cord, by which you are better enabled to judge of their complete extraction.

*In the second case*, that is to say, when the placenta is still adhering to the internal surface of the uterus, if pulling on the cord has not sufficed, you must by all means introduce one of your hands into the organ, in order to effect its separation. If the cord still exists, it will serve as a guide to the hand, which should be introduced according to the same rules and with the same precautions as in preternatural labours.

When your hand is in the womb, if you find a part of the placenta detached, insinuate your fingers between that part and the internal surface of the womb, until the separation be completed. Should the placenta be still adhering in its whole extent, you must begin by detaching one of the points of its circumference, and then proceed as above. When it

is adhering only by its circumference, its middle portion being detached, professor Desormeaux advises with Baudelocque to pierce its centre and to introduce your fingers through the opening, so as to complete its separation with greater facility.

In case a portion, or even the whole of the after birth, should adhere too firmly to be detached by the method we have just described, it would be much better to leave it as it is than to persist in endeavoring to extract it.

When you have detached the placenta, draw it out with your hand, taking care to bring along with it the portions which may be isolated as well as the clots which you will find in the uterus. (M. Desormeaux.)

*Nota.* In the deliverance which follows an abortion, as it is impossible to introduce the hand into the uterus, you must, in case of accidents, seize the placenta with two fingers or with the abortion (*a faux germe*) forceps of Levret.



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## ERRATA.

- Page 19, line 26, for *actebalum*, read *acetabalum*.  
 “ 56, “ 23, for *superior strait*, read *inferior strait*.  
 “ 78, “ 2, for *summit of the head*, read *crown of the head*.  
 “ 87, “ 11, for *stirnum*, read *sternum*.  
 “ 159, “ 6, for *movements up the fœtus*, read *movements of the fœtus*.  
 “ ib., “ 7, for *pariete*, read *parietes*.  
 “ 162, “ 21, *convalated wafer*, read *convoluted wafer*.





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