

A manual of midwifery, or, Compendium of gynaecology and paidonosology : comprising a new nomenclature of obstetric medicine, with a concise account of the symptoms and treatment of the most important diseases of women and children, and the management of the various forms of parturition / by Michael Ryan.

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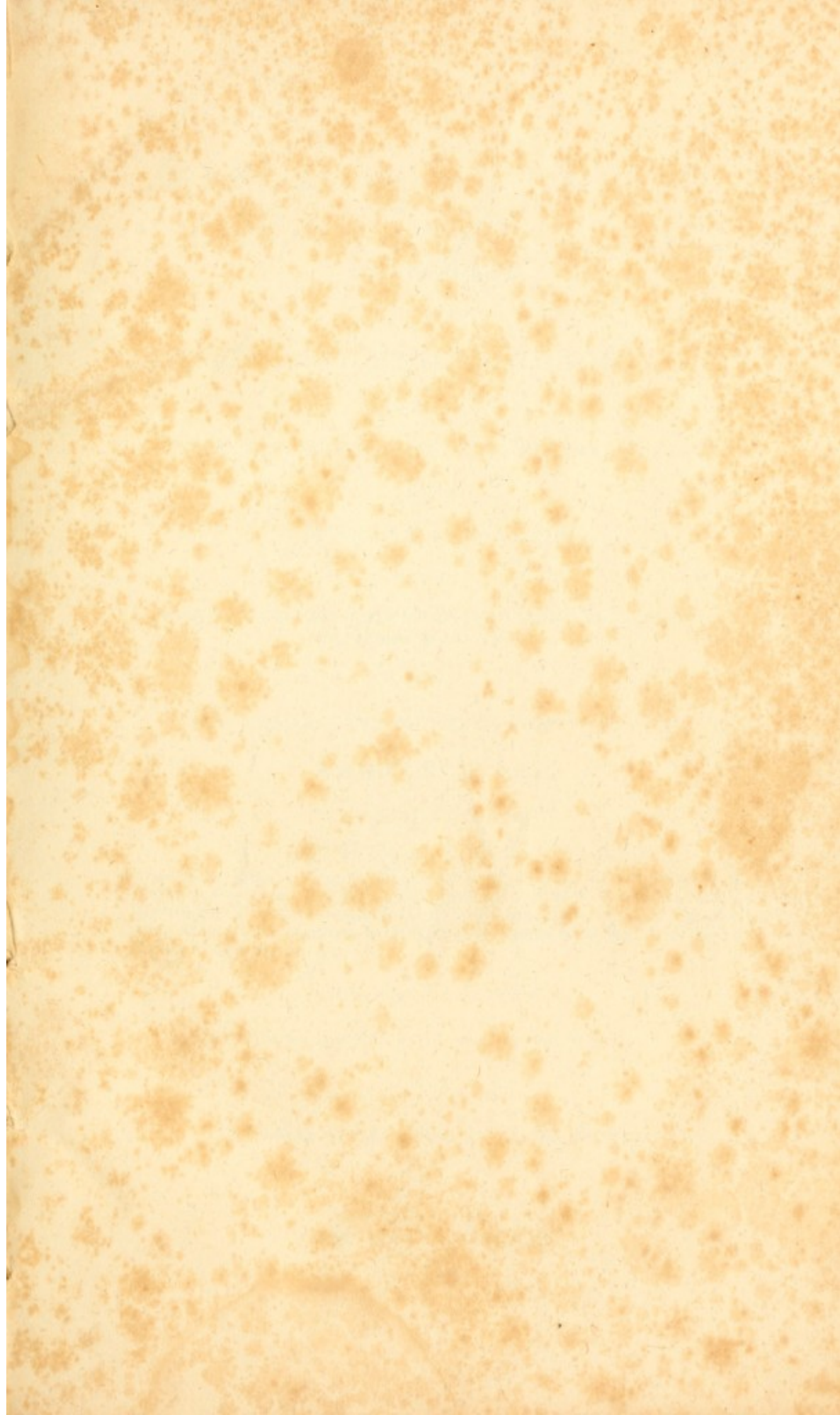
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A

MANUAL OF MIDWIFERY,

A. M. or H. Hungerford

COMPENDIUM

OF

GYNÆCOLOGY AND PAIDONOSOLOGY;

COMPRISING A

NEW NOMENCLATURE OF OBSTETRIC MEDICINE,

WITH A

CONCISE ACCOUNT

OF THE

SYMPTOMS AND TREATMENT OF THE MOST IMPORTANT DISEASES
OF WOMEN AND CHILDREN,

AND

THE MANAGEMENT OF THE VARIOUS FORMS OF

PARTURITION.

BY MICHAEL RYAN, M. D.

Member of the Royal College of Physicians in London; Lecturer on Practice of Medicine, Obstetrics, and Medical Jurisprudence; Member of the Council, and Secretary of Foreign Correspondence of the London Medical Society; Member of the Council, and Secretary to the Medical Committee of the Medico-Botanical Society of London, &c. &c.

ΠΕΡΙ δε της γυναικείας φύσεως καὶ νοσημάτων τα δε λεγώ.

ΙΙΙΙ.

FIRST AMERICAN FROM THE THIRD LONDON EDITION.

BURLINGTON:
SMITH AND HARRINGTON.

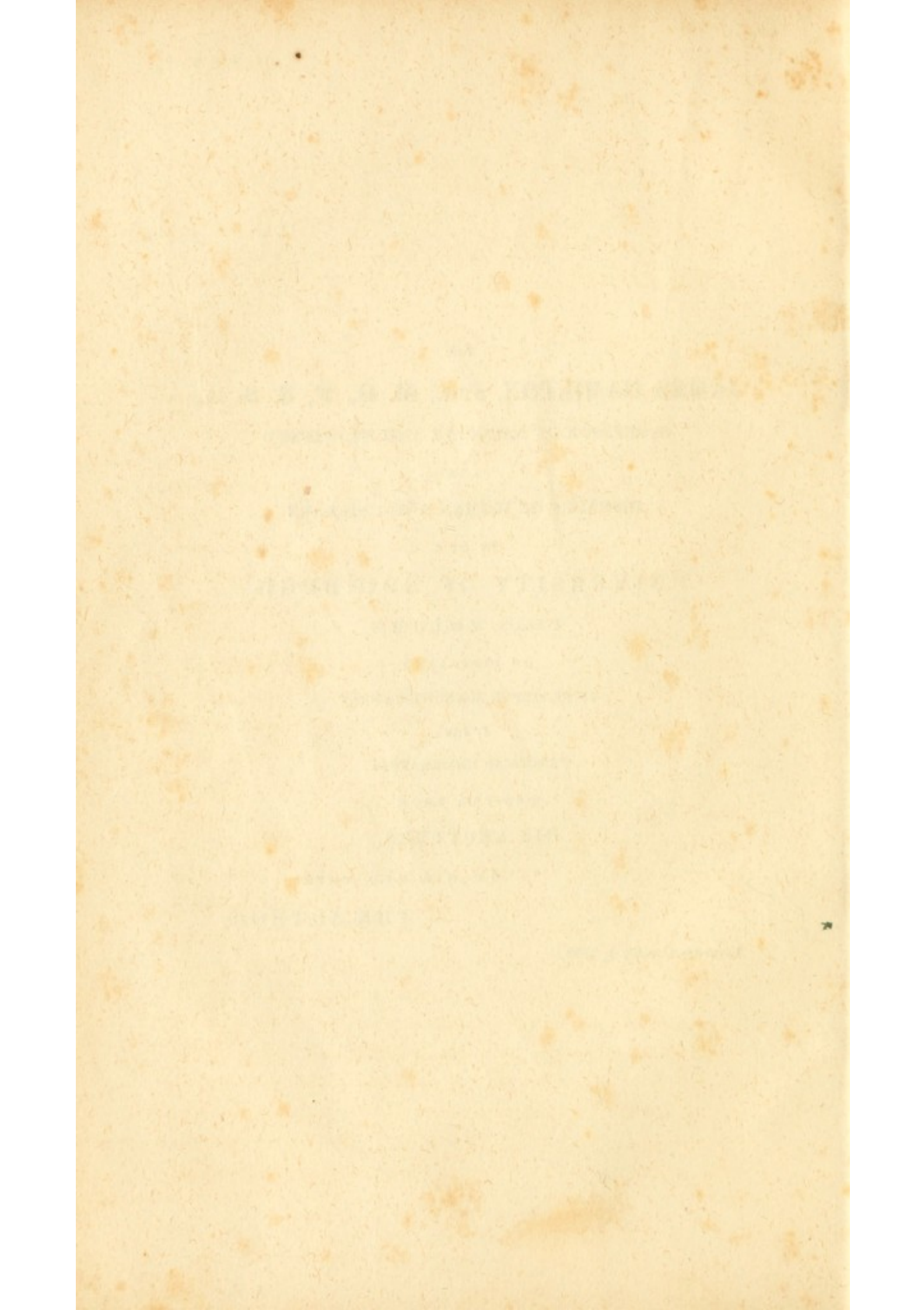
1835.

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Chas. H. Thompson

TO
JAMES HAMILTON, JUN., M. D., F. R. S. E.,
PROFESSOR OF MEDICINE AND MIDWIFERY
AND
DISEASES OF WOMEN AND CHILDREN
IN THE
UNIVERSITY OF EDINBURGH;
THIS VOLUME
IS INSCRIBED
IN GRATEFUL ACKNOWLEDGMENT
OF THE
PRACTICAL INFORMATION.
DERIVED FROM
HIS LECTURES,
BY HIS OLD PUPIL,
THE AUTHOR.

LONDON, *October 1, 1831.*



P R E F A C E.

It has been long remarked that all our knowledge of any science might be easily compressed into a small compass, by confining it to a simple enunciation of fact and inference. It appeared to me that this principle might be applied with peculiar advantage to the Science and Practice of Obstetricy; and it was by a rigorous adherence to it, that I have accomplished this work. My object was to concentrate facts and opinions, to describe them in language as simple as possible, under such arrangement and classification as would afford the easiest reference to the immediate object of research. I experienced the want of such a work during the earlier years of my practice; and considered it a great desideratum. With this view, the present "Manual of Obstetricy" was compiled. In making this statement, I wish to be distinctly understood, as by no means insinuating that the elaborate works of preceding writers were imperfect. They were, however, too voluminous for portability, and not one of them with which I am acquainted, possesses a good index. The best of them contains much valuable information, of which there is no account in the contents or index, and which is unobtainable on a sudden emergency. I have, therefore, endeavoured to remedy this defect, by arranging an alphabetical index; which from its comprehensiveness, approaches in some degree to a Dictionary of Obstetricy; which will, perhaps, prove convenient and useful. Encouraged by the very flattering approval which the former editions of this work have received from the profession in every part of Europe and in America, I have spared no pains in preparing this impression for the press. Every line of this Third Edition has been re-written; the errata, both typographical

and editorial, have been carefully revised, and such extensive additions made, as to render the volume double its former size. I have referred to the last editions of the standard works on Obstetrics, especially to those of Professors Hamilton, Denman, Burns, Blundell, Baudelocque, Gardien, Capuron, Maygrier, Velpeau, Duges, Hatin, Dewees, Carus, and numerous others, collated all important facts, and condensed them. Many are the discrepancies in the opinions of various authors; many the errors which have been committed and carelessly copied into successive treatises, and which, therefore, require to be exposed and corrected. In endeavouring to correct errors, which is always an ungracious task, it was my intention not to be too fastidious, nor to find fault without cause, merely to render this book different from those that preceded it; on the contrary, I have maturely considered the arguments for and against every point which appeared doubtful or dangerous; consulted the best authorities upon the subject; and having given an impartial view of the matter, offered my own opinion, and left the reader to form his own conclusion. In publishing this compendium, my object has been to present students and young practitioners with a concise, yet comprehensive, view of the exact state of Obstetric knowledge, by compressing into a small space all that is essential to be known upon the subject. The highly favourable reception which this volume has received, as appears by recorded reviews, and could be attested by numerous private testimonies from many of the most distinguished and celebrated Obstetricians in these and foreign countries, is the best proof that I did not err in judgement, as some persons imagined, when on its first appearance I ventured to predict success. The appearance of a Third Edition in three years is a further proof of the utility of the work. It is intended as a pocket companion for young and inexperienced Obstetricians. It contains a every fact of importance, and supplies the deficiencies of the small publications on this branch of science. In the smaller works, the Female Diseases of the Genito-Urinary Organs are not described: Geneseology, or the Physiology of Reproduction; and Embryology, or the Physiology of the new being,

are unnoticed. Encyonosology, or Diseases of Pregnancy ; and Paidonosology, or Diseases of Infants and children, are omitted. To obviate these defects, the present work was undertaken ; and how I have supplied the deficiencies, is not for me to decide.

Anxious to maintain the importance and utility of this branch of medicine, and to promote its cultivation, I have ventured to propose an improved nomenclature, which I am proud to state is approved of by all men of classical attainments, and is now universally adopted by all scientific practitioners, in these and other countries. The terminology I have proposed is the following, and I shall insert it in the order of my classification of the subjects comprehended in the terms obstetrics, midwifery, and diseases of women and children.

Gynæcology, gynæcologia (γυναικεῖος feminine, λόγος discourse,) history of woman.

Gynæcotomy, gynæcotomia (γυνή woman, τέμνω I cut,) anatomy of woman.

Gynæcophysiology, Gynæcophysiology (γυνή woman, φύσις nature, λόγος a discourse), physiology of woman.

Geneseology, geneseologia (γένεσις, γεινομαι I am born, λόγος a discourse), history of generation or procreation.

Embryology, embryologia (ἔμβρυον embryo, fœtus, λόγος a discourse,) history of the physiology of the new being.

Tokology, tokologia, (τοκος birth, λόγος discourse,) history of parturition.

Gynæcopathology, gynæcopathologia (γυνή woman, πάθος disease, λόγος discourse), history of the diseases of woman.

Encyonosology, encyonosologia (ἐγκυος pregnant, νόσος disease, λόγος a discourse), diseases of utero gestation.

Eutocia (ευ well, τοκος parturition,) natural labour.

Dystocia (δύς difficult, τοκος parturition), difficult labour.

Chiragotocia (χειραγωγεω to draw with the hand, τοκος labour,) manual parturition.

Organikotocia (ὀργανικὸς instrumental, τοκος labour,) instrumental parturition.

Embryotomy, embryotomia (ἐμβρυον embryo, τεμνω I cut), dismemberment of the fœtus.

Cephalotomy, cephalotomia (κεφαλή head, τεμνω I cut), perforation of the head.

Craniotomy, craniotomia (κράνιον head, τεμνω I cut,) perforation of the head.

Gastrotomy, gastrotomia (γαστήρ belly, τεμνω I cut,) incision of the abdominal parieties.

Gastrohysterotomy, gastrohysterotomia (γαστήρ belly, ὑστέρα womb, τεμνω I cut,) gastrohysterotomy, Cæsarean incision.

Lochionosology, lochionosologia (λοχός a woman in childbed, νόσος disease, λόγος disease), history of diseases of puerperal women.

Paidonosology, paidonosologia (παιδός child, νόσος disease, λόγος discourse,) history of diseases of children.

In addition to these terms, I was the first to propose the word obstetrician, in place of man-midwife and accoucheur, which was soon sanctioned by my distinguished friend Dr. Blundell, and is now generally adopted.

I have also introduced the word Obstetricy in the London Medical and Surgical Journal (1828), and this is now in use. M. Velpeau published his elaborate work, *Traité Elementaire de l'Art des Accouchemens, ou Principes de Tokologie et d'Embryologie*, in 1829, and proposed the word *Obstetricie* for *Obsterique*; and in a subsequent production (*Remarques sur les Positions Vicieuses et de la Version du Fœtus*, 1830), does me the honour of further notice. M. Martinet, whose works on Pathology and Therapeutics are so highly estimated in this empire as well as in his own country, has approved of my nomenclature, as appears in his review of the last edition of this work, which will be found at the end of this volume. It is but justice to state, that the scientific portion of the profession in this united kingdom entertain the same favourable opinion; but there are a few persons who, from prejudice, antiquated notions, or ignorance, tenaciously support the old nomenclature, and prefer such indelicate barbarisms as man-

midwife, accoucheur, anatomy of the female organs of generation, &c., to the more scientific terms.

The work is divided into four Parts, and each is substituted into Articles and Sections.

The *First Chapter* is entitled Gynæcotomy, and comprises the Anatomy of the Sexual Organs of Women.

The *Second Chapter* is headed Gynæcophysiology, and is divided into four Articles ; 1. Nubility ; 2. Utero-gestation, or Pregnancy ; 3. Delivery ; and 4. Lactation, or the Period of Suckling.

The *Third Chapter* is entitled Gynæcopathology, and is divided into four Articles ; 1. Parthenosology, or diseases of nubility, or of women in the unimpregnated state ; 2. Encyonosology, or diseases of utero-gestation or pregnancy ; 3. Dystocia, difficult labour, or morbid parturition ; 4. Lochionosology, or diseases of puerperal women.

The *Fourth Chapter* is designated Paidonosology, or diseases of infants and children.

Having now given the reader an idea of the plan and execution of the work, I have only to solicit his indulgence for whatever imperfections may occur, for some are inseparable in a production of this kind. I owe it to myself to mention, that no work was ever arranged amidst a greater multiplicity of engagements. I do not mention this as a boast, as my numerous friends and pupils can authenticate the truth of my statement. Actively engaged in practice, in lecturing, in conducting a periodical, and in arranging my work on Medical Jurisprudence, while my publishers urged me to supply this edition, I could have had little time to attend to the beauties of style and composition. The desire of being concise has sometimes induced me to use elliptical expressions; but I trust they are sufficiently perspicuous. I have the great satisfaction, that the best judges have pronounced the work free from practical errors. I hope there will be found so much useful and valuable information in it, as will counterbalance its defects, and introduce it as a text book, a book of reference and consulta-

tion; nor does this hope originate in presumption or arrogance; the favourable reception which my other works have already experienced from a liberal profession, fully justifies such an expectation, as I am conscious that I spared no exertions to render this equal, if not superior to my other productions.

In conclusion, I beg to express my acknowledgments to the numerous authors whose works I have laid under contribution; and to assure every one of them whose opinions I may have questioned, that my only motive was, to promote the real objects of our Science—the interests of humanity.

After the preceding prefatory remarks were in print, the following notice from the able Editor of the *Medico-Chirurgical Review* (October 1, 1831,) appeared, which confirms my assertion in the paragraph before the last. “We have, indeed, been astonished that Dr. Ryan has been able to dedicate so much time to laborious research which this volume (*Manual of Medical Jurisprudence*, published September 1st,) displays, considering his other avocations, as an editor, a lecturer, and a practitioner.” The reader will find further remarks of a favourable kind from Dr. Johnson, in the testimonials annexed; and I may inform him, that I accomplished both works at the same time with the *London Medical and Surgical Journal*, by abridging the ordinary time allotted to repose. This is my explanation. I am, however, amply compensated, for the research which was really laborious, in collecting the materials for this and my other work, when my efforts are fairly estimated by the first and best Medical Reviewer in these kingdoms, or indeed in existence. If my labours tend to diffuse information, and thereby assist in the promotion of science, and the alleviation of human suffering, my object will be obtained, and I shall have no reason to regret the hours I have devoted, with the aid of the midnight lamp, to the arrangement of this or my other productions.

It may be remarked by some cynical critics, that I have estimated this production too highly. They would do well to look nearer home; and before they discover the mote in a neighbour's

eye, let them not overlook the very large beams in their own. However egotistical they may declare me, they should remember how fairly this charge applies to some of themselves, when they puff off their own vapid and effete remarks, which are generally esteemed contemptible by all who are capable of forming an opinion upon them. They should have common sense enough to be a little more cautious in condemning the original labour of others, which are approved by their superiors, while they have produced nothing original themselves.

MANUAL

OF

MIDWIFERY.

THE science and art of obstetrics, including diseases of women and new-born infants, form a very important branch of medical education, and I have proposed to denominate them obstetricy (*ars obstetricia*). This title, though novel in this country, is not sufficiently comprehensive, as we usually mean by it, not only what refers to parturition, but all the phenomena which belong to women, and which are much better expressed by the word gynæcology, a term proposed in Germany by Professor Carus, and which I shall adopt from its accuracy.

The terms midwifery and obstetrics include the anatomy, physiology, pathology, and therapeutics peculiar to women, together with the science of reproduction, its phenomena, its consequences, parturition, puerperal, and infantile diseases. These terms are included with the exception of the last, in the word gynæcology, and I have expressed them in the following language in the first edition of this work : gynæcotomy, gynæcophysiology, parthenosology, geneseology, encyonosology, tocology, lochianosology, and paidonosology. Most of these terms are now adopted throughout the old and the new world. I also endeavoured to supply the place of the barbarisms man-midwife, midwifer, accoucheur, and physician accoucheur, and proposed the word obstetrician,—a term sanctioned by Dr. Blundell, and all scientific practitioners. It is preferable to obstetric practitioner. The high terms of eulogy in which the nomenclature above-mentioned has been spoken of, lead me to continue it, and to endeavour to render it more perfect in the following pages.

CHAPTER 1.

GYNÆCOTOMY.

Gynæcotomy comprehends five principal divisions: 1. the pelvis, and its annexions; 2. the uterus; 3. the internal appendages of the uterus; 4. the external appendages; 5. the mammæ.

ARTICLE 1.—OF THE PELVIS OR BASIN.

The obstetric properties of the pelvis can only be learned on that of an adult female, that is, of a subject eighteen or twenty years of age, which is that period, in temperate climates, at which a woman is capable of becoming a mother, with safety to herself and to her infant. At an earlier period of life [the pelvis is not sufficiently strong or developed, to bear the burthen of pregnancy, or force of parturition; and, at a later period, the bones which form the osseous canal are too firmly articulated, and their ligaments too firm and strong, to allow the commodious and easy passage of the infant. Under both of these circumstances, women purchase the pleasures of maternity at a very dear rate, generally at the risk of their own and their infants' lives. We therefore take a pelvis at the adult age as a standard one.

Section 1.—Of the Bones which compose the Pelvis.

The pelvis or Basin, in the human subject, is situated below the vertebral column or spine, which it supports, and above the inferior extremities which support it. It is a bony canal, which forms the lower part of the abdominal cavity, contains that portion of the intestinal canal called the rectum, and also the the bladder and internal organs of generation. It is said to be the centre of gravity of the body, and affords a passage to the principal emunctories which convey the residual impurities of digestion, the urinary and uterine secretions, various morbid growths both fluid and solid, the process of generation, the progress of the infant during parturition, and the puerperal discharge. From its subserviency to all these important offices, it is necessary that it should be permanently fixed and immoveable, especially on account of the great

force applied to its parietes by the mechanism of parturition. The direction of the pelvis will vary according to the different attitudes of the body ; it is oblique superiorly and inferiorly, and anteriorly and posteriorly, and becomes nearly vertical and horizontal, according as the female assumes the sitting or recumbent posture. The obstetrician must study this part distinct from the rest of the body, as one intimately concerned with his art ;—as the book of nature, which ought to be consulted, and which affords the best precepts for practice. We should therefore study its regions, dimensions, directions, planes, axes, structure, connexions, and varieties. The knowledge of these properties is indispensable to the obstetrician who wishes to practise dexteriously the manœuvres relative to his art, as it would be extremely difficult, if not impossible, to pass the hand or an instrument to extract the infant, without knowing the direction he was to introduce and withdraw it. Without this knowledge a man might practice obstetrics for thirty or forty years, and be a most ignorant, inexperienced, and injudicious practitioner. Such a man could not perform a manual or instrumental operation with the slightest safety,—and yet how many thousands of such men are in practice in this united empire !

The adult female pelvis is composed of four pieces of bone, the sacrum and coccyx posteriorly, or on the median line, and the two ossa innominata, vel coxalia, on each side and anteriorly. The ossa innominata are composed of three bones on each side in the foetus, os ilium, os ischium, and os pubis, and these are described separately by obstetricians.

The *sacrum* is the most posterior bone of the pelvis, is situated between the last lumbar vertebra and the coccyx, and is wedged between the ossa ilia on each side. It resembles a triangular pyramid reversed, having its base superiorly, attached to the lumbar vertebra, and from its union anteriorly a projection is formed, called the sacro-vertebral point or angle, or, in obstetric language, the promontory of the sacrum. The anterior, internal, or pelvic surface of the sacrum, is more or less concave, and presents four or five quadrangular spaces with transverse lines, and five foramina on each side near the central line of the bone, converging inferiorly, and destined for the passage of the anterior crural nerves. There are small projections between each row of foramina, for the attachment of the muscles. The concave surface of this bone is

called, in obstetric phraseology, the concavity or hollow of the sacrum. There are also to be seen two rows of foramina, for the passage of the branches of the posterior sacral nerves. Here are two other small triangular spaces, which terminate the spinal canal of this bone. We should also recollect that the eminences afford attachment to the posterior sacro-iliac ligaments. The sides of the sacrum are articulated with the coxal, or nameless bones, and the union is called the sacro-iliac junction, or symphysis, or synchondrosis. Inferiorly, the sacrum gives insertion to the large and small sacro-sciatic ligaments. The summit is elliptic and a little convex, presenting a cartilaginous surface, for the union with the coccyx. The sacrum has been considered a simple prolongation of the spine, and is formed before birth by five pieces of bone, like vertebræ, hence called false vertebræ. We can readily observe as many points of ossification. The breadth of the base of this bone is four inches, that of its apex two inches, and its length four inches and a half.

The *coccyx* is considered by many an appendix to the sacrum, and is of a pyramidal or triangular shape, its base articulated to the apex of the sacrum, its apex affords insertion to the sphincter ani. It is composed of three or four pieces at birth, which are articulated to each other by cartilage, and in some adult subjects are not perfectly ossified, and hence admit of a regressive motion during parturition. This motion is denied altogether by many eminent teachers. M. Velpeau asserts that the coccyx can move on the sacrum with most women until a late period in life, while Drs. Hamilton and Denman assert the contrary. The anterior aspect of this bone is concave, and supports the end of the rectum; while its posterior surface is convex and rough, and is separated from the integuments by the posterior sacro-coccygeal ligament only. Its sides afford attachment to the sciatic ligaments, coccygei muscles, sphincter, and levator ani. Dr. Denman heard the fracture of this bone and its separation from the sacrum; inflammation supervened, and it was finally expelled. I have met with some cases of this kind, caused by external injury, and one case was observed by some of my pupils at the Central Infirmary. The nature of the injury can be often ascertained by external examination; but, in some instances, the index finger must be passed into the rectum, and the thumb applied, in apposition, on the sacro-coccygeal joint externally, when the state of the joint can

be readily detected. When the sacro-coccygeal joint is much injured, we may expect rapid inflammation and its consequences; and in such cases leeches, cupping, purgation, and the antiphlogistic regimen, should be speedily employed. Dr. Dewees, the eminent obstetric professor, in the university of Philadelphia, describes a most severe pain of this part, after parturition, which he could only subdue by large doses of comphor, opium, and oil of juniper, and which may be induced by the contusion or dislocation of the joint, during the pressure of the infant's head. If the os coccygis admit of regressive motion, of which I have no doubt, it will facilitate the passage of the infant's head, during labour, by assisting in enlarging the cavity of the pelvis.

Ossa Innominata, Ossa Coxalia, haunch bones.—These bones could not be compared to any known body by the older anatomists, and hence called nameless bones. The French writers, Capuron, Maygrier, and Velpeau, adopt the term of Celsus, and call them the coxal bones, describing each as a single bone, as the three divisions apparent in infancy cannot be traced in the adult. In this country we retain the names of these divisions, and describe each innominatum as consisting of three parts—the os ilium, os ischium, and os pubis.

The *ilium* is the most posterior and extended of these bones; its form is somewhat triangular: it presents two surfaces, an external, and internal, three sides and three angles. The external surface is both convex and concave, and is called the *dorsum* by anatomists. The internal surface is called, very improperly, the *costa*. The superior border of this bone resembles an italic *S*, and is called the crest of the ilium. From its posterior third towards its termination is a small projection, from which a ligament runs to the transverse apophysis of the last lumbar vertebra. Towards the termination of the anterior border are two eminences, the anterior superior and inferior spinous process of the ilium; on the opposite end of the bone is the posterior superior spinous process, and the posterior inferior process, which is united to the sacrum. The bone is prolonged posteriorly, and forms the great and small sciatic notches. The crest of the ilium, at the anterior side, forms an obtuse angle, which is the superior anterior spinous process; the next angle is formed by the inferior anterior process, and the last by the superior posterior process. These angles or points are worthy of attention to the general anatomist, but, I confess, I am unable to com-

prehend of what use the knowledge of them is to the obstetrician; and I should have omitted them, had they not been described by Drs. Burns, Capuron, Velpeau, Duges, and many others. Drs. Blundell and Maygrier omit them and their valuable lectures.

The *pubis*, or share-bone, is so called from the attachment of the genital organs to its anterior part; is divided into two branches, the superior or ileopubic or superpubic; and the inferior, or ischioepubic or subpubic. The superior branch is nearly triangular in its middle part, is flattened as it becomes enlarged towards its anterior extremity, and is thickened towards the ilium; and hence the superior surface is slightly sinuous and concave; is larger behind than before; and thus the internal and external surfaces present a contrary disposition. The subpubic branch descends obliquely and laterally, it is flattened on both its surfaces, and is larger at its commencement than termination; it is about seven or eight lines long. Each os pubis is united with its fellow in front, and the junction is named the symphysis pubis. The arch formed inferiorly under the symphysis, by the bones on each side, is named the arch of the pubis.

The *ischium* presents two surfaces, two extremities, and two borders. The external surface of this bone is convex and irregular, and forms a part of the acetabulum. The internal face is concave, and offers an inclined plane above downwards, behind backwards, and without and within; and this plane should be recollected by obstetricians, as the child's head sweeps along it, on descending to the perineum. The superior extremity of the bone is attached insensibly to the ilium; the inferior is called the tuberosity of the ischium, and is surmounted by a small branch which joins the ramus, or branch of the pubis. The anterior internal border concurs in forming the oval or subpubic foramen; and the posterior or external border is concerned in the sacro-ischiatic notch. This last, at its inferior third, offers a triangular eminence, oblique behind and inferiorly, which is called the spine of the ischium.

Section 2.—Of the Articulations of the Pelvis.

The articulations of the bones of the pelvis do not differ from those of the same species in the other organs of the animal economy. They are of a mixed kind, according to ancient authors, and partake of synarthrosis, and more so of amphiarthrosis, which is the articulation by continuity of the moderns. The articula-

tions of the pelvis are generally called symphysis—as the symphysis of the pubis, of the sacrum, and ilium, of the sacrum and coccyx, and of the sacrum and lumbar vertebra. Velpeau asserts there are but three pelvic joints, the pubic and the two sacro-iliac, omitting the sacro-coccygeal; but afterwards he describes it and the sacro-lumbar, which he says constitute two amphiarthroses. It is necessary to examine the pelvic joints in the recent subject in order to understand their structure accurately, when we discover the following construction:

The joints of the pelvis are the two sacro-iliac posteriorly, the sacro-coccygeal inferiorly and the pubic anteriorly. The sacro-coccygeal and pubic joints are occasionally inflamed by the injury which they are destined to sustain during the parturition, and their surfaces may be entirely separated from each other. The symphysis pubis may also separate, and when such injury occurs, the most active treatment is required. Happily such separation is of comparatively rare occurrence; but many examples of it have been recorded and some cases have fallen under my own observation. The sacro-iliac symphysis may be similarly affected, but they seldom separate, though there is evidence that they are occasionally relaxed. Speaking generally, however, inflammation, abscess, or separation of the pelvic joints, is of rare occurrence. When these affections do occur, they are to be treated upon the ordinary principles of surgery. It is scarcely necessary to observe, that injuries of cartilages and ligaments require active treatment. The principal ligaments of the pelvis, in an obstetric point of view, are the internal and external sacro-ischiatic on each side, and the obturator, and these are liable to rigidity or relaxation. The former assist in the formation of the outlet of the pelvis, and in an advanced period of life may offer considerable impediment to the parturient process. The student may be reminded that the pelvis is lined by muscles, arteries, nerves, and lymphatics, contains the uterus and its appendages, the urinary bladder, and rectum; all of which organs may be injured by natural or preternatural parturitions.

Section 3.—Of the difference of the Pelvis relative to Ages, Sexes and Species.

At birth, the pelvis is very straight and elongated, the crest of the ilium rough, and the ilium is almost vertical; the cavity of the pel-

vis is conoid, and not excavated. The lateral diameter is shorter than the sacro-pubic. The pelvic bones are not ossified, but covered with cartilages, to allow of reduction of this cavity by pressure during delivery. It becomes more ossified in two or three years, and is completely ossified about the fifteenth or twentieth year. In the male, the pelvis preserves its infantile properties; it is deeper, its short or sacropubic diameter not more than three inches and the transverse or bisiliac diameter measures four and half; the bischiatic three and a half. The arch of the pubis is short and triangular, not expanded as in the female. The sacrum is less hollow, the bones are thicker and stronger in general, and more solid. The pelvis of the female is broader at the hips, as well as in every hotter part; and here nature seems to have sacrificed the facilities of motion to the advantages of pregnancy and parturition. The articulations of the female are not ankylosed; while they are firmly ossified in the male. The pelvis of the lower classes of animals differ materially from those of the human species, and are so constructed that the lower classes of animals require no aid, and suffer little pain in bringing forth their young. In these animals there is but one axis in the pelvis, the sacrum is almost parallel with the spine, the straits are only slightly inclined, the parietes are of equal depth and of the same length; the ossa innominata are so straight and elongated that there are no iliac fossæ; and hence expulsion of the young is not exposed to the same difficulties as in the human species. We find a vast variety in the pelvic structure of animals, which, as we gradually ascend the zoological scale, becomes insensibly more perfect. Thus the pelvis of the monkey and ourang outang have a strong resemblance to that of the human species; especially we can trace the shades between these and the Boschismans, the Ethiopians, negroes, Malays, Japanese, and Caucasians, the last of which is most different from the other mammiferæ; and thus, we may presume, that parturition is more painful as the species is more perfect, and *vice versa*: a most admirable and singular provision, that the dangers are increased, and most accumulated, according to the perfection and degree of intelligence of the animal. In the kangaroo and other species, marsupia, the pubis is loose, while the pelvis is so narrow in the mole as to be separated during parturition; In the cetaceæ there is scarcely a vestige of it; and in birds, reptiles, and fishes, where eggs are laid, we perceive the pelvis decomposed, and finally to

disappear.—(Wrolick's Essay Fev. Bull. de sciences Med. 1827. Velpeau.)

Section 4.—Of the Deformities of the Pelvis.

The pelvis may be deformed in its brim, cavity, and outlet, and offer serious impediments to the passage of the infant. On the contrary, it may be too capacious, or possess excess of amplitude, thereby affording too ready a passage to the fœtus. In the latter case, delivery will suddenly take place, often unexpectedly, and in extraordinary situations, as in the street, in a stage-coach, in the water-closet, night-chair, or in the sitting-room, before the female can retire to her apartment. The various obstetric works afford ample evidence of this fact; and it is even occasionally attested by the newspapers. Several instances have recently occurred in Dublin, of women having been delivered in the street, on the steps, and in the hall of the hospital.—(Mr. Gregory's Report of the Coombe Lying in Hospital, Dublin Hospital Reports, vol. v. 1830.) It is however of rare occurrence, and unfortunately we see the opposite condition very frequently prevail. Observation abundantly proves that with many women the pelvis retains the form which characterised it during infancy and puberty, and which nearly approaches to that of the male. In fine, every part of the true and false pelvis may be deformed, and diminished in capacity. In some cases the ossa innominata nearly approximate; in other cases, the pubis approaches within half an inch of the sacrum.—(Weideman, Boivin, Jeuffrion, Maygrier, C. Bell, Nægele, Velpeau.)

The inferior strait may be so considerably diminished, that the coccyx will rest upon the pubis, and the ischia approximate towards each other, and there may be every degree of deformity between these extremes. Exostosis may form upon any of the bones of the pelvis, and an immense variety of tumours may be developed in the vagina and internal or external genitals, which will impede parturition.

Section 5.—Of the causes of Vicious Conformation of the Pelvis.

In order to appreciate the causes of the malformation of the pelvis, we should examine them in infancy, at puberty, and at the adult age. During the first seven years, rickets will afford the explanation. When we admit that the softness of the bones pre-

vails throughout the body in rachitis, it is clear that if the infant is placed too much upon the legs, the base of the sacrum must approach towards the pubis, and the acetabula must be directed towards the promontory of the sacrum ; and the sacro-pubic and oblique diameters will be thus diminished. When the infant leans too much upon one extremity, the oblique diameter of one side will be contracted ; when it is allowed to sit too much, the concavity of the sacrum becomes deeper, and the antero-posterior diameters of the superior and inferior straits are diminished ; if it is placed continually on the back, the concavity of the sacrum disappears, so that the sacro-vertebral junction and the coccy-pubic diameter lose their ordinary dimensions ; the transverse diameter will also be affected. It is to be recollected how imperfectly the bones are ossified in case of rickets, and therefore how much they must be influenced by the action of the many powerful muscles attached to the pelvis, especially of those connected with the coxo-femoral articulation. The deformities of the pelvis are caused by partial or general mala-costeon, or mollities ossium, or osteomalaxie, the irregular action of muscles, and the bad position of attitude. Such persons have generally the head and pelvis thrown backwards, and they never can become mothers without the risk of great danger. I need scarcely observe, that in cases of amputation at the upper third of the femur, or the hip-joint, deformity of the opposite side of the pelvis will occur, from the whole weight of the body being principally placed upon the sound extremity. Fractures, when irregularly ossified, luxations, caries and syphilis, will often give rise to serious obstacles to delivery. In conclusion I may observe, that rachitis is the cause of pelvic deformity in young infants ; and after the age of puberty, the chief cause is osteomalaxie affecting the vertebral column, producing spinal curvatures, which cannot exist to any extent without affecting the pelvis very considerably. This fact is attested by the various writers on spinal curvatures. In France, and other countries, it is usual to ascertain the extent of pelvic deformity by instruments called pelvimeters ; but as such are never employed in this country, a description of them is unnecessary. The fact is, deformity can be ascertained much more correctly with the finger than with any pelvimeter. Those persons who labor under spinal and pelvic deformity to any considerable extent, are clearly unfit to enter into matrimonial engagements.

Section 6.—Of the Dimensions of the Pelvis.

DIMENSIONS, DIRECTIONS, PLANES, AND AXES OF THE PELVIS.

The pelvis is divided into an external and internal surface, a base and summit. The external surface serves for the attachment of the coxo-femoral muscles, and is divided into four regions, the anterior, posterior, and two lateral. The internal surface alone is concerned in the mechanism of natural parturition. It is divided into the great, superior, abdominal, or false pelvis; and the small, inferior, or true pelvis. The inferior or true pelvis is divided into the brim or entrance, the cavity and outlet. It contains the internal genito-urinary organs, the rectum, and the hypogastric and sacral vessels and nerves. It is also divided into four regions, an interior, a posterior, and two lateral. The pelvis is again divided into the superior and inferior straits.

The *superior, abdominal, or great strait*, or margin of the pelvis, is the osseous margin which separates the true from the false pelvis, formed by the superior margin of the sacrum, the linea ileopectinea, and the superior margins of the ossa pubis. Its form is variable, frequently oval, cordiform, elliptic, or triangular. It is measured by four diameters; the *anteroposterior*, which extends from pubis to sacrum, and is also named the *sacro-pubic*, the *conjugate* or *short diameter* of the brim,—a *transverse* which extends from one ilium to the other, and hence called *bis-iliac*, and the *two oblique*, which extend from the sacro-iliac symphyses to the opposite acetabula; and these are denominated the *long diameters* of the brim. The antero-posterior diameter measures four inches, according to British and French writers; the lateral or transverse five inches; but it is diminished half an inch on each side in the fresh subject, by the presence of the psoæ and iliac muscles and vessels, and does not really present more than four inches during labor; the oblique, long, or diagonal diameter, measures five inches and a quarter, and is considered the longest by almost all writers. The dimensions are subject to numerous varieties, and are scarcely the same in any two pelves, and should not be understood but in a general manner. There are scarcely two writers who agree in their account of the length of the pelvic diameters. The *inclination* of the superior strait in the erect position is not horizontal; but its posterior part is more elevated than its anterior, so that it is directed from above downwards, and from

behind forwards. It varies from thirty-five to fifty degrees. Its *axis* is represented by an imaginary line, drawn from the umbilicus to the inferior part of the sacrum. The *cavity of the pelvis* is divided into four regions: the anterior, posterior, and two lateral. The anterior region is slightly concave from side to side, formed by the posterior part of the symphysis and body of the pubis. The posterior region is formed by the anterior surface of the sacrum and coccyx, is concave, and presents foramina for the passage of the crural nerves. The lateral regions form a plane, inclined above and inwards, present the sciatic notches, which are converted into apertures by the sacroischiatic ligaments; a square surface which corresponds to the acetabulum, and the sciatic spine more prominent within the pelvis than the parts situated before and behind, offering by this disposition two inclined planes, an anterior and posterior. These planes impress on the head the rotation necessary for replacing its antero-posterior diameter in the long diameter of the outlet or inferior strait. The anterior plane of the side pushes the presenting part of the head under the arch of the pubis, while the posterior forces the front part of the head into the curvature or cavity of the sacrum.

Dimensions of the Cavity of the Pelvis. Antero-posterior diameter.—From the middle of the symphysis pubis to the middle of the sacrum measures about five inches, on account of the concavity of the latter, which affords an inch of depth. The *transverse diameter* measures about four inches and a half. These admeasurements are diminished as they approach the inferior part of the pelvis.

The *depth* of the anterior parietes is about an inch and a half; of the posterior, four inches and a half; and of the lateral parietes, three inches and a half.

The *direction* of the pelvic cavity represents a canal very much curved before, and falling perpendicularly from its axis to its two sides.

Its *axis* is represented by a curved line passing through the middle of the canal following the curvature of the sacrum.

Inferior Strait. The Inferior or Perineal Strait, Summit of the Pelvis or Outlet,—is formed by the point and edges of the coccyx, the edges of the sacro-ischiatic ligaments, the tuberosities of the ischia, and the ischio-pubic branch; it is triangular or cordiform, as it represents the figure of a heart of a playing card.

The inferior strait has four diameters, the antero-posterior, coccy-pubic, or long diameter, which extends from the point of the coccyx to the arch of the pubis; the transverse bis-ischiatic or short diameter, extending from the posterior and internal parts of the tuberosity of ischium to the opposite one; and two oblique diameters which extend from the reunion of the ischiatic and pubic branches to the middle of the sacro-ischiatic ligaments. All these diameters measure four inches; but the antero-posterior is said to measure five inches, on account of the retrocession of the coccyx during labour. The arch of the pubis, or anterior part of the pelvis, is four inches broad at its base, the length of each branch of the arch is three inches and a quarter.

The axis of the inferior strait is represented by an imaginary line drawn from the sacro-vertebral union, or obstetrically, the promontory of the sacrum, through the centre of the vagina, or centre of this strait.

The reunion of all the axes forms a curve, the concavity of which is in front, and the central lines of the superior and inferior straits forming the extremities. The practitioner is to recollect the direction of the planes of the sacrum, coccyx, and perineum, as these planes direct the infant's head with geometrical precision. If the axes and diameters of the superior and inferior straits were not reversed, the contents of the gravid uterus would be expelled on the slightest exertion, especially in the last months of utero-gestation. The young practitioner must perfectly understand this part of obstetrics, or he can never comprehend the mechanism of parturition. It is proper to observe that the axis of the brim, according to the writers of continental Europe, is a line drawn from the umbilicus to the point of the coccyx.

DIMENSIONS OF INFANT'S HEAD.

Of the Infant's Head, and the passage through the Pelvis during Labour.

The principal parts of the foetus, with respect to delivery, are the *head*, the *shoulders*, and the *breech*.

The head of the foetus separated from the trunk, presents an ovoid form, slightly flattened in different parts. It is divided by obstetricians into different regions,—the *vertex* or *summit*, the *base* the *face* and the *temporal regions*. It is said to have two extremities, the *occipital tubercle*, and the *chin*.

The *vertex* offers peculiarities which ought to be known to the obstetric practitioner. These are the anterior and posterior fontanelles, and the sagittal suture.

The *base of the skull* cannot present, unless the head is separated from the trunk, or in pedal presentations.

The *face* presents peculiarities which are not likely to be mistaken.

The *temporal regions* are recognizable by the presence of the ear.

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

The *first* is the occipito-mental, or oblique diameter, and measures four inches and a quarter.

The *second* is the occipito-frontal, and measures four inches and a quarter: this is usually called the long diameter.

The *third* extends from one parietal protuberance to the other, and measures three inches and a half: this is the short diameter of British writers.

The *fourth* extends from the vertex to the base of the cranium, and measures three inches and a half.

The *fifth* extends from one mastoid process to the other, and measures two inches and a half.

The longest diameter of the head is from the vertex to the chin, and measures nearly five inches. Though these are the average dimensions of the head, yet they may be considerably diminished during labour, owing to the looseness of the sutures, and the shape of the head may be completely altered. Dr. Clarke, of Dublin, has ascertained that the size of the male head is $\frac{1}{28}$ or $\frac{1}{30}$ larger than that of the female; and this difference he thinks accounts for the greater mortality of males from tedious labours; a conclusion also supported by Dr. Bland, and almost all writers.

The head may be bent upon the chest, the back, or upon either shoulder.

The shoulders measure from four to five inches in width; but may be reduced an inch by simple compression.

The breech measures the same as the shoulders, and may be reduced by pressure, as it is composed of fourteen pieces of bone separated by cartilages.

In natural labour, the long diameters of the head are adapted to the long diameters of the pelvis, and if we compare the dimen-

sions of the head with those of the pelvis, we shall perceive that the one can readily pass through the other. The long diameter of the superior strait or brim is oblique, that of the inferior strait is antero-posterior, and it follows that the largest part of the fœtus is placed obliquely in the superior strait, must have a rotatory motion to adapt it conveniently to the inferior strait. The three axes of the brim, cavity, and outlet form a curved line, the concavity of which is turned to the pubis, the convexity to the sacrum, the fœtus, in disengaging itself, must necessarily follow this direction, and the obstetrician must follow it in any operation. The posterior surface of the cavity of the pelvis is six inches in depth the anterior an inch and a half; and this difference explains the reason why the occiput escapes first in delivery, while the vertex is covered by the perineum, and the forehead and face in the concavity of the sacrum, which measures five inches.

Section 7.—Of the Mechanism of Natural Labour.

In this country, we say the vertex of the infant is the presenting part in natural labour, though the infant may pass by the head, the feet, the knees or the breech. The French writers maintain that all these presentations may exist in natural labour. There is much reason in this opinion, as, next to the vertex, these are the easiest and safest presentations.

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

First Position.—The occiput is turned to the left acetabulum, the forehead to the right sacro-iliac symphysis. The posterior region of the fœtus is forward and to the left, the anterior behind and to the right; the feet are at the bottom or fundus of the uterus.

Pressed by the contractions of the uterus, the head is bent upon the chest, and its occipito-mental diameter becomes parallel to the axis of the superior strait; in other words, the central part of the sagittal suture presents. The vertex runs over the concavity of the sacrum, and on arriving at the inferior strait or outlet, it encounters the inclined planes, which impresses it with a rotatory motion, by which the occiput is placed under the arch of the pubis, and the face in the curvature of the sacrum. The long diameter of the head is now in the long diameter of the outlet, and its passage is only opposed by the external genital organs. The head

pressed by the contractions of the womb, advances more and more, and gradually dilates the vulva or genital fissure; and after each pain it recedes more or less into the concavity of the sacrum.

After labour, more or less prolonged, the resistance of the external genitals is overcome, the head escapes, the occiput being under the arch of the pubis, and the perineum having slipped over the forehead and face. The head being free, the occiput turns towards the left groin, and the face towards the posterior and internal part of the right thigh, and by this movement the body of the infant is turned, so that the shoulders are brought into the long diameter of the inferior strait or outlet. The shoulders are first obliquely engaged in the superior strait, run over the cavity of the pelvis, and when arrived at the inferior strait, are turned by the inclined planes in the same manner as the head, and thus adapted to the outlet. The right shoulder approaches the arch of the pubis, and the left is in the curvature of the sacrum. The relative position of the head is changed, the face turns to the middle and internal part of the right thigh, and the occiput to the same part of the left. The inferior shoulder receives all the contractions of the womb, and presses on the vulva, which it overcomes, so that the superior shoulder at the pubis serves as a resting point. When the shoulders escape, the body is expelled with great rapidity, as it diminishes in size, and as the passage has been dilated by more voluminous parts.

The Second Position.—The occiput is turned to the right acetabulum, and the face to the left sacro-iliac symphysis. The posterior region of the fœtus is turned forward and to the right, the anterior behind and to the left, and the feet to the fundus uteri. The mechanism is the same as in the first; but the relative position of the infant to the pelvis is reversed.

Third Position.—The occiput is turned to the right sacro-iliac symphysis, the forehead to the left acetabulum. The posterior region of the infant is directed behind and to the right, the anterior before and to the left. The feet are at the fundus uteri. The mechanism of labor in this case differs but little from that of the first, as the same diameters of the fœtus correspond to the same diameters of the mother. This position may also be converted to the second.

Fourth Position.—The occiput corresponds to the left sacro-iliac symphysis, and the face to the right acetabulum. The me-

chanism is the same as that of the third; but the relative position of the fœtus to the pelvis is inverted. This position can be converted into the first. Such then is the mechanism of natural labour; but this description is somewhat more minute than that usually employed in this empire. I have described the positions, the patient being on the back, which is preferable to the side.

ARTICLE II.—OF THE SEXUAL ORGANS.

The reproductive organs of both sexes are divided into external and internal.

Section 1.—Of the External Organs of Generation.

The external organs of generation in the female are the mons veneris, the vulva, and perineum. Though these parts are secondary in the act of parturition, they are exposed to much injury, which renders an exact knowledge of them indispensable to the obstetrician.

The *mons veneris* is a fatty eminence, covered with hairs after puberty, situated on the symphysis pubis, arising on each side from the groin, composed of common integuments, fibrous and cellular tissue, and a great number of sebaceous follicles. It is from an inch to two in breadth, and bifurcates inferiorly to form the labia externa. This part is sometimes the seat of phlegmonous inflammation, which is accompanied with acute pain, and indicates the necessity of opening an abscess in this situation at an early period.

Labia externa, majora, pudendi.—They arise at the termination of the mons veneris, and descend to the perineum antérieur; they consist of common integuments, cellular substance, and fat, and are covered with capillary growth after puberty. Their internal surface is smooth, and of a rosaceous colour, with numerous mucous and sebaceous follicles, which sometimes give rise to an acrid irritating discharge, often mistaken for gonorrhœa. The points at which the labia are united, above and below, are called the *superior* and *inferior commissures*. Before puberty the labia are dense, and in apposition; after marriage they become elongated, flaccid, and bluish, and lose their regularity. When inflamed the pain is excessive; but suppuration takes place very rapidly, and matter is discharged in twenty-four or thirty-six hours, by poultices. According to Burns, the abscess ought not to be open-

ed, as hæmorrhage takes place; while Velpeau recommends a deep incision in proper time, to prevent the formation of fistulous openings. My own experience accords with that of Dr. Burns. The labia may be the seat of hernia or other tumours. The fissure formed by the labia is called the *vulva*, *pudendum*, or *genital fissure*, or *sinus pudoris*. It contains other parts: the *labia minora*, the *clitoris*, the *vestibulum*, the *meatus urinarus*, the *vaginal orifice*, the *hymen*, the *fossa navicularis*, and the *fourchette*. On separating the labia externa at the superior commissure, we see the *clitoris*.

The *clitoris* is an erectile, elongated substance, compared by some of the palate, composed of two cavernous, spongy, vascular bodies about two inches in length, inserted into the ischio-pubic branches. It resembles the male penis, has a round free extremity, called its *glans*, which is enveloped by skin or *prepuce*, which terminates in the labia minora. A suspensory ligament attaches the clitoris to the pubis. In the first months of intra-uterine life, the clitoris is as voluminous as the penis, but at birth it is greatly diminished in size, and at puberty it is a tubercle of about four lines in length. It sometimes increases to four or five inches in length, and then constitutes a form of hermaphroditism. It becomes erect during coition, and is the principal seat of voluptuousness. It is not liable to disease, though sometimes the seat of cancer and cauliflower excrescence. If elongated or diseased, it may be removed by excision.

Behind the glans of the clitoris and between the nymphæ is a triangular space, about an inch in extent, called the *vestibulum*, which does not fulfil any function relative to generation. Through this space Celsus and Lisfranc have proposed to perform the operation of lithotomy on women. Posteriorly and about half an inch from the symphysis pubis, is the *meatus urinarius* or orifice of the urethra, a small round aperture, surrounded by small depressions, called *lacunæ*. The female urethra is about an inch or an inch and a half in length, capable of great dilation, and subject to much injury during parturition. It is connected to the pubis by the *ligamentum inferius vesicæ*.

The *labia minora*, or *nymphæ* are two continuations from the prepuce of the clitoris and labia externa, compared to the comb of a young cock, descend and diverge on the internal surface of the labia majora, and terminate insensibly about the middle of these last. Their consistence is firm, their colour reddish; they

are formed by the fine, thin, vascular, and spongy tissue of the clitoris, and consist internally of adipose and cellular tissue. At birth they pass the level of the external labia; in virgins they are hidden by the latter; and in women who have had children, they again project, but lose their density and rosaceous colour. In some subjects they are elongated, naturally or accidentally, and in some countries, as Hindostan, Turkey, and Persia, they produce so much inconvenience as to require excision—an operation occasionally required in European nations. The nymphæ are said to direct the stream of urine, and to increase venereal enjoyment.

The *hymen*, or *circulus membranousus*, is a thin, extensile membrane (muscular; Velpeau,) formed by a doubling of the inner surface of the vestibulum, of a semilunar form, its extremities or cornua ascending upwards to the sides of the urethra, where they unite. This membrane nearly closes the vulvo-vaginal orifice, leaving a small aperture superiorly for the escape of the menses. It was long considered a proof of virginity by the vulgar, the magistrates, and medical jurists, and often led to very erroneous and unjust decisions by the tribunals. It is now universally known that a thousand causes besides coition may destroy this membrane, as sudden exertion of the lower extremities, leucorrhœa, excoriations, and various morbid growths, both fluid and solid. It is also well known that it is absent in infants, or may exist at parturition. (Mauriceau, Ruysch, Pare, Meckel, Walter, Smellie, Baudelocque, Capuron, Nægele.) Haller fell into this error when he said, "*Attamen prima Venus debet esse cruenta.*" The hymen was said to be ruptured in the first coitus, and its remains were called the *carunculæ myrtiformes*.

The *carunculæ myrtiformes* are small projections which are denied by many modern physiologists to be the remains of the hymen (Hamilton, Velpeau); they are not exactly in the same situation, and have been seen in infants and virgins. Behind these is the orifice of the *vagina*.

The *perineum antierius* is that portion of soft parts which extends from the inferior commissure of the labia to the anus.

The *perineum posterius* is the space behind the anus, which extends to the os coccygis.

The *fossa navicularis* is a space situated between the inferior commissure of the labia and hymen; the *fourchette* or *frænum* forms the anterior border of the perineum, and unites the labia pudendi.

Section 2.—Of the Internal Organs of Generation.

The internal organs of generation in the female are *uterus, vagina, uterine tubes, ovaries, and ligaments.*

The *uterus* or womb is a hollow muscle, to contain, nourish and expel the foetus, and serving habitually for the secretion of menstruation. It is situated in the cavity of the pelvis, behind the bladder, before the rectum, under the small intestines, and above the vagina. It is of a pyriform or conoid shape, thickened before and behind, its base turned upwards. It is divided into three parts; the *fundus* or bottom, the *corpus* or body, and the *cervix* or neck. Its anterior surface adheres inferiorly to the bladder; its posterior surface is convex, covered by peritoneum, and rests upon the rectum; its lateral surfaces are concave towards their middle, covered by the *broad ligaments*, giving origin above to the *ligament of the ovary*, the uterine tubes, and round ligament, and receiving below the vessels and nerves called uterine, and higher the spermatic arteries. It opens into the vagina by an orifice called *os uteri*, or *tinæ*, or *utero-vaginal orifice*, formed by two lips, an anterior, which is thicker and shorter than the posterior, which appears thinner and longer, on account of the obliquity of the vagina and uterus. The interior of this organ offers a *cavity* of a triangular form, having two surfaces, which are almost in contact in the virgin, but separate and concave in those who have had children. It has three angles; two superior or lateral, terminating in the orifice of the uterine or Fallopian tubes; the other inferior, forming the internal or cervico-uterine vaginal orifice or cavity of the neck of the uterus. Its posterior surface offers projecting wrinkles, disposed in the form of a palm, and hence called *arbor vitæ*.

Dimensions.—The length of the virgin uterus is twenty-seven lines; the width of the body, twenty lines, and of the neck thirteen lines; the thickness of the body, nine lines; of the neck, six lines; of the parietes, four lines; of the body, four lines; and of the neck, three lines; the lips in the vagina, two or three lines; the weight seven or eight drachms. After the female is a mother, the uterus measures two and a half or three inches in length: the body, two inches; the neck, one inch and a half; the base, twenty to twenty-four lines; the neck, fifteen or sixteen lines; the body, twelve or fourteen; each wall, six lines; the os

uteri, or utero-vaginal orifice, six lines; the weight about two ounces. These dimensions were ascertained by Rœderer on a great number of bodies.

Directions.—The uterus is said to be in the direction of the axis of the superior strait of the pelvis, and with the axis of the vagina forms nearly a right angle; its orifice looks downwards and backwards, and its anterior lip is lower than the posterior. The direction will vary according to the situation of the woman, the fulness of the bladder or rectum, or in a state of spasm or contraction. It is generally inclined a little to the right side.

Organization, Structure.—The whole uterus is covered posteriorly by peritoneum; the body only is covered anteriorly; the neck is supported by the bladder. The uterus consists of an external and internal membrane, a peculiar tissue, numerous vessels, nerves, and some cellular tissue. The external or peritoneal tunic forms two folds at the sides, called the *broad ligaments*. Their anterior and posterior layers are closely united, but allow a passage for the uterine and ovarian vessels and nerves and some muscular fibres. Their upper borders form three folds, which contain the round ligament, the tube, and the ovary.

Muscular Tissue of the Uterus—Vesalius, Malpighi, Ruysch, Noorthwick, Wrisberg, Meckel, Lobstien, Hunter, Charles Bell, Velpeau, Rosenberger, Duges, and a host of modern anatomists maintain the muscularity of the uterus; while Bœhmer, Blumenbach, and a few others, deny it. The course and direction of the fibres were disputed by anatomists. Malpighi said it was impossible to separate them, as they were so interlaced; Ruysch and others, that they formed an orbicular muscle, at the fundus to expel the placenta; Hunter, Sue, &c. that they were intermixed; Leroy, Meckel, and many German anatomists, that they formed an internal and external layer of muscle. Baudelocque and his countrymen declined to determine the course of the uterine fibres; though they supposed them to form fasciculi parallel to the axis of the uterus, or longitudinally, or in circles placed horizontally, that the body and fundus were principally formed by the first, and the neck by the second. This view is corroborated by recent writers. The fibres are longitudinal, and oblique externally (Rosenberger), transverse all the interior of the neck (Verheyen), and circular at the tubal orifice (Weitbrecht) the exterior fibres form the round ligaments (Rosenberger).

Velpeau has dissected a great number of uteri, and arrives at the following conclusions : 1. There exists under the peritoneal tunic a thin, dense, elastic, cellulo-fibrous layer, sometimes, but not always, muscular, in which the fibres have not a fixed direction ; 2. a thick layer of transverse fibres, united similar to the constrictors of the pharynx, and most deeply transverse fibres ; but the fibres were longitudinal and oblique on the neck and internal surface of the organ. All these layers have for a base a cellulo-fibrous tissue, surcharged with fibrine ; the fleshy tissue is developed in this substance as in the intestines, and the uterus appears to result from the re-union of two cylindroid canals.

The internal membrane of the uterus is said to be mucous by many ; but this is denied by Gordon, Chaussier, Ribes, Beclard, and Azzoguidi. Mucous and vesicular follicles occupy the neck and external orifice, and these were named *ova Nabothi*. The *arteries* which supply the uterus are the spermatics and hypogastrics. The *veins* form a cavernous tissue, which is highly developed during pregnancy. The *lymphatics* are large and numerous during uterogestation, and follow the course of the blood-vessels. The *nerves* are supplied by the renal portion of the great sympathetic, are six plexuses (Tiedeman), and are divided into branches, which supply the fundus and follow the course of the uterine arteries ; while the neck is supplied by the first pair of sacral nerves.

The *vagina* is the canal, which extends from the genital fissure to the uterus. It lies between the bladder and rectum ; it is closely connected with the former, and loosely to the latter. It is about an inch in diameter in the virgin state, but much more capacious in married women, and in those who have had family. It is from three to five inches in length, and is capable of great contraction and dilatation. Its superior extremity surrounds the cervix uteri ; its inferior is surrounded by a *sphincter*, and a network of vessels, called *plexus retiformis*. It is lined by mucous membrane, its middle tunic is spongy and muscular, and its external coat superiorly and posteriorly is peritoneum. Its vessels and nerves are afforded by the hypogastrics. The mucous membrane affords a secretion to prevent adhesion of its surfaces, and this is increased in leucorrhœa, and removed by astringents or continence. The inferior surface or floor is longer than the superior, and the vagina is larger

near the cervix uteri, which it surrounds, than externally. It is a wise and wonderful provision of nature, that the vagina is capable of adapting itself to the various dimensions of the virile member, (see 357).

The *vulva*, *sinus pudoris*, *pudendum*, *genital fissure*, is situated between the labia and is the external orifice of the female genitals.

ARTICLE III.—OF THE INTERNAL APPENDAGES OF THE UTERUS.

Section 1.—Ovaries (Ovaria).

The *ovaries* have long been denominated testes muliebres, and are properly called the seminal glands of woman, the secreting organs of the germs, situated near the sides of the uterus, enclosed in the posterior fold of the broad ligament, attached to the uterus by a proper ligament, are oblong, oval, about the size of an almond or bean, and of a yellow grey colour. Composed, 1. of a peritoneal tunic; 2. of a fibrous membrane, thick and hard, perhaps fleshy like the uterus and ovariac ligament, of which it may be an expansion (Velpéau); 3. of a reddish tissue, dense, and firm; 4. of miliary vesicles, ova, from the number of eight to twenty, filled with an albuminous fluid: 5. sometimes of a body of a yellowish grey colour, covered by a cicatrix, and called *corpus luteum*. At puberty, the ovaries become active and developed, producing by sympathy a series of changes in the uterus, its appendages in mammæ, larynx, &c. The ovary is an organ essential to generation, it forms the germs. These germs were said to pass through different canals to the uterus, and not through the tube (Fallopian): the ligament of the ovary was the chief passage. Wharton and Mauriceau admitted one or two others, which opened into the vagina; an idea lately revived by Gartner of Copenhagen, as he found them in the large quadrupeds; but as yet they have not been discovered in woman. We shall perceive hereafter much reason in this opinion, as it will appear in the article ‘Generation,’ that there are the strongest grounds for supposing the absorption of the semina fluid from the vagina can only account for impregnation in many cases.

Section 2.—Uterine Tubes (Tubæ Fallopianæ.)

The *Uterine*, or *Fallopian tubes* are two small canals four or five inches long, of the size of a goose-quill, extending from the

lateral angles of the uterus, with which they are connected, to the ovary, passing through the middle fold of the broad ligament, floating loosely in the pelvic cavity, and terminating in a fringed extremity, called *fimbriæ* or *morsus diaboli*. The cavity of this tube is large near the uterus, narrow in the middle, and again enlarged towards the fimbriated extremity. It is composed of a peritoneal tunic, of a musculo-vascular substance similar to that of the uterus, and of a mucous membrane, folded in the longitudinal direction. The fleshy substance consists of circular and longitudinal fibres, arranged as in the intestinal canal. The mucous membrane has been as easily separated as that of the œsophagus, consists of valvular folds, which admit the passage of the ovum towards the uterus, but prevent its retrograde motion towards the ovary, and of course the passage of the seminal fluid of the male (Velpéau, Baudelocque, neveu.) The cavity of the tube is often filled with whitish mucous like all other mucous surfaces, which accounts for the mistake of those who said they saw the spermatic fluid in the tube. The tube receives its vessels from branches of the ovariac, and its nerves from the great sympathetic; it is erectile and contractile, and is put in motion by the uterus and ovaries. It becomes erect during coition, seizes the ovary, and permits the passage of the seminal fluid to that organ. Haller caused its erection by injections of the uterus in the dead body.

Section 3.—Ligaments of the Uterus.

The *ligaments of the uterus*, are the broad and round.

The *broad ligament* (ligamentum latum) is a broad fold of peritoneum reflected from the body of the uterus, and connecting it to the sides of the pelvis. The uterus and its two broad ligaments divide the pelvis into two cavities; an anterior, which contains the bladder; a posterior, in which is found the rectum. Each ligament is subdivided into two or three folds, which enclose the tube, ovary, and round ligament.

The *round ligament* (ligamentum rotundum) arises from the uterus before and under the tube, passes through the inguinal canal, and terminates in the groin and mons veneris. It is a round, long muscular cord, which supports the uterus in situ, and prevents its retroversion, when pressed on by the distended bladder. Four other ligaments are said to exist; two anterior, utero-vesical, two posterior, utero-sacral.

CHAPTER II.

GYNÆCO-PHYSIOLOGY.

THE physiology of woman offers four principal divisions: 1 Nubility; 2. pregnancy, or utero-gestation; 3. Delivery; 4. Lactation.

ARTICLE I.—NUBILITY.

The term nubility is applied to that period of female life which is proper for the performance of the generative function. The history of nubility comprehends four distinct periods: 1. puerile sterility, or infancy; 2. the establishment of fecundity, or puberty; 3. established fecundity, or periodical menstruation; 4. the cessation of fecundity, or menstruation, or the critical age or senescence.

Section 1.—Puerile Sterility—Infancy.

From the period of birth to the twelfth or fourteenth year, the genital organs are not proportionably developed with the rest of the body; their functions and sympathetic influence are scarcely perceptible, and seldom exerted; so that there is scarcely any difference between both sexes until the age of puberty. Differences, however, do exist in their tastes, habits, manners, and especially in the voice, which is much sharper in females.

The diameters of the pelvis in the first years of life differ little in both sexes, and are nearly reversed, as the longest is the antero-posterior, or the transverse: the pelvis has many of the characters of that of the male. The uterus is about thirteen or fourteen lines in length in the new-born infant, and eighteen in a girl of ten years (Rœderer.) Its functions consist of the secretion of a tenacious mucus; the neck is larger, harder, and more cylindroid than the body.

The tubes and ovaries are proportionably more developed than the uterus. The ovary is elongated, vermiform, red, and compact,

without vesicles. It is eight or ten lines in length in the new-born infant ; it is sixteen at the tenth year, and twenty at puberty (Rœderer.)—The vesicles sometimes appear during the first year ; but generally not before the eighth or tenth. The tubes do not develop in proportion to the uterus and ovaries.

The vagina remains strait and wrinkled in infancy and childhood : it is two inches in length in the new-born infant, and four in the adult (Meckel.)—It is more strait below than above, has a relaxed fold in the form of the palate at the superior part of its orifice, which is the hymen, and in latter years becomes semicircular, and obstructs or contracts the real orifice of the vagina.

The vulva is small, uncovered by hairs ; the great labia are thick, and projecting a little. The mons veneris is large, and a little prominent ; the nymphæ and clitoris are prominent ; the mucous membrane is red or rosaceous, smooth, firm, and humid.

The gland of the breast is about the size of the end of the finger, its tissue is red and firm, and resembles that of the thyroid gland ; it furnishes a lacteous or serous fluid in new born infants of both sexes, and remains inert for some years afterwards. The breasts are subjected to great injury by the pressure of stays, which are seldom made so as to allow space for the growth of the organs : they compress and waste the nipple ; obliterate the lactiferous tubes, render suckling extremely difficult, and expose the breast to abscess. Rachitis deserves great attention, as this disease has considerable effect upon the different parts of the pelvis. M. Duges advises that children should be cautioned against masturbation, which not only causes rickets, but a variety of chronic and incurable diseases.

Section 2—Establishment of Fecundity—Puberty.

The period of puberty will vary according to climate, education, and constitution ; an elevated temperature, as in tropical climates an excited imagination, and a sanguineous temperament, accelerate it, and induce it at the ninth or tenth year ; while cold, as in the polar regions, an inactive life, and a lymphatic temperament, do not permit it to arrive until the eighteenth or twentieth year. In this country and in France it occurs from the twelfth to the fourteenth year. The most remarkable changes take place in the economy at this time. The body becomes more developed, the temperament becomes sanguineous or nervous, the constitution becomes stronger and more vigorous. Many diseases cease sponta-

neously, as scrofula, rickets, tinea, ringworm, epilepsy, &c.; while others become developed, as chlorosis, hysteria, bronchocele, various inflammations, and hæmorrhages. The moral and physical characters are modified; those which distinguish childhood are lost; the tastes are analogous to those of a fully developed female; the passions are more powerful and durable, the moral and physical sensibility are greater, and the desire for marriage commences. The character of a woman's mind is chiefly determined by the part she bears in relation to generation. Her destiny to be united to a husband and to become a mother, is perceived in the plays of her infancy, and afterwards becomes manifest in the commencing struggle in her bosom, between her modesty and her inclination for the other sex, as is seen in her lovely blushes, often united with a noble feminine pride and reserve, until she meets the man of her heart, when all these feelings are succeeded by a full and unlimited abandonment of herself to the object of her affection. Soon, however, conjugal love has to surrender itself to the stronger feeling of maternal affection, of the power of which we have many and the most extraordinary examples.

At the approach of puberty the voice changes; but not so much as in the male. The pelvis rapidly enlarges, but it is not completely ossified until the twenty-first year, although in the sixteenth year it acquires its ordinary dimensions. The uterus at this period becomes double its former size in one year; it becomes thicker, rounder, and more firm, redder, congested, and erectile: there are pains, heaviness in the loins, groins, and thighs, with bearing down sensations. This state is accompanied by a local or general plethora, a general *molimen*, sometimes by a febrile state, or paroxysms of heat. At length a sanguineous exhalation, a critical hæmorrhage takes place, which is the first *menstruation*. The quantity of fluid discharged is small, is of a pale red colour, sometimes a vivid red becoming serous; it recurs at the end of four or six weeks, for the first eruptions are rarely periodical. The uterus is now fit for reproduction; but examples of pregnancy occurring before the age of puberty are well attested, though rare. (Sir E. Home Phil. Trans. vol. lii: Velpeau, vol i. p. 113.)

The tubes and ovaries enlarge, become redder, and more sensible; the former evince the structure of muscle, are affected with a peristaltic motion and erection, and seize the ovary in fecundation (Vallisnieri, Cruickshank); they contain an abundance of

white opaque mucus, which has been often mistaken for male or female sperm. The ovaries present yellow spots, corpora lutea, produced by excitation, spontaneous or provoked, of the genital organs, without the approach of the male (Home, Brugnone, Cruickshank, Haighton, Blundell). The ovaries appear to be the centre of general sympathetic excitation, and of that of the uterus. Women have had uteri without ovaries; but were deprived of all the signs of puberty and nubility, (Pears): others, in whom the ovaries were extracted, (Pott, Simon, Lizars,) had lost all the characters of nubility and power of fecundation, though the uterus remained. The uterus may be absent, and the ovaries healthy, when sexual desire may remain, and a molimen exist which requires the application of leeches to the vulva or anus (Dupuytren). The vagina gradually enlarges, becomes more sensible, spongy, and erectile. The vulva is more firmly closed by the enlargement of the labia, and is surrounded with hairs. The mucous membrane becomes redder, more vascular, sensible, and humid. The breasts become prominent and conoid; the nipple projects, is conical and obtuse, of a red or brown colour; it possesses an erectile power: and is sometimes painful, and occasionally discharges a serous fluid. The areola is of the same colour as in infants, but is much larger.

Section 3.—Established Fecundity—Menstruation.

From the age of puberty to the forty-fifth or fiftieth year, the menses or uterine secretion recurs monthly, with most women at the end of each calendar month; in some cases every fortnight or three weeks, with others every five or six weeks, and with some every fortnight.

The duration and quantity of the discharge varies very considerably; the extremes are from two to eight days, and half an ounce to five or six ounces. The menstrual fluid differs in its physical and chemical properties from blood; it never coagulates, is devoid of fibrin, and has a peculiar odour. Its colour resembles that of venous blood: it is coagulated, black, and fœtid in dysmenorrhœa (Duges). Its eruption is often preceded or followed by a sero-mucous discharge, which ceases on its appearance or disappearance. Each eruption is preceded by symptoms of plethora, of melancholy and mental depression, hysteria, or lassitude. The eyes are encircled by black, especially in wo-

men of fair complexion ; there are pains about the loins, pelvis, or breasts, disorder of the stomach and bowels, sense of heat or itching in the uterus or vagina ; the uterus is congested, and sometimes ecchymosed, its orifice is soft and open, hence conception readily takes place after the cessation of the evacuation. The vagina is relaxed, and more extensible, the vulva is turgid and humid, the breasts evince turgidity, and sometimes the areola assumes a more marked colour ; the ovary is very much excited, and presents corpora lutea, which are not so well marked as in women who have borne children.

The menstrual fluid is a secretion from the uterus, as attested by numerous eminent physicians, who observed it exude from the organ when inverted (Vesalius, Peyer, Mauriceau, Littre, W. Hunter, John Clarke, Hamilton, Money, &c. &c.). It was said to depend on local or general plethora (Aristotle, Galen, Simson, Astruc, Lobstein) ; on a superabundance of carbon and nitrogen (Oslander) ; on the feebleness of the coats of the veins (Clifton) ; on fermentation (Paracelsus, Sylvius, De Graaf, &c.) ; on a particular molimen (Stahl and Duges) ; on erection, (Emmet) ; on amorous phlogosis (Le Cat, Abernethy).

This secretion was said to proceed from the vagina (Columbo, Sue, Pineau, Bohn. Desormeaux), from the veins (Vesalius), from the arteries (Ruysch), arterial capillaries (Winslow and Meibomius) from the glands (Lister), from particular small receptacles (Simson), and from the venous sinuses (Astruc). It was said to depend on civilization (Emmet, Roussel, Aubert) ; but every well-informed physician is aware that it occurs to rude and uncivilized females, and even to some of the lower classes of animals.

The presence of this discharge is vernacularly designated "the courses, the change, the flowers, nature, indisposition, periodical or female health ;" and among the middle and lower classes, the woman is said to be "ill, unwell, to have a change, to be regular, or to be well in certain respects."

The eruption, or first appearance of the discharge or catamenia, occurs, in temperate climates, from the twelfth to the sixteenth year ; in the meridional countries from the eighth to the twelfth year ; and in the polar regions from the fifteenth to the twentieth year. It has occurred in this country so early as two years and a half (Lond. Med. and Physical Journ. vol. xxviii) ; at eight

years and a half (Op. Cit. 1810, vol. xxiv.); and between the third or fourth year (Sir A. Cooper, *Medico-Chirurgical Transactions*. vol. iv.). The talented and erudite Professor Velpeau has known it occur in Paris from the ninth year and a half to the twelfth; he does not agree with those who have said menstruation may occur at birth, which he very properly thinks was the result of disease; neither can he credit the case lately published at Havannah, in which the infant was said to have had the discharge at the eighteenth month, and regularly every month afterwards. Oslander of Gottingen, has recorded one hundred and thirty seven cases, in which nine women menstruated at the twelfth year, eight at the thirteenth, twenty one at the fourteenth, eleven at the seventeenth, thirty-two at the fifteenth, twenty-four at the sixteenth, eighteen at the eighteenth, from ten to twenty at the twentieth, one at twenty-one, and one at the twenty-fourth year. The quantity of secreted fluid afforded during menstruation varies in different climates. According to Hippocrates, twenty ounces were discharged in Archipelago; eighteen ounces, according to Galen; from six to twelve, according to Haller; from four to six ounces in this country; but the quantity will depend upon the physical and social habits of the individuals. Women often die from excessive menstruation in Java; while in Lapland and all polar regions the discharge is exceedingly trifling, and recurs but twice or thrice a-year.

Pliny and his contemporaries maintained that the catamenial fluid was poisonous—a most ridiculous opinion, though in some degree supported by M. Velpeau, who agrees with Pliny, Columelle, and the Arabians, that the miasm arising from a woman during menstruation is capable of decomposing milk and other fluids; finally, that blood retained in the genitals for any length of time acquires more or less deleterious properties. The learned professor forgets that the catamenial fluid is not blood, and has been retained for years, in cases of imperforate hymen, without producing the slightest local irritation or disease. He is also at variance with the general opinion when he maintains the fluid contains fibrin, is blood, and coagulates. In rare cases blood may be effused with the menstrual fluid, but this very seldom happens; nor can I assent to the statement that the mixture of the fluid with the mucus and serum of the internal organs prevents it from possessing the characters of blood from a wound. The uterine

fluid differs in its chemical and physical properties from blood (Brande) : it possesses no serum, but albumen combined with colouring matter (M. Toulmanche, Arch. de Med., Dec. 1829, Lond. Med. and Surg. Journal, 1830, vol. iv. p. 78,) (M. Thenard, in 1817) ; it possesses no fibrin (Lavagna).

The menstrual fluid is of a brownish colour ; is sparing on the first day, its quantity is increased on the second, it diminishes on the third, and ceases on the fourth or fifth. The evacuation recurs every month, as its name indicates, sometimes sooner and sometimes later ; it has returned every tenth day, from the twelfth year to the fortieth, and the patient in good health (Dewees) ; it has returned every twelfth day, and in one case the woman was almost always menstruating, though in good health, but thin and of an extreme sensibility (Velpeau).

It was said that the recurrence of menstruation was from the first to the eighth day, or from the eighth to the fifteenth ; but this assertion is unworthy of credence. The same woman may menstruate on any day in the week or month. Again, the periodicity of the catamenia was ascribed by Aristotle, Van Helmont, Mead, and Roussel to the influence of the moon, and hence the adage "*luna vetus vetulas, juvenes nova luna repurgat.*" This opinion is controverted by the fact that the same woman will menstruate in the different phases of the moon, in the course of many, or even a single year. If menstruation depended upon lunar influence, all women should have the discharge at the same time, which every medical practitioner knows is not the case.

I fully assent to the following position of Mr. Ashwell : I believe it to be one of the instances in which the researches of able and intelligent men will terminate in their tracing it to the will of the Creator ; or, in other words, they will regard it as a law of nature, that the fleshy uterus of the human female shall once every month, by a secretory action, produce a certain sanguineous fluid.

The use of this secretion is to fit the womb for fecundation ; its suppression during pregnancy allows the organ to take on a new action for the nourishment of the fœtus ; it is also suppressed during lactation or suckling. There are exceptions to all these statements, as conception has happened before menstruation ; and the latter has occurred during utero-gestation (Mauriceau, Deventer, Haller, Heberden, Hossack, Fodéré, Capuron, Francis, Dewees, H. Mayo,) and every one knows during lactation.

Section 4.—Cessation of Menstruation—Senile Sterility.

The menstrual secretion ceases, in temperate countries, about the forty-fifth or fiftieth year, sometimes so early as the twenty-fifth (Haller, Dewees, Velpeau,) and again not until the fifty-fifth, sixtieth, sixty-fifth. (I have known a woman delivered in her sixty-third year,) seventieth (Richerand, Magendie,) eightieth, ninety-fifth (Lond. Med. and Surg. Journ. 1830, vol. v. p. 338,) and one hundredth (Blancardi). Desormeaux has known it to continue from the sixtieth to the seventy-fifth year. It appears so early as the ninth year in Abyssinia, and ceases at the eighteenth, and hence polygamy is allowed the people (Bruce). In general it continues about thirty years in temperate climates, and during the most appropriate ages for the reproduction of the species.

When menstruation is about to cease, the period is called “the change, or turn of life ;” and many important changes take place in the constitution. The breasts collapse, the fullness of habits disappears, the skin shrivels, and loses its colour and softness, and many diseases appear in the womb and breasts which had lain dormant for years. However, when this period has passed, women often enjoy better prospects of health and of long life than the other sex. This period is also designated “the climacteric, the critical time, the critical age ;” and often before its arrival the menstruation is irregular, absent for weeks or months, the abdomen becomes tumid, there is loss of appetite in the morning, and the woman considers herself pregnant, which is never the case. According to the statistical reports of Finlaison, Moret, Châteauneuf, and Lachaise, no more women than men die between the fortieth and fiftieth years; and Dewees contends that women are not more liable to diseases at this than at any other period of life. The cessation of menstruation, however, is often attended with gradual decrease, or sudden increase of the fluid, with nervousness, with all its protean symptoms, or more serious diseases appear, so that moderate purgation is often of the greatest advantage. The internal and external orifices of the uterus become obliterated, partially or totally (Duges), or the cervico-uterine orifice (Mayer), the uterus and ovaries are atrophied or hypertrophied; the rugæ of the vagina and mucous membrane of the uterus are relaxed, and pour out a mucous discharge; the vulva is flaccid and dilated; there is often prolapsus uteri, the breasts decrease, or disappear.

In describing the menstrual function I should have stated that

it is sometimes suppressed or denied by nature ; in such cases its place is supplied by a vicarious discharge, and blood is periodical-ly effused from some other parts of the body ; from the nose, eyes, ears, nipples, lungs, stomach, bowels, navel, in a word, from every part of the body, especially from ulcers, and hence the happy designation of Sir Astley Cooper to such cases, of menstrual ulcer. We can easily conceive that different parts of the sanguinary system may supply each other's place ; that if the secretion of menstruation be suppressed, its want may be supplied by other parts equally provided with secreting vessels. Baudelocque knew a woman, aged forty-eight, who from the age of fifteen was attacked every month with vomiting and purging, which lasted three or four days : she never had menstruated. Hæmoptysis, or hæmorrhoids, is often urgent in cases of suppressed menstruation.

Dr. Marshall Hall, in his excellent Commentaries on Diseases of Females, strenuously recommends attention to the general health at the cessation of the catamenia, and enjoins the necessity of regulating the state of the bowels, diet, air, exercise ; and in cases in which vertigo or drowsiness appears, the occasional abstraction of blood, by cupping from the nape of the neck, leeching, and purgation. He considers that the health is affected several years before and after the climacteric period.

Every process in the female economy is imperfect until the appearance of menstruation ; it is the sign and establishment of health ; without it beauty cannot exist, or will be effaced ; the order of vital actions will be altered ; the mind is languid, and the body depressed. During its presence women are weaker, more delicate, and more susceptible of impressions ; all their organs partake, more or less, in the condition of the uterus. The whole train of nervous sympathy is thrown into action, the vascular and nervous systems, the digestive and respiratory organs are liable to derangement of function at this time. Hence, the general practice of medical men, a practice consonant to the prejudices of women themselves, is to omit all active medicines during menstruation. All strong mental and corporeal exertions must be carefully avoided, as passions of the mind, travelling, riding in carriages or on horseback, long walks, dancing, &c., and exposure to cold and moisture, every one of which causes will suppress the evacuation.

In the Sacred Writings we find the most precise directions as

to every circumstance connected with this function ; a separation was enjoined, and nuptial intercourse interdicted. The excellence and wisdom of the Levitical injunctions will be admitted by every scientific practitioner, when he recollects the injurious effects of sexual commerce under such circumstances, especially to the female ; nor does he want evidence to convince him that the male has contracted simple gonorrhœa from this cause. Every well-informed physician is aware of the numerous disorders to which women are subject from excessive menstruation.

The hygienic precautions relating to menstruation are seldom attended to in this country. The young female at the age of puberty is seldom instructed as to the change she is to suffer ; she is left ignorant, and is much astonished at the first eruption of the uterine secretion. The mental emotion thus excited, often interrupts the proper establishment of the evacuation for one or two years. She is not cautioned to avoid, during each periodical evacuation, exposure to cold, humidity, all strong emotions, violent exertions, exciting aliments and drinks, &c. The first appearance of the catamenia will depend upon the constitution, mode of life, and in the opinion of many, upon the manners of those with whom young women converse. In general, women are weak during the periodical evacuation, and are averse to sexual congress : the most abandoned female will not allow it, unless impelled by the direst distress and misery. It is also a general rule, that women of full habit, those who live luxuriously, those confined in warm apartments, and those who indulge in nuptial commerce, menstruate most copiously. But we often find full habits have the secretion sparingly, while pale and delicate women have it copiously. It is much increased by marriage, though it may recur during the first week of that state and not again for years, and the woman bear seven children (Hamilton's Lectures).—There is no truth in the opinion that the menstrual fluid nourishes the fœtus, and is suppressed for that purpose ; but the correct explanation of the cause of its suppression is afforded by the physical changes which take place in the uterus after conception ; and the established physiological axiom, that two functions or diseases cannot affect the same organ at the same time.

Again, animals that are deprived of this secretion by nature still nourish their offspring.

When menstruation returns during lactation, conception very

soon follows ; the milk is considered by women to be deteriorated, and unfit for the nourishment of the infant.

From the preceding remarks, it is very manifest every process of female economy to the climacteric period is affected by the periodical secretion ; and women very properly ascribe all their diseases to the derangement of this most important function.

ARTICLE II.—GENESEOLOGY.—REPRODUCTION.

The terms reproduction, generation, fecundation, or impregnation and conception, are generally employed as synonymous, though each has a distinct grammatical acceptation. The word reproduction is applied to the function by which living beings are perpetuated, the word generation to the creation of the germs, the term fecundation expresses the action by which the germs are united, or by which one of the germs vivifies the other. Conception means the action by which the fecundated germ is retained in the sexual organs, and coition or copulation the approach of the sexes by which fecundation is established. It appears, therefore, that reproduction is the generic term, and that the others refer to distinct phenomena.

Section 1.—General Remarks on Geneseology—Reproduction.

The term generation is expressive of the power inherent in animals of reproducing their kind, by the concurrence of both sexes of the same species. The term conception is more immediately applicable to the influence of those means on the female. It is necessary that both animals should be in health ; that the male should secrete semen, and have sufficient vigour to transmit it to the proper organs of the female, and that the organs peculiar to the latter, have a corresponding soundness of structure and functions, to complete the generative act. There must be a fecundating fluid, conveyed from the male to the female of all animals, in order to reproduce and perpetuate the species. The human semen is never emitted in a pure state, for the mucus of the vesiculæ seminales forms the greatest part of it ; and it is this latter that eunuchs emit in such considerable quantity. The fluids of the prostate gland and urethra are emitted before the sperm, but in general are mixed with it. The Abbé Spallanzani proved, that the male semen of the inferior animals should be diluted, before it was fit for impregnation. The penis does not enter the womb, but it is sup-

posed that the semen does ; the orifice of the womb is too small, and besides, there is much reason to believe that the penis is seldom accurately applied to it. Richerand, Blumenbach, Magendie, and others, assert that the womb sucks in the semen after its effusion ; but can this be ever positively ascertained ? Prevost and Dumas assert that animalcules are indispensable, and must be supplied by the male ; that they arrive at the upper part of the womb, but do not enter the Fallopian tubes, and that a small grain escapes from the vesicle or ovum, some days after coition, and meets animalcules in the tube ; and that fecundation occurs several days after the approach of the sexes. This is the most modern theory of conception, and is fully as objectionable as any ever offered on the subject. If the womb remained open several days after conception, an assertion almost unanimously denied by physiologists, there would be other conceptions formed, and the doctrine of superfœtation established. Before the conclusion of this article, we shall perceive other arguments still more powerful against the new theory.

At the epoch of puberty, in both sexes, a lively sensation, irresistible, and hitherto unknown, breaks forth ; leads to a union of the sexes, and inclines them to copulation. This sensation has hitherto been attributed to the genital organs, until Gall has made it one of the faculties of the soul, and asserts it is placed in the cerebellum, as old men and very young boys have sexual desire. At this time man is endowed with more principles of life than are necessary for his body ; and this superabundance is intended for the perpetuation of his species. An accumulation of these vivifying particles induce the most vivid sensation, which causes erection of the penis, which is affected by an afflux of blood into that organ. The penis acquires considerable strength by its active congestion, surmounts every resistance offered by the vagina, and penetrates deeply into the cavity, towards the neck of the womb. The burning heat, communicated by the female organs, the voluptuous pressure it experiences, propagates its orgasm to the whole organs of fecundation ; the testicles are drawn nearer the abdomen, and tightened in their coverings ; the seminal vesicles contract, and propel the semen they contained into the urethra, and from that moment, by the convulsive motion of the perineal muscles and urethra, it is propelled by that delightful sensation, which words cannot describe—which throws the subject into a

kind of convulsion, similar to an electric shock ; sometimes even forcing cries from him ; this powerful nervous sensation is more or less protracted, and the penis soon collapses afterwards, and is restored to its primitive state.

The sensation of desire in females, causes a congestion in all the erectile parts of the vulva and vagina, the approach of the other sex, and particularly the introduction of the penis, throws her into a voluptuous orgasm, which sometimes causes cramp or convulsions, and terminates by a secretion, more or less considerable, from the mucous membrane of the vagina, which is succeeded by a total prostration, that is far from being void of pleasure.

Fecundation is the creation of a new being, by the contact of elements, applied by two individuals of different sexes. It is proved, beyond all doubt, that the male semen is the fecundating liquor, by the artificial impregnations of eggs of frogs, by Spallanzani, and by those of Jacob upon fishes. These experiments were successfully reported by Dumas and Prevost, who also remarked, as Spallanzani had done, that the seed, in order to be fit for fecundating, required to be diluted. Thus we can perceive the utility of the prostatic fluid, and of the mucous emission of the vagina. The most extraordinary opinions have been entertained in the mechanism of conception ; a few of the leading ones only will be enumerated, as the history of them all, about two hundred and fifty in number, would consume too much time, and serve no purpose. The first opinion was that of Pythagoras. He supposed, that a vapour descended from the brain and nerves of the male, during coition, from which the embryo was formed. All the grosser parts were formed from the blood in the uterus : he maintained that forty days elapsed in the completion of the infant, and some months in its perfection, according to the laws of harmony. Impressed with this idea, the Scythians cut the veins behind the ears, when they intended to procure impotence and sterility ; an idea so justly ridiculed by Sterne.

Empedocles was of opinion, that some parts of the embryo were contained in the male semen ; and others in that of the female ; and that by their mixture, the embryo was formed. He also maintained that the desire of procreation was caused by the natural tendency of the separated parts to be united.

Hippocrates thought the infant was formed in the womb by the mixture of the male and female seeds. Aristotle denied that there

was any female semen, and in this he was correct; but the ovarian fluid answers the same purpose. He was of opinion that the embryo was formed in the womb, by the menstruous blood, and vivified by the male semen. He held, that the female supplied the material which was modelled by the male: the woman furnished the marble, man was the sculptor, and the embryo the statue.

Galen said, the embryo was formed by the substance of the male semen, and the fluid supplied by the female nourishes it; this is nearly correct.

De Graafe maintained, that all animals were produced from eggs (ova) omne ab ovo, and that the germs existed in ovary of the human female.

Josephus de Aromatariis, Swammerdam, and Harvey, our immortal countryman, who devoted great attention to the subject of generation, after his discovery of the circulation of the blood, asserts that as iron by friction becomes magnetic, so the womb, during coition, acquires a plastic power of conceiving an embryo, as the brain is capable of thinking and apprehending. It appears from his work on generation and parturition, published 1603, that he was a practical obstetrician, as he describes instrumental operations he performed. He was in practice more than half a century before M. Clement, who is said by some English writers to be the first medical obstetrician.

Hamme discovered the animalcules in the semen of all male animals, which required a bed or habitation, from the female, for their abode and expansion. Leewenhoeck deprived him of this discovery. The principal arguments brought against this doctrine were hybrid productions—as the mule, which is procreated by different animals; and secondly, that animalcules are observed in soup and gravies, and in vegetable infusions. The lascivious Charles ordered that the animalcules of the male semen should be presented to him, frisking in their native liquor.

Harvey examined the womb of the doe, an hour after coition, but he never found it contain semen; hence he concluded there was an aura seminalis or vapour, which ascends and impregnates. Ruysch, however, found the semen in the uterus of a young married woman, who was detected by her husband in a criminal connexion, and killed by him in the very act of copulation. Leewenhoeck and Hartsocker attested the same fact. Mr. Hunter killed a bitch during coition; he then opened the womb, and saw the male se-

men entering by jerks. Haller found the semen in the Fallopian tube, and thought with Fabricius ab Aquapendente, that the germ of the embryo was in the female, and was vivified by the male. Dumas and Chaussier say, that the male semen fecundates the ovum, or vesicular egg; and that the Fallopian tube becomes erected during coition, seizes on the ovarium, and conveys the ovum or egg into the uterus, to meet the fecundating liquor. De Graafe and Magendie have found the fringed extremity of the tube strongly applied to the ovary, a few hours after copulation, and the abdominal or the extra-uterine pregnancies, and the fact, that Nuck could produce those of the tube at will, by a ligature, seems to substantiate the opinion. Again, if the tubes are impervious, there will be no pregnancy. Harvey was the first who contended that an egg dropped from the ovary; and De Graafe demonstrated this fact, by precise experiments. Dumas and Prevost have proved that subsequently to a fecundating coition, a vesicle unfolds itself in the ovary, increases in size for four or five days, and then bursts; and that the ovule escapes through the small opening, and leaves a yellow spot after it. Brissiere saw this diminutive body, partly in the interior of the tube, whilst it still adhered to the ovary. All the theories that have been brought forward, respecting generation, may be reduced to the following: First, Epigenesis—that the materials are produced by the two sexes, which are called the force of formation. Second, Evolution—Bonet was of opinion, that the first female contained all the eggs, one within another; and that the human race will ultimately become extinct, by the exhaustion of the reproducing ovules. Lamark contends, that organized bodies arise from spontaneous generation, caused by light and electricity. Descartes speaks of a kind of ferment in the two semens. Pascal, and the older chemists, maintained that the seed of one was acid, and the other alkaline. Buffon maintained, that there were living organic molecules, which combined with a portion of dead matter. Others assert, that every female produces her eggs by secretion. Dumas and Chaussier hold, that the animalcules contain the nervous system of the embryo.

The semen of the male is said to be conveyed to the ovaries by the penis, and from thence back into the uterus. The chief objection to this is the disproportion between the generative organs of sexes; for example, if a large woman be married to a small man, as often happens, the male organ may not reach the orifice

of the womb, which may be distant from three to six inches, from the external parts; and besides the width of the upper part of the vagina, which may not close tightly on the penis; and therefore the semen will not be injected accurately into the orifice of the womb. Again, if a large man be married to a small woman, the penis may pass up beyond the mouth of the womb, that is, by pushing up the loose vagina; and thus the emission of the semen will not be thrown into the womb. We meet with many cases where the mouth of the womb is not two inches from the external parts; and there are few male organs that do not exceed this length. The penis is not perhaps in contact with the mouth of the womb in nine cases out of ten—It passes far above it. Impregnation has taken place, and the hymen perfect, where no complete penetration could have happened. I have been confidently assured by a gentleman, that he impregnated a female, although he scarcely penetrated the vagina. The woman consulted me, unconscious of her condition, as the connexion had taken place when she was intoxicated, and she absolutely averred she never knew any man; yet my opinion was unchanged, and she was delivered in due time. I knew a man who lost two inches of his penis, yet he had children, his wife being rather over the middle size. The penis had been amputated close to the pubes. The wife supposed her husband impotent, and was highly offended when informed he might propagate; but she bore him offspring, of his own similitude (*Lond. Med. and Surg. Jour.*, 1830, vol. iv.—*Mr. Hurd's case*). These cases favour the doctrine of absorption. The orifice of the womb may be scirrhus, and nearly closed up. Drs. Munro and Farquharson, of Edinburgh, found it completely closed, and the woman pregnant; there must have been a small opening, to admit of conception. Another doctrine is, that the male semen is absorbed from the vagina, carried into the circulation, and brought into the ovaries. To this it is to be objected, that the semen, if taken into the circulation of the blood, would be so changed by admixture, as no longer to be semen, and therefore could not impregnate. If true, a woman would conceive, if the male semen were injected into her veins.

From the experiments of Spallanzani, the semen must be slightly diluted to effect impregnation, but still it must be semen. Others say there would be no use for the Fallopian tubes if absorp-

tion took place ; but this is an error, as they would still be requisite to convey the impregnated ovum to the womb.

Some assert, that the semen makes an impression upon the labia, vagina, or the womb, and that impregnation takes place by the ovaries sympathizing with the impression. Others are of opinion that the semen is absorbed from the vagina and labia by a set of vessels, whose whole duty it is to convey it to the ovaries. Such ducts have been discovered in the elephant, and by Dr. Gartner, of Copenhagen, in the cow and sow. This modified doctrine of absorption is the most simple that nature could adopt in this process ; but, if true, super-foetation ought always to occur.

If the germs existed in the female, they would have been formed in the first of the species ; and all infants would be like the female parent, which we know not to be the case. Again, the ass and the mare produce a different species of animal, which is incapable of reproduction. This doctrine would not account for monsters, or defective infants. The internal functions of both parents are deeply concerned in the production of the fœtus, as we often see scrofula of the one parent conveyed to the offspring ; hence the objection to marrying delicate and diseased persons. Dr. Cullen remarks, that infants of both sexes will become scrofulous. Physiologists have asserted, that the right testis and ovary form the male, and the left the female. Scotus asserts that a soldier, who lost his left testis, had twenty-six children, all boys ; and he removed the right testis of a dog, and caused the animal to impregnate a bitch, when the puppies were all female. However, Richerand asserts, that a man with one testis will beget male and female infants. Velpeau describes a woman with one ovary, who had male and female offspring. I should have observed, in refuting the doctrine of animalculism, that many were horrified at the idea of supposing that only one animalcula, out of so many millions as were said to exist in the male semen, should be vivified, a doctrine so opposite to the wisdom and beneficence of Omnipotence. On the whole, the doctrines of the *aura seminalis*, or vapour, and of absorption, are decidedly the most feasible, because the orifice of the penis is seldom applied to that of the womb ; but we are perfectly ignorant of the phenomena of conception, even in these times.

In order to have coition effectual, there is a mutual relation necessary—a union in mind and pleasurable enjoyment as well as in

body, and unless this union of love be mutual, conception will seldom, if ever happen ; for it has been long observed, that frigidity and reserve in either party will defeat procreation—a want of love being a certain cause of barrenness. Hence, in unequal marriages, where one of the parties is old and the other young, there is scarcely ever offspring. Again, it has been observed, that in cases of rape, impregnation seldom occurs.

In order to effect procreation, there must be an ability and fitness of disposition in the sexual organs of both parties. The disproportion of the organs impede or prevent conception. This is observed very often when persons of extreme difference of stature cohabit. The most frequent cause of want of family is too frequent intercourse ; the male semen will be too weak, and the female will become relaxed, have increased mucous vaginal discharge, which will extinguish the vivifying principle of the male altogether. Hence, we see strong, young, vigorous, and amorous persons remain married five, six, and seven years without children. I know three respectable families in this predicament. I am inclined to think that the male semen is not sufficiently strong when only allowed to accumulate for a day ; in fact, all healthy persons, who desire children, should cohabit but once or twice a week, and they will seldom be disappointed in their expectations. The sexual act is not performed well when repeated too often. Hence, when boys or extreme young persons get married, they seldom propagate. It is an opinion, that the greater the quantity of semen, the more perfect the formation, and even future disposition of the offspring, and the greater the pleasure experienced by both sexes. The first opinion is attested in the inspired writings, Gen. xlix. v. 3. The more the semen is preserved, it is more powerful, and ought to be retained for a few days, in order to render the sexual congress effectual.

Care, thoughts of business, sorrow, sadness, and depressing passions should be avoided, as they have a bad effect on the conception. This has been long the prevailing opinion among mankind, especially among physicians, naturalists, and I might add, sentimentalists too.

The most frequent causes of failure on the male side are too frequent copulation, malformation of the penis as the urethra opening at the side of the perineum, or on the back of the organ, or near the scrotum ; in all of which states, the semen will not be

applied to the orifice of the uterus. Stricture is another cause of impotence, as the semen may escape into the bladder; there may be want of erection, or that function may cease before the completion of the act. Frequent intercourse is injurious to conception, causes debility of the organs, and unfits them for generation. Prostitutes seldom conceive; on the other hand, a woman very readily becomes pregnant by a single intercourse. If the semen of the male be vitiated or depraved, the infant will be affected. Thus the venereal disease is communicated to the fœtus in the womb; infants have been born with the copper-colored eruption, and cured only by mercury.

All healthy persons, at the time of puberty, most certainly feel the passion of physical love. It is a part of their health, and as natural a consequence as hunger or thirst. It is the most delightful of all the passions, and makes the greater part of human happiness; it exists independently of the human will; it may be restrained, but not extinguished. Reproduction seems to be a common law of animal and vegetable life, and the disposition to reproduce, in all healthy subjects, is most powerful. It is a passion that must be gratified. In the male, the semen will only accumulate for a certain time, and must be disposed in some manner, natural or unnatural. Those who think intercourse with the other sex criminal, unless in the married state, allow the semen to be disposed of by nocturnal effusions. Others, who fear offspring, dispose of it by the abominable practice of onanism, self-pollution, or those other disgusting and unjust means recommended in our times as wholesome checks and salutary preventives of conception. The practice of introducing substances into the vagina before coition, will not prevent impregnation.

In cases of precocious puberty, in which seminal emissions and menstruation have occurred before the fifth year, it would be worth enquiring, whether conception could happen between such persons, and also in cases of old age, as at eighty in the male and seventy in the female. The French physiologists maintain the affirmative of the latter supposition. Magendie asserts that menstruation has returned after the seventieth and eightieth year (*Physiol.*, 1826); and Dr. Elliotson informs us, in his most interesting notes on the translation of Blumenbach's *Physiology*, 1828, that Thomas Parr, who died at the age of 152, was compelled to do penance in a white sheet, for an illicit amour, committed at

the age of 105; from which it is evident that he not only enjoyed the longevity, but also the vigour of his antediluvian progenitors. Mr. Callaway, the eminent surgeon of Guy's Hospital, presented a child at the London Medical Society, in June 1828, whose age was three years and eight months, and whose organs of generation were fully developed. He had whiskers, hoarse voice, erections, and sensual desires; but it was doubtful whether he had seminal emissions. There is a similar case recorded in the Medical and Physical Journal; the boy was five years, of age, the generative organs were fully developed, and he had nocturnal emissions. Could impregnation be caused by them?

Section 2.—Fecundation.—Conception.—Phenomena with respect to the Mother.

In my Inaugural Dissertation on Man, and the apparent varieties of the human species, I maintained, "that a fluid was afforded by each sex for the formation of the human embryo; but that something besides the mechanical commixture of these fluids was requisite for the purpose of procreation, and a Power, far different from brute matter, was exerted, by which the future offspring became endowed with animal as well as rational existence." This opinion, to me original, is now maintained by one of the most eminent physiologists and distinguished surgeons of modern times—Mr. Abernethy. When speaking of conception, he says, "Now I pause here, that you may think of the positive absurdity of supposing that the foetus can be formed by either parent. How can it be! What is the testicle: for that undoubtedly secretes the fecundating liquor? Is it not a congregation of vessels? Why, then it must be formed by aggregation of parts, after the secreting process has taken place. And what is the ovary, but a vascular part? I say it is impossible, therefore, to suppose that a young animal can be secreted; it must be formed; and then the only question is, where is it formed, and how is it formed?—Lectures, 1828.

The ovaries are much concerned in the phenomena of conception; they become red and tumified, one of their vesicles swells, bursts, and escapes, having its parieties thickened and pulpy, and being about the size of a small cherry (Duges), and containing a fluid, and the ovule, or rudiments of the embryo. The opening through which it escapes becomes cicatrized, and is called the corpus luteum: it is described by Fallopius, Malpighi, De Graafe, and

Rœderer; and its development is not the effect of the male semen, but is a peculiar function of the ovary; it is an indispensable preliminary necessary for conception; it has been found in women who had not conceived, by Rœderer, and in virgins by Haighton, Vallisnieri, Santorini, Bertrandi, Sir E. Home, Brugnone, and Cruickshank: in mules, by Brugnone; and in animals whose Fallopian tubes were tied before coition, by Haighton. The male semen is said to be carried by absorption, or by a peristaltic motion of the womb and tubes (Galen, Fallopius, Morgagni, Hunter, Magendie, Richerand Blumenbach, and Ruysch); and Haller found the sperm in the Fallopian tubes of women and animals, who were killed immediately after coition. Dr. Haighton tied the Fallopian tubes of rabbits and incised them; the animals lost all desire, were barren, and yet the corpora lutea were developed. Impregnation took place when one tube was cut, but that of the divided side contained no ova (Phil. Trans., vol. lxxxvii. p. 175). Ovarian and extra-uterine conceptions prove that the process of impregnation takes place in the ovary, and beyond the womb and Fallopian tube. Mr. Stanley has published an account of a case of ovarian pregnancy (Med. Trans., vol. vi. art. xvi.); and Dr. Granville a more extraordinary example, the foetus being perfect, and four months old (Phil. Trans., 1820). Yet it must be admitted that the penis is not always in absolute contact with the orifice of the womb during seminal emission, and from the smallness of the orifice, in many cases, cannot inject the semen into the uterine cavity. "It would be difficult," says Richerand, "to conceive that this straight passage, the orifice of the womb, should admit even the seminal fluid, if it were not known" (who knows it?) "that in the moment of copulation, the womb from irritation draws together, and inhales, by real suction, the semen which it craves." I would ask how can this theory be ever proved? Mr. Abernethy was right when he declared, "we know nothing of the phenomena of conception." All that has been said concerning it must not be received as fact, but merely as probable; such is the darkness with which nature has chosen to envelope this great mystery of the living economy. But to proceed with the received opinions: The Fallopian tube is said to become erected during orgasm of coition, to embrace the ovary, which embracement was observed in different animals killed after coition, by Haller, De Graffe, and Cruickshank; in women, who died soon after coition, by Littre; and in a virgin,

who died of hysteria, by Vallisnieri. The peristaltic and anti-peristaltic motion of the tube, the conveyance of the semen to the ovary, and the re-conveyance of the impregnated ovum to the womb, have been proved by ocular demonstration, by Beclard, De Graafe, Prevost, and Dumast, and by the experiments of Nuck and Duverney, who arrested the impregnated ovum in the tube, by a ligature applied three days after coition; again by the tubular and abdominal pregnancy, in which the tube has allowed an ovule to escape (Lallemand). It is probable that the increased dilatation of the tube, after fecundation, is intended for the retention of the ovum for some time. How can we explain the fact, that but one tube only is concerned in conception? What was the object of nature, in forming two tubes, two ovaries, two testes, two seminal receptacles, if one organ in each sex be sufficient for the propagation of the species? Or are the double organs in each sex intended for the formation of the distinct sexes?

The same orgasm that affects the ovary and tube is said to render the womb vascular, and lightly inflamed (Harvey, Ruysch, Hunter, and others). Its internal surface thus irritated, secretes the albuminous concretion, called decidua, by Hunter, and epichorion by Chaussier. These effects are purely sympathetic, because they exist in extra-uterine pregnancies; they are more perfect, however, when produced by the presence of the ovule.

The volume, form, and direction of the uterus are changed; its parietes are enormously thickened; its weight, at the completion of the term of gestation, is two or three pounds, and compared with that of a woman who has been a mother (two ounces), and with that of a virgin (half an ounce), we find it multiplied by nearly twelve and twenty-four. Its fibres are muscular (Lobstein); but not invariably so, as attested by Dr. Malins and myself, in a case lately published (Lond. Med. and Surg. Journ., Jan. 1831, vol. vi.) Drs. Dewees and Ramsbotham deny that new matter is added to the uterus after conception; an opinion at variance with that of the profession in all countries.

Section 3.—Fecundation. Phenomena of the new being, the product of Conception.

It has been attributed by the ovarists to the exclusive production of the female, to the male by animalculists. Haller, Hunter, Buffon, Haighton, De Graafe, Cruickshank, Vallisnieri, Prevost,

Dumas, Rolando, and all the modern physiologists agree that the fœtus is produced by both sexes, the ovary affording the ovule or germ, and the male the principle of life. Some assert that the male produces the nervous, and the female the vascular systems, as the vessels of the fœtus in birds are connected with the yolk before fecundation.

The doctrine of the ovarists, as to exclusive evolution of the germ of the female, is now abandoned, and that of the epigenesis, or the adscititious property of the male, is now generally received. It did not require the illumination of the physiologists of ages to inform us that neither sex can individually propagate the new being; nor that male and female must be concerned in the formation of the offspring. After all the speculations and experiments of physiologists, for two thousand years, they have only arrived at a conclusion universally known to every grade in society, and in every clime—that the union of both sexes, of the same genus of animals, must take place, in order to form the new being. I say of the same genus, as there is but one exception to this assertion in the whole class of animals, namely, the fecundation between the horse and the ass; but even here nature has provided against the indiscriminate mixture of animals; the mules are formed with imperfect genitals, and cannot continue their species. The seminal fluid of each animal is a specific stimulus, and is incapable of fecundating in another; for if it had such power, there would be an endless confusion of animals, and no distinct genera. This clearly proves the monstrous absurdity of supposing that fecundation could take place between the human and inferior species of animals.

Section 4.—Development of the Embryo and its Membranes.

The impregnated ovum contains the elements of the new being, is detached from the ovary, and has been perceived in the Fallopian tubes of rabbits three days after conception, by Cruickshank and De Graafe; and about the sixth or eighth day in bitches, by Prevost and Dumas; and Sir. E. Home found the ovum in the womb, eight days after conception. Med. Chir. Trans. vol. 2. Cruickshank was of opinion, that it remained detached for two days after its descent into the womb, and then became attached to the organ by vascular filaments.

Meckel asserts, that the human embryo can be observed on the

fifth day after conception ; and that the ovum measures from six to eight lines in diameter. The embryo at that time appears vermiform, with a small head ; the trunk separated from the head, and attached at a certain point to the decidua, or epichorion, without members, or without apertures, of a homogeneous appearance ; three lines long, and weighing three grains. Sir. E. Home describes it at the eighth day, as a vesicular, glutinous, pellucid, oval body, attached to the bottom of the womb ; that it is composed of two oval bodies, joined as if by a neck ; the one the head, the other, the trunk. On another occasion (*de Genere Humano ejusque varietatibus*) I have given a description of the impregnated ovum, and said that about the fourth week it resembles a tadpole, and probably that its tail is the spinal marrow. A small point is perceived below the head, which pulsates, and this is the heart ; and below this the abdomen appears. Thus the brain, medulla spinalis and heart are formed before the other parts. The ovum resembles a cone, somewhat curved, ; the head and trunk equal ; no distinct neck ; face small ; the spinal column perfect, and turned forward at the coccyx ; the umbilical cord is short, and contains the intestines, the extremities appearing ; it is six lines long, and weighs eighteen grains. About the sixth week two small black spots proclaim the development of the eyes ; the mouth appears shortly after ; and the inferior and superior limbs soon become discernible. The intestinal tube is perpendicular, running along the spine ; the anterior wall of the abdomen forms a projection, which still adheres to the membranes of the ovum. The ovum presents an ovoid form, and it is one inch and a half long, and one inch and a quarter broad. The embryo soon separates from the membranes of the ovum ; other parietes of the abdomen assume a funnel-like extension, to form the umbilical cord or naval string ; and the anus and genital organs appear. At two months, the eyes and eyebrows are visible ; the limbs are developed ; the fingers are closed on each other ; the head forms the third part of the body. Between the ninth and tenth weeks the mouth closes, by the lips drawing together, but the cavity still communicates with the nose ; the eyelids close the eyes ; the auricular openings begin to appear ; the spinal tail shortens ; and the fingers assume their positions. I have a small embryo in my possession, about this age, which is quite perfect, and the organs

of generation quite evident.* The parent assured me positively, that it was not more than two months and a half old. Towards the third month the face is distinct ; the mouth open ; the brain caseiform ; the meconium in the stomach, the anterior part of the chest is covered in by the sternum : the intestines, hitherto contained in the umbilical cord, enter the abdomen ; the skin begins to be organized ; and the embryo is from four to six inches in length. At the fourth month, the upper and lower extremities are equal ; the skin is downy ; the muscles contractile ; the meconium in the small intestines ; the auricles of the heart are larger than the ventricles ; the fœtus measures four inches long, and weighs about two ounces. About the fifth month, the auricles and ventricles of the heart are equal ; the nails are consistent ; the skin is still red ; there are points of ossification in the sternum ; the bowels capable of contraction ; the length of the fœtus, ten inches ; the weight sixteen ounces. At the sixth month, the hair appears ; the brain is homogenous ; the meconium brown, greenish in the cœcum ; and the testicles are under the kidneys ; the length is twelve inches ; weight, nearly two pounds. At the seventh month, the skin is of a rosy colour ; the cellular substance becomes developed ; the eyelids are covered ; the membrana pupillaris is broken ; the testicles descend to the abdominal rings ; the valvulæ conniventes are observable in the small intestines : the meconium descends into the colon ; the bile is bitter ; the length of the body is fourteen inches ; the weight about three pounds. At the eighth month all the parts become more developed ; the testicles descend into the inguinal canals ; the infant measures sixteen inches, and weighs between four and five pounds. At nine months, the infant has acquired the perfect form of the human species ; the two substances of the brain are quite distinct ; the auricles of the heart are smaller than the ventricles ; the meconium is in the rectum ; the bladder full of urine ; the skin is covered with an oily caseiform matter ; the breasts contain a serous whitish fluid : the thymus and thyroid glands are red ; the length of the body is generally twenty inches ; and the weight seven or eight pounds. There is a considerable variety in the weight and dimensions of different infants, during the different periods of development.

* M. Duges asserts, that the sexes are not to be discerned sooner than the fourth month.—*Manuel Obstetrique*, 1826.

How wonderful the development of the infant ! its body, consisting of a viscid gelatinous fluid after conception, and ultimately becoming the most varied and complicated machine in the universe.

Immediately after conception, the womb becomes excited and more vascular, it is softer and more spongy, an albuminous fluid is thrown out on its surface, which is organized in the shape of a membrane ; which, from being afterwards cast off, was called *membrana decidua* by Dr. Hunter, and *epichorion* by Chaussier, and *caduca* by others. This membrane lines the womb, and covers its orifice ; and also the Fallopian tubes, so that the fecundating ovum, in passing through the Fallopian tube, pushes the membrane before it, and thus makes it fall back upon itself ; the ovum is not in its cavity, no more than the lungs are in that of the pleura ; as Moreau, Velpeau, and Breschet have demonstrated. This reflected membrane does not belong to the ovum, only supports it as the *decidua reflexa* in the early months of gestation. The ovum is covered by two membranes ; the external one named *chorion*, which is thin, transparent, and provided with numerous vascular villousities that connect it with the decidua reflexa, except at that part where the latter is reflected by the ovum, at which point the villousities are to form the placenta.

The internal surface of the chorion is equally vascular and villous, and is separated from the internal covering of the embryo named amnios, by a quantity of serous fluid. The chorion is said to consist of two lamina by Burns and others ; but Velpeau has proved that it is a single sheet, and distinct so early as twelve days after conception. The *amnios* is a thin, white, transparent membrane, separated from the chorion during the two first months of pregnancy, by a fluid called liquor amnii, or “ the waters of the amnios ; ” but it afterwards coheres to that membrane, it lines the fœtal surface of the placenta, it ascends along the cord, and is lost on the cuticle of the infant, according to Velpeau.

This membrane has been injected from the mother, by Monro, and Weisberg, and from the fœtus, by Chaussier. It is sometimes inflamed (Mercier, Beclard, and Lee ; Lond. Med. Gazette, vol. vii. 1830.)

Some assert that the water of the amnios proceeds from the fœtal excretions, others from the mother. It has been analyzed by the celebrated Vauquelin, who found it contain water, albumen, soda, hydro-chlorate of soda and lime, and phosphate of lime.

Berzelius found it contain fluoric acid; Scheele, oxygen, and a respirable gas, according to Lassaigne and Geoffroy-Saint-Hilaire, but this is refuted by Chevreul.

The *vesicula umbilicalis* is a small sac situated between the chorion and the amnios at the origin or root of the umbilical cord, runs towards the embryo, whose abdomen it embraces, and forms a passage to the intestinal canal. It is analogous to the vitellin canal in oviparous animals, and runs from the yolk to the small intestines (Meckel, Oken, Bojanus), and exists in the human embryo (Wolff, W. Hunter, Oken, Bojanus, Meckel, Velpeau, Pockels, Duges, and Tiedemann). The arteries and veins on its external surface, are named ompholo-mesenteric. The artery is connected with the superior mesenteric; the vein enters the vena porta under the liver. These vessels have been observed in the foetus near birth by Duges, and in the adult by Spangenberg.

The use of the *vesicula umbilicalis* is to nourish the embryo by the albuminous yellow fluid it contains. The *vesicula allantoides* is a sac reflected from the chorion and amnion, and communicates with the bladder in animals. Its existence in the human embryo is denied by many, but attested by Hales, Dutrochet, Breschet, Pockels, Duges, and Velpeau. Duges asserts that it contains the fluid which is expelled in large quantities some weeks or months before delivery, a case of which I have recorded in this work; this is the hydrorrhœa of German writers. (Lond. Med. and Surg. Jour. 1830, vol. v.)

The *vesicula erythroides* or *Isis*, is a sac described by Pockels, as will appear hereafter; but its existence is denied by almost all obstetric writers.

The *placenta, after-birth, hepar uterinum*, is a spongy, vascular mass, destined for the sanguification of the foetus. It is common to all mammiferous animals, and presents different forms. It is produced by the villousities of the external surface of the chorion, which become united with the epichorion or decidua. During the first two months the villousities only exist; but about two months and a half they are much developed, and cover more than three-fourths of the ovum, at the middle period of gestation two-thirds only, and at the full period a third or a fourth. Velpeau questions the accuracy of these conclusions, and is of opinion that the placenta exists as soon as the ovule descends into the uterus.

The placenta in a human subject is a vascular, spongy body,

flattened, circular, oval, pyriform, and reniform; its centre is an inch or an inch and a half in thickness, and it becomes thinner towards the circumference, where it presents only a few lines. It is six or eight inches in diameter; and from eighteen to twenty-four in circumference. Its weight is about a pound.

It has two surfaces, an *external* and *internal*. Its *external*, *uterine*, or *maternal surface* is attached to the uterus at any point of its cavity, at the side, anteriorly, posteriorly, superiorly, or inferiorly, but generally at the fundus or right side. Its surface is soft, spongy, porous, and consists of several lobes (cotyledons) separated by fissures, named sinuses, and covered by a very fine membrane.

The *internal* or *fœtal surface* is attached to the chorion, which adheres to the amnios, the latter at the centre or origin of the umbilical cord, from which it may be easily separated by traction.

At the end of gestation, the circumference of the placenta is insensibly lost on the uterus, and is often detached with difficulty by young practitioners.

Organization of the placenta.—Various eminent anatomists have maintained that the placenta was composed of two layers, a maternal and fœtal, between which cells existed; but this is denied by all modern writers. The objection to this doctrine is the existence of the membrane between the placenta and uterus which is described by Arantius, Littre, Hunter, and Lobstein, Chaussier, Meckel, and many other eminent anatomists among the moderns; while it is rejected by Ruysch, Mary, Rohault, and others. The uterine portion was said to consist of arteries which deposited the maternal blood in the cells, whence it was absorbed by the ramifications of the umbilical vein, and conveyed to the fœtus. It will appear hereafter, that this doctrine is untenable. The placenta was said to contain *lymphatics* by Wharton, Cruickshank, Mascagni, Wrisberg, De Michaëlis, De Schræger, and Lauth; a point denied by the moderns. The existence of *nerves* in this organ is maintained by Verheyen. Chaussier, Sir E. Home, Bauer, and Ribes, but controverted by anatomists in general. The white cords observed in the placenta, and said to be lymphatics and nerves, were proved to be obliterated vessels by Velpeau, in 1823 (*Arch. Gen. de Med.*), and also by Carus, in 1827. In separating the uterine surface of the chorion, arteries and veins are divided, but no nerves or lymphatics.

Osiander, Stein, and others accounted for the situation of the placenta by ascribing it to the position of the woman after fecundation; but they forget that the ovule does not descend into the uterus for some days after conception. Velpeau offers an ingenious explanation. He says, that if the decidua be more firmly attached at the fundus, the ovule will fall towards the cervix uteri; and if the attachment be looser at the fundus than below the uterine tube, then the attachment will take place superiorly. These conclusions were drawn from thirty-four dissections, in twenty of which the centre of the placenta corresponded with the orifice, three times anteriorly, twice behind, and three times under one of the tubes, and six times only at the fundus uteri.

The mode of union of the placenta with the uterus is as yet a disputed point among physiologists. Some maintain that the great venous canals of the uterus are continuous with those of the placenta (Northwyck, Astruc, Haller, Mary, Baudelocque, &c.)

The moderns hold, that villousities or fungosities are produced on the part of the uterus in contact with the chorion, and intermixing with those of the latter, from the placenta (Wharton, Reuss, Stein, Asdrubali, &c.); while Velpeau maintains there is a fine membrane between the uterus and the lobes of the placenta. Duges, on the other hand, is convinced that the spongy tissue of the placenta is nothing but an assemblage of the ramifications of the umbilical vessels and the filaments produced by the chorion; the maternal blood is effused into their interstices, which may be compared to the areola of a sponge (Manuel d'Obstrétique, 1830). According to the same author, the umbilical veins and arteries anastomose, as injection passes from one set of vessels into the other, if made from the arteries, but a certain portion of the placenta remains uninjected. We also find that we may render the placenta turgid by injection through the foetal vessels; but some parts of it remain uninjected, as the vessels do not pass all the way to its surface. If the injection be made through the uterine arteries, the placenta is affected in the same manner, but the umbilical vessels are not injected. Hence we may infer, says Dr. Burns, in his last edition, 1829, that the placenta is composed of two portions. Williams, however, has injected linseed oil through the aorta and hypogastric arteries, which penetrated to the organs of the foetus; and Bianchini has frequently repeated similar experiments. Other objections will appear in a future article.

Wrisberg asserts that the arteries and veins of each lobe of the placenta anastomose, but have no connexion with those of the vicinal lobe. The use of the placenta is to vivify the blood of the fœtus and to supply it, as will appear more satisfactorily when we come to describe the fœtal circulation and umbilical cord.

The placenta is sometimes scirrhus, ossified, hydatid, and hypertrophied, softened, and affected with fleshy tumours. In such cases there will be danger of hæmorrhage from retention of the organ, hysteritis; and the child may be born alive, unless the disorganization is considerable. In twin cases there are two distinct placentæ, or one with two cords, or more commonly a bilobulated organ, with vascular anastomoses. It has been attached to the head of the infant (Nouv. Bibliotheque Med., 1830).

The *umbilical cord*, *navel-string*, *funis umbilicalis*, extends from the abdomen of the fœtus to the membranes of the ovum and placenta. It was observed by Velpeau, in many cases, at the fifteenth day, and from that to the third week after conception. About the fifth week it is composed of the vesicula umbilicalis, ompholo-mesenteric, or vitelline vessels, a portion of the allantoides and intestines. At the second month the intestinal canal enters the abdomen, the allantoides and vitelline vessels are obliterated, and from the third to the ninth month, the cord is composed of two arteries, one vein, a gelatinous and spongy tissue, and an amniotic tunic. It was said that the cord contains lymphatics (Dembroeck, Wrisberg, Schræger, and Michaelis), and nerves (Chausier, Reuss, Darr, &c.); but Velpeau is inclined to suppose these authors were deceived by the vestiges of the allantoides vitelline canals; and Lobstein and Meckel have denied the accuracy of their researches.

Sometimes there is but one artery and two veins, specimens of which were described by Blandin and Velpeau. The vein is double the size of the arteries, has no valves, and both are spiral from left to right.

The vessels of the cord may separate near the placenta or abdomen, and present a double cord, a fact attested by Velpeau and Deneux. The cord presents other anomalies; it has been inserted into the head, chest, and extremities. M. J. Cloquet has seen the cord attached to the head, in the Anatomical Museum at Brussels. The length of the funis at birth is generally about from fifteen to twenty inches; but it may be five or six feet, according

to Mauriceau, Hebenstret, Haller, Wrisberg, Denman, L'Heritier, Morlanne, and Maygrier. It is of a greyish yellow colour, less than the size of the little finger in thickness; its veins are sometimes varicose; it sometimes presents nodosities, and is knotted, or is partially filled with hydatids.

Section 5.—Development of the Embryo.

The following account of the development of the embryo is given by Dr. Pockels, of Brunswick, 1825, who has examined fifty ova within the first six weeks of pregnancy. He examined four, taken between the eighth sixteenth day, and arrived at these conclusions: First that the ovum is about the size of a small nut, up to the day of conception. There is no connection by vessels between the layers of the chorion. The chorion contains a reddish, gelatinous, transparent fluid, of the consistence of white of egg, in which a delicate, colourless membrane floats in different directions. He never saw an instance of allantoides, or the coat, which is said to line the chorion. Second, in this fluid lies the amnios, which is about the size of a pea, or a small bean; in the first fourteen days of gestation it is pyriform or globular; it is attached to the chorion, at a point, by a pedicle; its parietes are transparent, and contain a clear fluid. Third, the embryo appears to the naked eye at fourteen days, is one twelfth of an inch in size (a line), flat, and pressed together in the middle, at both ends thicker, and a little rounded, and has the consistence of jelly. It lies external to the amnios to the twelfth day of conception, and communicates to it by a clear cellular membrane; it can be removed from the amnios without opening the latter. About the eighth day it adheres by its back to the external surface of the amnios, and soon sinks into the cavity of the amnios. Towards the sixteenth day it is in the cavity of the amnios, with a navel-string. The head and posteriors may be recognized as small, white projecting knots, and the back is still concave. The vesicula erythroides is a small, pyriform bladder, resting on the amnios, over the lower part of the embryo; its smaller end opens into the abdomen of the fœtus. In the fœtus of eight to twelve days it is three times as large as the fœtus, and disappears in the fourth week of conception. It can be readily separated from the embryo; a cord passes from it into the abdomen of the fœtus; it becomes the umbilical cord; its remains are seen, as white lamel-

læ, at the origin of the cord, at the fourth or fifth week. The vermiform string of this vesicle coils itself into several folds, and turns towards the abdomen of the infant; the intestines in part arise in the vesicula erythroides.

The vesicula umbilicalis, a globular vesicle, larger than the embryo, on which it rests, is attached to the amnios, to which it is external; it is communicated with the vesicula erythroides. Both these vesicular distentions serve to develop the embryo, before the formation of the placenta. It is doubtful whether the umbilical vessel originate from the fœtus or erythroides. The want of evolution in both these vesicles is often a cause of miscarriages. Dr. Pockels found only one in four ova, in which the development of these vesicles was perfect, though he examined thirty ova, to ascertain this point. This description is received by all the continental anatomists; but requires further investigation before we can admit it.

Section 6.—Development of the Embryo and Fœtus.

The term *embryo* is applied to the germ during the three first months of utero-gestation, or until its different parts are distinct from each other: it is called *fœtus* during the remainder of its sojourn in the uterus, and *infant* after birth.

Much discrepancy of opinion exists among physiologists as to the period after conception, in which the embryo is visible. Hippocrates said, the ovum was visible on the sixth day; Meckel, on the fifth; Pockels, Sir E. Home, and Bauer, on the eighth; and Haller, from the fifteenth to the twenty-first. Velpeau dissents from all these writers, and denies that the present state of science is such as to enable us to fix the exact hour of conception, or to prove that the embryo will descend into the uterus of the same animal at the same period after different conceptions. On the other hand, Pockels asserts he examined for ova between the eighth and sixteenth day; and Beclard says, the ovum is visible when only three lines in diameter.

According to Meckel, the ovum can be distinctly seen the fifteenth day after conception: it is six or eight lines in diameter, is pyriform, elongated, curved, large, and round at the extremity, which appears to be the head, fixed to the membranes by the opposite extremity, which is small; it offers a homogeneous appearance, and

with difficulty a white fibre is seen, which is said to be the spinal marrow. (Velpéau.)

Sir E. Home describes it at the eighth day as a vesicular, glutinous, pellucid, oval body, attached to the fundus uteri; that it is composed of two oval bodies joined by a neck, the one the head, the other the trunk. (Phil. Trans. 1817; Med. Chir. Trans. vol. ii.) M. Velpéau informs us, that before the end of the third week the embryo is elongated, and he believes consists of the cerebro-spinal system; it appears to him, from numerous recent observations, that the vertebral column is the fundamental part of the body, and that all other parts proceed from this as branches do from a tree. He dissents from Tiedemann, Meckel, Serres, Geoffroy-Saint-Hilaire, who think the organic evolution is from the sides towards the median line. This, however, is the received opinion.

It is held that each organ is double at first, but as development advances the two lateral parts are joined together. It is said by the last author, if any impediment is given to the progressive growth of organs, as when an artery does not supply proper materials in an organ, such organ will be imperfectly developed, and thus monstrosity produced. He refers to the influence of the mother's mind and corporeal exertions on the fœtus, and deems them sufficient causes of deformity in the early stage of fœtal development. This theory, though ingenious, is by no means satisfactory.

Section 7.—Functions of the Embryo and Fœtus.

The sensibility of the fœtus must be admitted, though it is not exposed to external objects. Its motions are often violent and troublesome towards the completion of the term of gestation, and are purely instinctive. Its caloricity is less than that of the adult. (Edwards.)

Nutrition.—Of all the questions of physiology, this has been the most disputed. Some have placed the source of nutrition in the water of the amnios, more than in the placenta, some in the vesicula umbilicalis and allantoides, others in the gelatin of the cord, and some in the decidua or epichorion.

Harvey and Diemerbroeck considered the water of the amnios highly nutritive and lacteous; and with Rudbeck, Haller, Darwin, La Courve, maintained it passed by the mouth to the stomach; while Alcmeon, Boerhaave, Buffon, and Van-den-Bosch alleged it was absorbed by the skin. These opinions are refuted by the fact, that in cases of imperforation of the œsophagus, in acephalous

monsters, and when the infant is born with all the outlets imperious, it is fully developed. It is foreign to the nature of this manual to notice all the physiological reveries upon this and other parts of my subject; but I cannot help inserting a few more upon this point. Lobstein held the fluid was partly absorbed by the genitals; Osiander, Oken, and Muller, that it was absorbed and modified by the mammæ, then conveyed to the thymus gland, and finally to the thoracic duct; while Schurigius, David, Bøederer, Scheele, Winslow, Heroldt, Beclard, and Geoffroy-Saint-Hilaire believe it to enter the trachea and bronchi, and to be there elaborated for the purpose of nutrition. The general and received opinion of almost all physiologists is, that the placenta is the source of nutrition to the fœtus. It has been said that the placenta is a respiratory organ to the fœtus, and supplies it with oxygen.

During the early period of intra-uterine life, the embryo is nourished by the umbilical vesicle, which is continuous with the intestinal tube, which absorbs the fluid, which is carried by the omphalo-mesenteric vein to the heart of the embryo. The analogy of these vessels to the yolk of the egg renders this opinion probable. The absence of the meconium in acephalous cases (Elben), which, according to others, was the residuum of digestion, was considered an argument in favour of the passage of the amniotic fluid into the stomach. This fluid does depend upon the bile, and is only absent when the liver is wanting. (Tiedeman.) The female nourishes her offspring with her blood, through the medium of the placenta; while the fœtus possesses an organ for the further depuration of the blood, and the liver is that organ. (Bichat and others.) Tiedemann and Gmelin considered it the same in the adult. The researches of Dr. Stoker of Dublin, in his Pathology upon this point, are exceedingly interesting and satisfactory.

The uterine arteries, which are continued to the decidua, furnish blood to the amnios in the spongy tissue of the placentæ, where it is in contact with the extremities of the umbilical vessels of the fœtus. The blood is mixed with that deposited by the umbilical arteries, and absorbed by the veins of the same name, and conveyed to the fœtus, and again returned to the placenta by the umbilical arteries, and absorbed by the maternal veins.

Circulation of the fœtus.—At a very early age, the heart of the embryo is nothing but a reservoir, composed of the umbilical

vessels ; at a later period, the right ventrical and pulmonary artery appear. When the organ is perfect, the circulation of the fœtus is said to be effected in the following manner.

The umbilical vein arises from the placenta by innumerable branches, runs along the cord to the umbilicus of the fœtus, penetrates the abdomen behind the peritoneum, and divides into three branches, at the transverse fissure of the liver. One proceeds to the vena cava inferior, this is the ductus venosus ; the other two enter the right lobe of the liver, and anastomose with the vena porta. The inferior cava carries the greater part of the blood into the right auricle, from whence it passes into the left auricle through the foramen ovale, then to the ventricle and ascending aorta, and thence to the head and superior extremities. It is returned by the jugular and subclavian veins to the superior cava which throws it into the right auricle, where it is mixed with a portion conveyed by the inferior cava ; it then enters the right ventricle and pulmonary artery. As the lungs are impervious, a canal runs from the pulmonary artery to the aorta, called ductus arteriosus, through which the blood passes to the descending aorta, and thence to the abdominal viscera and lower extremities ; but a part of it escapes from the fœtus by the internal iliac arteries, which are prolonged into the umbilical, and these run along the cord to the placenta, where their blood is deposited.

Much diversity of opinion exists with respect to the circulation of the fœtus. Haller, Wolf, Sabatier, Portal, Richerand, say that the currents of blood from the inferior and superior cavæ do not mix in the right auricle, that the blood of the inferior cava passes entirely into the left auricle, that of the superior cava into the right ventricle. Bichat and Magendie dissent from this doctrine, and think it extremely improbable that two columns of blood can pass through the same cavity without intermixing ; and as the two auricles contract simultaneously, it is not likely that the vivified blood of the umbilical vein goes entirely to the upper parts of the body, and that the venous blood only supplies the remaining parts. But as the inferior cava surmounts the Eustachian valve, it appears to be continuous with the foramen ovale, while the superior cava opens anterior and opposite the orifice of the ventricle, so that no such mixture of the blood of these vessels need necessarily take place. Nevertheless, it is not correct to state, that the head and superior extremities are nourished by pu-

rer blood than the inferior parts of the body ; for it is to be recollected how the blood of the umbilical vein is mixed with the venous blood of the abdominal viscera, through the vena porta, and with that of the inferior extremities by the ascending cava.

The circulation of the placenta is also differently explained. Some say the fœtal arteries deposit the blood in the cells of the placenta, whence it is absorbed by the maternal veins, is carried to the maternal lungs to be vivified, and afterwards brought by the arteries to the placenta. Others maintain that a portion of the blood deposited by the umbilical arteries is absorbed by the veins of that name, and returns to the fœtus. M. Velpeau raises a formidable objection to the first opinion. He says, if the blood of the umbilical arteries is deposited in the placental sinuses, it must evidently mix with that of the uterine arteries, which is effused in the same place ; it is therefore necessary to suppose that the absorbent mouths of the umbilical vein have the faculty of choosing the arterial blood from this mixture, as the uterine veins do not take but the venous (arterial ?) blood. On the other hand, an injection will pass with the greatest facility from the arteries into the veins of the placenta, without effusing itself upon the uterine surface of that body ; therefore the blood of the fœtus is not taken up by the uterus. The reader should refer to the remarks upon the placenta in a former page for solid objections against this reasoning, where he will find strong arguments against this conclusion. M. Velpeau is inclined to suppose that the arterial blood of the fœtus undergoes its changes by a molecular action in the placenta, which though inexplicable may be still correct. He thinks it may be compared to the capillary system after birth ; to what takes place in secretory organs, and in the lung itself. The fluids of the ovum are in mediate contact with those of the woman ; but a change may take place analogous to that in the lungs between the atmospheric air and the venous blood. However ingenious this hypothesis appears on paper, it is decidedly erroneous. It is only necessary to reflect upon the utter impossibility of supposing the fœtus to form its own blood, that is, to grow and daily increase in size without a supply from the mother. Again, every one at all conversant with obstetrics is aware of the innumerable vessels which pass from the uterus to the placenta, and the hæmorrhage consequent to their rupture. It is really astonishing that a physician so intimately acquainted with obstetrics, and ev-

ery branch of medical science, as Professor Velpeau is, could seriously propose such a doctrine.

It has long been supposed that the great size of the liver in the fœtus served some purpose, and, it is said, is the organ which effects certain changes in the blood. Lobstein thinks it the organ which effects the colour of the blood (hematose): Fourcroy, that it causes a decarbonization and a deshydro-genisation; and Stoker, a change in the hydro-carbonous principle of the blood; Prevost and Dumas, that it forms the globules of blood in the fœtus; Geoffroy-Saint-Hilaire, that it secretes a large quantity of bile, which passes into the small intestines, and there determines the formation of an abundant quantity of mucus, which the fœtus digests, and on which its development depends. Dr. Robert Lee has endeavored to prove, that the liver secretes an albuminous nutritive matter, which he found in the hepatic duct, duodenum, and small intestines; while he found an acid fluid in the stomach, and meconium in the large intestines. All these theories require further corroboration before they can be admitted. Like all other points in the physiology of the fœtus, this is extremely doubtful and unsettled. Indeed the function of the liver in the adult is by no means determined.

ARTICLE III.—OF CONCEPTION WITH REGARD TO THE SEX OF THE FÆTUS.

Section 1.—Is it possible to know the Sex of the Fœtus during Pregnancy.

IN the primitive archives of medicine, we find this subject discussed, and more especially the influence of the mother's imagination upon conception and the fœtus. Even in our own day, we find women of all ranks alarmed about marks and blemishes, which they suppose can be induced by their own imagination. Medical men, too, are found among the advocates of this silly doctrine, as will appear in the course of this article. It is therefore worthy of attention.

The annals of history afford evidence that great interest was felt by females in all countries in endeavouring to ascertain the sex of the fœtus in utero. The Egyptians and Indians referred to the state of the heavens, and to the conjunction of the planets, at the moment of fecundation. The Greeks, and most other an-

cient nations, invoked the phases of the moon, and consulted astrologers, soothsayers, sorceresses. Even Livy had the folly to assist his wife in completing the incubation of a pullet's egg with the heat of the hands, persuaded that if the male appeared the infant would be a boy, and this practice continued to the time of Augustus.

Hippocrates and Aristotle were of opinion, that a male was developed more slowly than a female; that pregnancy was more protracted; that the mother was more active, vigorous, and in better health than when she carried a female. I have known many women entertain this idea, and one who foretold the sex in two instances. I need scarcely mention, that it is impossible to discover the sex of the fœtus in utero.

Another question which engaged physiologists was the possibility of creating the sexes at will.

Hippocrates was opinion, that the right testis and ovary supplied the male germs, and the left the female; and this doctrine prevailed in many ages, indeed to the present century. Millot, and recent continental writers, have advised the adoption of one side or other, during a fecundating copulation, to ensure the sex which was desired to be obtained. This hypothesis is false and absurd, as Le Gallois removed an ovary from a rabbit, and yet the animal produced male and female; and Velpeau dissected the body of a woman at the Maternité, who was the mother of ten or twelve children, male and female, and who had but one ovary. Both sexes are found in one lobe of the uterus of animals. Dr. Edwards, however, has determined that the mollicules of *confervæ* may be modified so as to produce male and female at will, and also many insects.

M. Velpeau, in discussing this point, informs us, that the agriculturists of France have long observed the influence of season in determining the sex of animals. If the wind be north, the season dry and cold, then mares, sheep, and heifers, produce less females than in an opposite state of weather. Agriculturists, are persuaded that to produce males, nothing is more advantageous than to have animals impregnated by the most vigorous of their species. An agriculturist, who has lately paid great attention to this subject, confirms the statement, and proves that where one male, as in the gallinaceous tribes, serves a number of females,

the female sex predominates. This fact has been observed in countries in which polygamy is allowed, as in Persia and Turkey; whereas, in European nations, where the custom is not tolerated, the proportion of the sexes is equal. "It is therefore probable," says Velpeau, "that the sex is determined by that of whichever enjoys the most prolific power at the instant of conception. Many researches are as yet necessary to transform this proposition into a mathematical certainty; but if ever it comes to be confirmed by authentic observations, it is evident that the act of procreating the sexes at will, will not be a chimera, and that the hope is to remain, that pregnant women can be informed of the sex of the infant of which they will be delivered."

It has been said, that the inhabitants of prosperous nations and a salubrious climate, produce more males than females; but this is denied by M. Villermé and others, who prove that the proportion of the sexes does not differ in the poorest countries. This must appear manifest when we consider that the inhabitants, male and female, of such countries, are subjected to the same luxuries or privations. As they manage these things better in France than in this country, I must insert the report of Villermé, read before the Academy of Sciences in Paris; of 12,000 births, 1093 happened in January, 1136 in February, 1117 in March, 1057 in April, 1000 in November, 981 in December, 981 in September, 964 in October, 965 in May, 927 in August, 896 in June, 884 in July; and therefore that the proportion of conceptions is far from being the same in all months in the year. He thinks that balls and public rejoicings at the time of marriage, privations, fasting, prosperity, civilization, liberty, misery, and calamity, have different effects upon reproduction; and he demonstrates that more infants are born under a fine sun, in countries where the arts, industry, and the sciences flourish, where the atmosphere is pure and the country fertile, than in opposite conditions; and that scarcity and famine produce great changes in the progress of population. I have only to observe in conclusion, that "to those who wish to create the sexes at will, fine infants, infants of spirit, and without passions," I cannot but recommend the *Callipédie* of Quillet, the *Megalanthropogenesie* of Robert, and the *Traité de la Philopédie*; and at the same time request their perusal of the following remarks:

Section 2.—Influence of the Mother's Imagination upon the Infant during Pregnancy—Marks.

The older writers supposed that certain positions, as laying on the right side after coition, would form a male, and on the left, a female; but the will has no power over fecundation; it is not in our power voluntarily to create the sexes, neither with respect to the number of children, nor with regard to their future physical or moral qualities. This is the most modern opinion of physiologists, and of course controverts the vulgar notion that the imagination of the woman can disfigure or injure the infant, an idea that clearly shews the low ebb of physical knowledge of former times, and the gross materialism with which the philosophy of the human mind was contaminated and degraded; a doctrine inconsistent with right reason, experience, and anatomical knowledge. The belief in the power of imagination is, however, of very high antiquity, as appears by the contrivance of Jacob, to mark the lambs, calves, and kids, which were to fall to the share of Laban, (Gen. c. xxx. 37, 39.) But the Divine influence had interposed in that instance, and therefore it is out of the ordinary course of nature. The ideas of mankind, at this early age, on this subject, were vague and ill defined. The popular opinion prevailed in Greece, and was sanctioned by Hippocrates and Galen. The Spartans had their pregnant women to gaze on pictures, or figures of Nireus, Narcissus, Hyacinthus, Castor and Pollux, and on the more youthful divinities. Hesiod and Hippocrates speak of imagination; Galen and Oppian on the force of mere vision. The doctrine was adopted by the Arabian physicians, Avicenna and others, and in time by the schoolmen of the twelfth and thirteenth, and by the physiologists of the fifteenth and sixteenth centuries. Albertus Magnus, an ecclesiastic, described the power of imagination, and said it arose from celestial influence. He enters on a long discussion on the influence of the planets on the fœtus in the womb. These mysterious and extravagant notions were first imbibed by Thomas Aquinas, the angelic doctor, and made more unintelligible by a mixture with universals, substantials, elementary qualities, &c.; and these opinions were received by the most eminent physicians of the age, even by Roger Bacon, Arnold de Villa Nova, and the Hon. R. Boyle, the distinguished philosopher and chemist. Fiennius, of Louvain, published a work on the subject, in 1608, and the greater part of the seventeenth century

was remarkable for this imaginative philosophy, and its offspring—the gross credulity in the collection of all sorts of marvellous and prodigious stories. An unanswerable objection to all these stories is, that not one of them is sufficiently authenticated. Towards the end of the seventeenth century, even Stahl, Hoffman, and Boerhaave, believed in this doctrine. Van Swieten and Turner were also strong advocates in favour of this view of the subject. In the year 1716 M. Marcet wrote against it in the *Transactions of the Society of Medicine*, at Montpellier. He denied that there was either a direct vascular or nervous connexion between the mother and infant, and also that the infant cannot see or hear in the womb of the mother, as asserted by the Abbè Malebranche; and that although there are hereditary diseases, they are independent of the imagination of the mother. He ridicules the idea, that James the First was terrified at the sight of a sword, because Queen Mary had been frightened at the murder of David Rizzio in her chamber, during pregnancy; for he proves that the fears of the mother are generally discovered after the birth of the infant, and then laid hold of by the friends to explain the deformity. The best work against the imaginative doctrine, which I have seen, was published by Dr. Augustus Blondell, of London, in 1728; and he was opposed by De Superville, a German, in the *Transactions of the Royal Society of London*, 1740. This writer was opposed, in turn, by the celebrated Buffon, who contended that marks were more dependent on the fancy of others, as to resemblance, than of the mother; he explained the influence of change of season, and why marks on the skin were redder in summer. He maintained that it was as easy to suppose a hen on her eggs, who sees the neck of a cock twisted off, can produce chickens with crooked necks, as for a woman to bring forth a dislocated child, by seeing a man broken on the wheel. As to dislocations and fractures of infants before birth, the imagination could not cause them; but scrofula, syphilis, rickets, or mollities ossium, may. The doctrine was also opposed by Eller, in the *Transactions of the Berlin Academy*, by Krauv and Røederer, at Petersburg, and most successfully by the illustrious Haller, in 1766. This latter eminent physiologist admitted that he saw marks that might arise from any cause capable of corroding the skin, which might, by a lively imagination, be transformed into fruits, mice, sparrows, flames, &c.; but most of them hap-

pen without any affection of the mind, or disorder of the female.

The case of Malebranche and others Haller regarded as erroneous. No nerves pass directly from the mother to the fœtus, and hence no mental power can directly affect the latter. The question had been settled by Haller, sixty years ago, and was never doubted until 1825, when Sir E. Home opposed it in the *Philosophical Transactions*. Where is the instance that can be indubitably shown, in which any object that can act on the mother's imagination has unquestionably influenced the fœtus? Is it proved in the relation of cause and effect? In truth, we have in medicine more false facts than false theories. Sir E. detected nerves in the placenta, by the assistance of Mr. Bauer, of microscopic celebrity; but it is surprising that no other anatomist or physiologists should have observed the placental nerves to this time. It is rather extraordinary that these nerves should have eluded inspection if they proceeded in a body from the placenta to the child; yet Sir E. found them in a preparation of a placenta belonging to Mr. Brookes, which had been in spirits for forty years! He thinks small-pox and ague caused by the nervous communication. The transmission of small-pox, or the venereal disease, is caused by the circulation of a poison in the maternal blood, which is deposited in the tissues; and even in ague, it is well known that the disease depends on some material agent, which affects the circulation. That instances of deformity occasionally occur, cannot be denied; but if they depended on the mother's imagination, they would happen almost in every case, as there is not a pregnant woman whose imagination is not more or less affected during utero-gestation.

It is extraordinary, that the human female, the most lovely object of the whole creation, who is endowed with so many charms, and also with an extraordinary love and tenderness for her offspring, instead of answering those noble ends, should be capable of producing monsters by her imagination. The thing is unnatural and ridiculous. The female passions, we know, act on the body, by accelerating the circulation of the blood, or by exciting or depressing the nerves; but there is no direct circulation, or nervous communication between the woman and her offspring. Physiologists account for this wise interruption of the circulation; for if direct, the fœtus, in the first months, might be destroyed by the increased circulation of the mother. The fœtus, when only percep-

tible by a microscope, and not larger than the smallest atom, would be destroyed, if the circulation of the mother were powerfully accelerated and pressed on it. Again, it is certain that conception is independent of the mother's will; she cannot cause or prevent it by her imagination or volition. If the blood passed directly from the mother to the infant, all her agitations would affect it; but we know that nervous mothers have healthy children. But the great question is, whether the attention of the mother's mind to a certain object can cause a determinate or specific effect on the infant's body in the womb, without any exciting force or violence; and whether the application of the mother's hand (chirapsy) to any particular part of her body, although accidental, and not premeditated, can work the same by sympathy, and induce an organic change on the same part of the fœtus. Most of the middle and lower classes believe the affirmative of these questions; yet they are contrary to reason, to anatomical science, and to genuine and unsophisticated experience; and hence they are discredited by every person of information and common sense. The theories of the imaginationists have varied in every age; and it is impossible that experience can support such contradictory and different assertions. Thus the supporters of the doctrine are not agreed as to the person whose imagination is excited, when it is excited, or the exact extent of its influence. For example, Pliny was of opinion that the imagination of both sexes, male and female, was reputed to imprint or confound the similitude (Book vii. chap. 12). Others asserted that it was the fœtus that caused the longings; and where they have not been duly gratified, the wise women, thinking that the infant was in want, have supplied all deficiencies after birth, by making it suck a piece of roasted pork, as a certain panacea to supply all former disappointments. This custom still prevails among the vulgar, and no doubt it is rather obscurely consonant with physiological science, with fair logical deduction, and with the due connexion between cause and effect. The variations of the power of the imagination, as to time, are very remarkable; some say it is effected at the moment of conception (Pliny, *opus citatum*); others, before quickening, that is, between the third and fifth months, and that there is no danger afterwards; and others, that the imagination is most powerful after quickening (Turner on Diseases of the Skin). But monsters, or imperfect infants, can be accounted for in a more

rational way : from a redundancy, deficiency, or viciousness of the semen, from deformities of the parents, from malformation of the womb, from violent accidents, and, lastly, by the will of Divine Providence. These causes are more rational, and account for deformities of offspring far better than supposing that the imagination can produce a change in the fœtus. It must be admitted that there will be often powerful imagination, and afterwards no marks or deformities on the infants. A patient of Dr. Hamilton's had her abdomen grazed by a pistol shot, yet no deformity took place. Again, there are often marks and deformities, without any influence of the imagination.

Every obstetrician could give a long catalogue of pregnant women, who had had ungratified longings, who had been frightened by dismal objects, and even met with dreadful accidents, and yet their infants have been perfect, and without any marks or blemishes. In fact, no woman can arrive at the end of utero-gestation, in this or any other crowded city, without encountering some of these longings, frights, or accidents, and yet how few deformed children are produced ! Again, look to the reports of our lying-in hospitals, and see the small proportion of imperfect or monstrous births—scarcely one in five thousand. Is not this an unanswerable argument against the assertion, that the imagination is the cause of them ? We know the imagination to be exerted in almost every case, but not followed by the reputed result ; here we have a constant cause, but not a constant effect. If we inspect the bills of mortality in the different nations, we must observe how few cases of monstrous births are recorded. If we examine the reputed cases detailed by Dr. Turner and others, we shall in every instance discover the credulity of the witnesses, the inconclusiveness of the evidence, and the absurdity and folly of the narrations. Thus, a woman in Italy longed for a lobster, and not being gratified brought forth a lobster. Such is the story of Aldrovandus. There was a child said to be born in Normandy, in 1682, with horns and cloven feet, because his father, having represented a satyr on the stage, had connexion with his wife in his stage dress. Zodiacus Martius Hildanus was informed by Hornicæus, a physician of Frankfort, that a woman being frightened by a musket shot, brought forth a child with a wound in its back, as if made by a musket ball. I would ask, was this wound made by the imagination, and what stopped the bleeding ? The Abbe Malebranche

relates various incredulous stories of this kind; one where all the bones of the fœtus were broken in the womb, because the mother had witnessed the breaking of a malefactor on the wheel; another, when the child was born, resembling Saint Pius, as the mother had gazed on his picture. About the year 1700 a boy was exhibited in Moorfields, in this city, who had the word "Elohim," in Hebrew characters, round one iris, and "Deus" round the other. This deceit was managed by two thin pieces of glass, or artificial eyes. A child was lately exhibited in London, with the words "Napoleon Empereur" on each iris, and said to have been caused by the mother having cried over a French coin, which was left her by her brother. I visited this case, and aver that there was no letter whatever visible, but the usual appearance of the blue eye of an infant for the first three months. Malebranche asserts, that the infants in the womb see and hear, as their mothers have the same passions, &c. I would ask, how can an infant, enclosed in the membranes, see without light; and surrounded by the womb, the membranes, and a considerable quantity of fluid, hear external sounds, without vibration of the air? The good father relates a case where the bones were soft from imagination, the mother having witnessed the execution of a criminal; but will not mollities ossium, or softening of the bones, better explain such an occurrence? Hesoid recommends men not to cohabit with their wives after the latter returned from a funeral; but in this country people are not so fastidious or cautious, and pregnant women attend funerals; and although the mind is naturally depressed, we never hear of or observe a child marked with a coffin, scarfs, or white feathers. There is no truth whatever in the fabulous stories that Ethiopians have produced white children, or Europeans children perfectly black. There is good reason to suppose that there were other very solid and more legitimate causes to account for the phenomena. Bartholin relates the case of a woman who, in 1638, produced an infant with the head of a cat; but a flat nose, a short chin, and a few hairy moles would account for that sage report. The same writer describes a case where a rat was produced. How unfortunate it was that the cat was not in the neighbourhood. This writer also speaks of a woman who was brought to bed of two small fishes, with scales, which were no sooner born than they swam in the neighboring waters!! But the semen of one species of animals will not impregnate another; for if the con-

verse of this held good, there would be an endless confusion, and no distinct generation. One of Pope Nicholas's family (the Ursini), brought forth a substance like a bear; but how very singular that the lady should be frightened by looking on her own coat of arms. I should not dwell on these absurd stories, had not Sir E. Home lately attempted to revive this ridiculous and absurd doctrine.

Ludovicus Vives informs us, that a loose fellow at Brabant, who personated the devil in a play, said he should have to do with his wife in his stage-dress, which so frightened the poor woman, that she in due time brought forth an infant of a diabolical figure. An American woman is said to have brought forth a child with a wooden leg, and a ferrule at the end of it, exactly similar to her husband's. Though physiologists assure us that the blood produces all the tissues in the human body, they have overlooked the power of its producing a wooden leg with an iron ferrule. In this country the blood does not take on that action, as fathers with one leg produce infants with both natural, neither of them cork, wood, nor iron.

Women have been said to have their children marked with frogs, mice, rats, lizzards, &c.; yet thousands of women are daily frightened by these insects, and no marks appear on their infants. Marks and deformities often exist on the offspring, without any previous imagination. Conception is independent of the mother's will and pleasure. How many women are desirous of children, and yet have none; while others not only conceive, contrary to their wishes, but go to their full time, in despite of the various means they wickedly and designedly employ to destroy the fœtus. Again, the nutrition and growth of the infant go on according to the laws of nature, whether the woman wishes or not. It is also out of the mother's power to choose a boy or a girl; to have one or more children at a birth; to cause the infant to be fair, dark, large or small, weak or strong, or to give it her own or the father's features. If, then, women cannot, by imagination or will, promote or impede conception, how can any one believe, without derogating from the power and wisdom of God, that they can disfigure the infants, and injure the works of nature? Is it not absurd to suppose that the mother has more influence over her child than over her own body? The idea is preposterous. If she cannot, by the strength of her imagination, make any mark on her own body,

or change the figure, situation, quantity, and number of her own limbs, why should we believe she can do so to the body of the infant? Is it not silly and ridiculous to think that if the affrighted mother apply her hand to any part of her body, which may be done accidentally and undesignedly, this can effect the same part of the infant? Does she mark that part of her own body by such application of the hand? But the child hears and sees, and feels the passions of the mother. How can this happen when there is no nervous connexion between the mother and infant? Surely every obstetrician has observed, on dividing the naval-string, that the child suffers no pain whatever, neither does the mother. And can nerves be divided in any other part of the body without pain? Again, how can the mother communicate her thoughts to the child when her soul is distinct from that of the infant? That marks and deformities frequently happen, cannot be denied; but they can be accounted for in a much more scientific and natural manner than by the influence of the mother's imagination.

Why should we be surprised at some irregularities on the skin and other parts of the body, when we observe the same happen to vegetables, though incapable of imagination? They have their moles, their hairy parts, their discolorations, their excrescences, their unnatural shapes, which resemble animals and other bodies, and all without the help of fancy. There are many deformities never referred to the imagination, as the irregular conformation of the viscera. Is the whole empire of the microcosm, or world of the human body, so divided between nature and imagination, that one governs the internal and the other the external parts? We ought to be little amazed at the deformities, when we consider the wonderful uniformity that exists among all living creatures. We should remember that the rudiments of all animals are infinitely small, and composed of an infinite number of minute parts, which the least shock may put out of order; and yet they remain whole and entire, except in a few extraordinary cases, which we can readily account for by the following reasons: firstly, the variety of particles, and of their combination; secondly, the distempers of the children in the womb; thirdly, the interrupted developments of some parts in the children: fourthly, force and violence upon the body of the infant; and lastly, diseases from inheritance.

The variety of particles, and of their combinations, is the first cause of marks in children. If we examine ever so many bones

of the same kind, and as near as possible of the same kind, we shall find a vast difference in their shape, in their cavities, in their extremities, and surfaces, and in the number, situation, and disproportion of the foramina or holes through which the blood-vessels pass. This proves that the arteries and veins have not the same diameters, situation, or branches, in all individuals, a fact known to every anatomist; thus the particles which make up one body, differ from those of all others. This accounts for the several irregularities and deformities of different bodies, and for the congenital diseases of new-born infants. The diseases of children in the womb are numerous, and known to all practical obstetricians; and these are causes of defects, marks, and deformities.

The excessive development and unnatural growth of any of these parts will cause deformity, and is of frequent occurrence. The same development accounts for deformities on the external surface of the body; thus the various tumours.

Every part of an infant in the womb may be more or less diseased or defective! We often observe cataract, amaurosis, aneurisms, varices, jaundice, hydrocephalus, and various other congenital defects in infants; but who could seriously think that any of these defective diseases, these marks and deformities, depended on the imagination of the mother. The passions or imaginations of the mother can only act in an indirect manner on the infant, by debilitating the mother only; but all marks deformities, and diseases of the infant depend upon unnatural development of certain particles or parts which compose its body. The parts of the fœtus are delineated in the ovum, but they do not increase in the same proportion; and the increase of some parts being prevented, will induce deformity. Force or violence upon the body of the fœtus, or pressure of the womb by tight lacing, will cause deformity in the infant. Dr. James Augustus Blondel, about 1728, published a curious work on this subject, which was the best that had appeared against the power of the imagination of the mother. He maintains, among many other original and interesting opinions, that the rudiments of all plants and animals now existing, have existed from the creation; and that there is no new creation or equivocal generation. He contends that there is no child born but whose linaments have existed somewhere since the first creation, and in that somewhere, are liable to many vicissitudes. This somewhere was the primitive ovum, which had several ova

within one another ; and that, although there is no transmigration of soul, there is of body, and that each foetus has been successively in different women.

That the ovum, undergoing to many revolutions, may receive some damage, as these mothers must have been liable to bruises, cuts, and wounds, to many diseases, scrofula, consumption, cancer, &c. ; and therefore, that infants must be affected with various defects and diseases. He contends, that the largest oak has been a small single acorn ; and that a single acorn not only contains the oak, but also all the trees and acorns which shall be produced from thence successively, as long as the world lasts. If we look back to first causes, we shall readily perceive the force and authenticity of these opinions ; for it is manifest that the whole human race must have existed in the first of the species. M. Geoffroy St. Hilaire proposes a hypothesis of monstrosities or deformed infants, which has been already noticed (p. 80), and may be considered the latest and most satisfactory as yet offered ; but is by no means established.

ARTICLE IV.—MEDICO-LEGAL QUESTIONS RELATIVE TO THE SIGNS OF CONCEPTION AND UTERO-GESTATION.

Section 1.—Signs of Defloration.

THE questions which may be submitted to medical men under this head, are as follow :

1. Are there certain signs of defloration ? 2. Can we distinguish between forcible violence against the consent of the accuser, and whether the signs of violence be not attributable to the introduction of other extraneous bodies into the external sexual organs ? 3. And whether a woman can be violated without her knowledge ? And 4, whether pregnancy can follow violation ?

1. *Are there certain signs of defloration ?* To determine this question, we must decide whether there be certain signs of virginity. We have to refer to anatomical and obstetric works for a description of the external genitals in the virginal state, to enable us to form a correct decision upon this question. The external genital organs are those connected with the subject.

In virgins the external labia are thick, firm, elastic, and internally of a vermillion or rosaceous colour, their edges in apposition, so as to close completely the orifice of the vulva. They are soft, pale, and separated in women accustomed to venereal enjoyment.

But these characters are not to be depended on, as women of strong constitutions may have the signs of virginity; and virgins the latter signs from leucorrhœa, or fluor albus. In fact, no positive conclusion can be deduced from the state of the external or internal labia. The same must be said of the frœnum labiorum; it may or may not be ruptured during coition, and every obstetrician, of ordinary experience, can attest its perfect condition during parturition. Besides, it may be ruptured by falls, external injuries, or by the passage of solid morbid growths. The orifice of the vagina is ordinarily narrow, but it may be relaxed by leucorrhœa, or may be larger in a virgin than in a woman who has been violated. In some women it is closed by the hymen, a membrane long held as the surest sign of virginity.

It is now universally known, that a great variety of causes besides coition may destroy this membrane, as sudden exertion of the lower extremities, leucorrhœa, masturbation excoriation, confined menstrual fluid, and various morbid growths, both solid and fluid. It does not always exist even in infants, and sometimes does not entirely close the vagina at puberty, so that the introduction of the penis may be effected, if not disproportionate. (Teichmeyer, Brendel, Severin, Pineau, &c.) Indeed, women have been in labour, and the hymen perfect. (Mauriceau, Ruysch, Pare, Meckel, Walter, Baudelocque, Smellie, Capuron, Naegele, &c.) It is therefore no infallible sign of virginity, nor is its absence alone a positive proof of defloration. The carunculæ myrtiformes were long considered as the remains of the hymen; but this is denied by Hamilton, Conquest, and Velpeau. They have been seen in infants and virgins, and are no proof of defloration; because, like the rugæ of the vagina, they are only effaced by repeated coition. Dr. Beck admits, that many of the above signs are equivocal; but if taken in connection with one and other, he thinks it cannot be possible that all mentioned in the chaste state can be absent without a strong suspicion against the female. I cannot assent to this conclusion, as I think experience has proved that all the physical signs of virginity are equivocal, and all may be absent from causes already enumerated, without room for a well-grounded suspicion against the female. From my own experience, and the result of my researches, I can arrive but at one conclusion, that there are no positive signs of virginity, and consequently those of defloration are extremely uncertain; this, I find,

is the opinion of Leipsig, of Metzger, and of Morgagni. The presence of the reputed signs of virginity afford no decisive proof of chastity, nor their absence no decisive proof of incontinence. If all the reputed signs described above exist, the female feels offended at the examination, or rather displays evidence of shame, if her morals and education have been good, then there are strong grounds for supposing her in possession of her chastity ; and if all the contrary signs exist with a suspected reputation, and an equivocal virtue, then there is reason to pronounce a contrary opinion.

It is necessary to recollect the habit of the body and age of the patient, as the signs of virginity are most perfect between puberty and the twenty-fifth year, after which period they become more equivocal.

When defloration of a young female has recently taken place, the signs are very evident. The laceration of the hymen (if it exist,) the presence of its remains covered with clotted blood, the contusions of the labia majora and minora, of the clitoris, and carunculæ myrtiformes, the redness and tumefaction, or laceration of all the external genitals, leave no room to doubt. But almost all these marks will generally disappear in three or four days. They disappear almost instantaneously in chlorotic and leucorrhœic females. (Briand, Manuel de Medicine-Legale.)

2. *Can we distinguish between defloration, the result of voluntary carnal commerce, or that which has been effected by violence, or by the introduction of a foreign body into the vagina?*

It is extremely difficult to determine this question in a positive manner. Many medical jurists are of opinion, that contusions, lacerations, inflammation of the vulva, ecchymoses of the thighs, arms, breasts, and other parts of the body, prove that violence had been used, and that the female did not consent. But it is to be recollected, that many women will not consent without some force, which may be followed by ecchymoses, and also that injuries of the genital organs may follow a first congress, when the sexual organs are disproportionate.

Every person knows, says a French jurist, that at the epoch of puberty, young girls of an erotic temperament employ foreign bodies for the gratification of their desires, and may cause laceration or contusion of the external genitals ; and who does not know

that these excesses have brought on delirium, and who is ignorant of the deplorable effects of onanism. (Briand.) Again, women have injured the organs for the purpose of accusing an innocent man of rape. (Fodere.)

In all cases of defloration we must consider the age, strength, and state of mind of both parties. When this crime is perpetrated on children of a tender age, the disproportion of the organs will be followed by the marks of injury already enumerated. On the other hand, a strong woman may accuse a delicate man or boy, or one who is impotent. It is held by most jurists, that it is almost impossible; at all events exceedingly doubtful, that one man can violate an adult female. (Mahon, Farr, Fodere, Capuron, Beck, Briand, &c.) The exceptions to this rule are when the female labours under insensibility from violence, syncope or fainting, narcotics, intoxication, and according to the faculty of Leipsic, when she is asleep.

It is indispensably necessary to examine the sexual organs of both parties. The man may be impotent from a variety of causes; the penis may have been destroyed by sloughing or cancer, &c.; or the organ may be so small as to cause no pain on its introduction into the vagina. Zacchias mentions a singular case of this last kind. The woman may labour under a variety of malformations which preclude the generative act. A speedy examination should be made in all cases, for the reasons stated in a preceding paragraph.

The state of mind of the woman must be kept in view, as an idiot at twenty or upwards can make less resistance than a girl of fourteen.

Venereal infection is a proof of violation, when it coincides with the time at which the crime is alleged to have been perpetrated, that is, if it appears from the third to the eighth day; and, above all, if the accused is affected with the disease. Every well-informed practitioner is aware that gonorrhœa or syphilis cannot manifest itself immediately after congress, and therefore, if found on the female, it is a strong proof against her.

Every well-informed physician and surgeon is also conversant with the purulent discharge of female children of scrofulous and delicate habits, from the period of dentition to the age of puberty; such discharge is seen almost every day in dispensary and hospi-

tal practice among the poor. It is described by John Hunter, Hamilton, Astley Cooper, Dewees, Jewel, and myself, and is often mistaken by ignorant practitioners for gonorrhœa.

There is no fact better attested than this, that purulent discharge from the genital organs of both sexes, from the period of infancy upwards, may arise from causes purely physical, chemical or specific. Venereal excess between two persons whose organs are healthy, may cause a discharge more or less intense in one or both; but still the symptoms are not so violent as in gonorrhœa. Even children of both sexes are subject to genital discharge before and during dentition, from worms, or from local injury of the sexual organs, as in cases under notice. The last fact is one of great importance to those who are called on to give evidence before magistrates, or in courts of justice, in charges of rape. The accused may be free from gonorrhœa, and declare that if the child is infected it is not by him. The medical man should ascertain all lesions, and discriminate between purulent discharge the consequence of violence and inflammation, and that arising from infection. The history of the case will enable him to form a correct opinion in the majority of instances, and he ought to ascertain whether the child has not been subject to discharge previously to the supposed offence. In a case in which I was consulted, and which is recorded in the Lond. Med. and Surg. Journ. 1830, vol. v., the girl had laboured under purulent discharge five years before, and was then eleven years old, and exceedingly delicate. On that occasion I afforded abundant evidence of the liability of female infants, and of girls to the age of puberty, to purulent discharge from the vagina. We know that equitation, injury on the perineum, calculus in the bladder, stricture of the urethra, hæmorrhoids, gout, rheumatism, certain cutaneous diseases, as herpes, impetigo, serpigo, lepra, &c., the terebinthinate medicines, lytta, spices, diuretics, sexual intercourse during the catamenial or lochial evacuations, the introduction and long retention of a bougie in the urethra, irritation in different parts of the alimentary canal, constipation, certain aliments and medicines, as new beer, asparagus, &c.; in a word, diseases of organs which strongly sympathise with the genito-urinary system may cause simple gonorrhœa. Cases are recorded in which gastro-enteritis, diseases of the respiratory system, coryza, cynanche, pneumonia, and asthma, had terminated by a copious discharge from the urethra. It

is admitted that there is a reciprocity of action between the mucous, serous, fibrous tissues, the digestive, respiratory systems, the urinary apparatus, the urethra, and uterine system, and that these systems when irritated or inflamed will often affect the urethra or uterine apparatus. So also the latter organs cannot be affected without implicating the former tissues in various degrees. Dr. Titley relates a case in which he supposed venereal gonorrhœa existed for a period of three days, and for which he prescribed the usual remedies; but before the patient had taken the medicine, he was seized with a smart attack of gout, and in a few hours the urethral discharge had vanished.

Capuron was consulted in a supposed case of defloration, in which a purulent discharge escaped from the vagina; the external genitals were ulcerated; but that able physician ascribed it to influenza, and the girl was soon restored to health. M. Biessy, of Lyons, relates a case, in which all the surgeons of that town certified a child had been violated in consequence of the presence of a discharge. He denied it, which induced the Mayor to request five physicians to examine the child separately, without knowing the application to each, and they all agreed that she only laboured under a simple mucous discharge. (Manuel Médico-Legale, &c.)

The following case is related by the revered Dr. Percival in his admirable *Ethics*:—“Jane Hampson, aged four, was admitted an out-patient of the Manchester Infirmary, February 11, 1791. The female organs were highly inflamed, sore, and painful; and it was stated by the mother, that the child had been as well as usual, till the preceding day, when she complained of pain in making water. This induced the mother to examine the parts affected, when she was surprised to find the appearances above described. The child had slept two or three nights in the same bed with a boy fourteen years old, and had complained of being very much hurt by him during the night. Leeches, and other external applications, together with appropriate internal remedies, were prescribed; but the debility increased, and on the 20th of February the child died. The coroner's inquest was taken; previous to which, the body was inspected, and the abdominal and thoracic viscera found free of disease. From these circumstances, Mr. Ward, the surgeon attending this case, was induced to give it as his opinion, that the child's death was caused by exter-

nal violence; and a verdict of murder was accordingly returned against the boy with whom she had slept. Not many weeks elapsed, however, before several similar cases occurred, in which there was no reason to suspect that external violence had been offered, and some in which it was absolutely certain that no such injury could have taken place. A few of these patients died. Mr. Ward was now convinced that he was under a mistake in attributing the death of Jane Hampson to external violence, and informed the coroner of the reasons which induced this change of opinion. Accordingly, when the boy was called to the bar at Lancaster, the judge informed the jury, that the evidence adduced was not sufficient to convict; and that it would give rise to much indelicate discussion, if they proceeded to the trial; and that he hoped, therefore, they would acquit him, without calling witnesses. With this request the jury immediately complied. The disorder in these cases, says Dr. Percival, had been a typhus fever, accompanied with a mortification of the pudenda."

Mr. Kinder Wood relates cases of a disease somewhat similar, in which there is fever for three days, inflammation of both labia, clitoris, nymphæ, and hymen, followed by sloughing and death. The mortality was ten in twelve, and the disease considered a peculiar kind of eruptive fever. (Med. Chir. Trans. vol. vii.)

I have already recorded a case of a delicate scrofulous girl, aged eleven years, who had purulent, or rather mucous discharge from the external genitals, and accused a young man of eighteen, whose genitals were developed in an extraordinary degree, of having violated her person. Two apothecaries swore the girl had been violated, a rape committed, and gonorrhœa communicated. Dr. Gordon Smith, Mr. Whitmore, and myself, were of a different opinion. The frænum labiorum was perfect, the hymen absent, a discharge without any sign of inflammation the day after the alleged intercourse, and a small dark spot observed by Dr. Smith only, on the thigh. The examinations of the medical men were made at different times. The case was grievously mismanaged for the prisoner; the only evidence in his favour was Dr. Smith's which was contrasted with that of the two medical witnesses for the prosecution. The man found guilty, and sentenced to six months' imprisonment, and reminded by the chairman of the Middlesex sessions (Mr. Const) "of his good fortune that he was not hanged"—for a crime he never committed. The mother inform-

ed Dr. Smith that her daughter had had the discharge since she was five years old. The medical witnesses for the prosecution declined examining the person of the prisoner, though those on his side had assured them he had no discharge from the urethra, nor had not had any for six months previously. The case was tried in November sessions, 1829. When the girl was examined at the trial, and asked why she did not tell the domestic who disturbed the parties during the alleged intercourse, she replied "she forgot it." A girl of eleven years old, violated by an adult, forget it! Cases like the present are unfortunately of too frequent occurrence, and are attested by Sir A. Cooper in the following impressive language:

"There is a circumstance which I am exceedingly anxious to dwell on. I allude to a discharge from young females; and I hope that there is not one here this evening but will be strongly impressed with the importance of the subject. Children from one year old, and even under, up to puberty, are frequently the subjects of a purulent discharge from the pudendum, chiefly originating beneath the preputium clitoridis; the nymphæ, orifice of the vagina, and the meatus urinarius are in an inflamed state, and pour out a discharge. The bed-linen and rest of the clothes are marked by it. It now and then happens to a nervous woman, to be alarmed at such an appearance, and she suspects her child of having acted in an improper manner; and, perhaps, not quite clear herself, she is more ready to suspect others, and says, 'Dear me!' (if she confesses) 'it is something like what I have had myself.' She goes to a medical man, who may unfortunately not beware of the nature of the complaint I am speaking of, and he says, 'Good God! your child has got a clap.' (A laugh.) A mistake of this kind, gentlemen, is no laughing matter; and though I am glad to make you smile sometimes, and like to join you in your smiles, I cannot do it on the present occasion, for it is too serious a matter. I can assure you a multitude of persons have been hanged by such a mistake. I will tell you exactly what takes place in such cases; the mother goes home, and says to the child, 'Who is it that has been playing with you; who has taken you on his knee lately?' The child innocently replies, 'No one, mother; nobody has, I declare to you.' The mother then says, 'Oh, don't tell me such stories; I will flog you if you do.' And thus the child is driven to confess what never happened, in order

to save herself from being chastised. At last she says, 'Such a one has taken me on his lap.' The person is questioned, and firmly denies it; but the child owing to the mother's threats, persists in what she has said. The man is brought into a court of justice; a surgeon who is ignorant of the nature of the discharge I am now speaking about, gives his evidence; and the man suffers for that which he never committed. The mother is persuaded, if there be a slight ulceration on the parts, that violence has been used, and a rape committed. She immediately says, 'What a horrid villain must he be for forcing a child to such an unnatural crime, and communicating to her such a horrible disease! I should be glad to see him hanged.'

"If I were to tell you how often I have met with such cases, I should say that I have met with thirty in the course of my life. The last case I saw was in the city; a gentleman came to me, and asked me to see a child with him, who had a gonorrhœa on her I went, and found that she had a free discharge from the preputium clitoridis. I said that there was nothing so common as this. There was considerable inflammation, and it had even proceeded to ulceration, which I told him would soon give way to the use of the liquor calcis, with calomel. 'Do you tell me so?' he replied, 'why, suspicion has fallen on one of the servants; but he will not confess. If he had appeared at the Old Bailey, I should have given my evidence against him, for I was not aware of what you have just told me.' I told him, that if the man had been hanged by his evidence, he would have deserved to be hanged too.

"I am anxious that this complaint should be known by every one present, and that the remarks which I have made should be circulated throughout the kingdom. When a child has this discharge, there is a heat of the parts, slight inflammation, and this sometimes increases, and goes on to ulceration. This disease sometimes occurs in children at the time of cutting their teeth." (Lectures on Surgery.

Dr. Dewees, the eminent professor of midwifery, in the University of Philadelphia, has also given an excellent account of the morbid discharge under notice, in his *Treatise on the Physical and Medical Treatment of Children*, pp. 326, 435. He says, "We occasionally find that very young children have a discharge from within the labia of a thin acrid kind, or of a purulent appearance. When this occurs in very young subjects, it almost

always proceeds from a neglect of cleanly attention to these parts, either by withholding a frequent use of lukewarm water, or permitting the child to remain too long wet. * * * * Children, however, of a more advanced age, have also discharges of a purulent character, that seem to arise from a morbid action of the mucous membrane of the vagina or labia. This frequently shews itself about the *fifth* year, and may continue, if neglected, to almost any period. Parents, therefore, cannot be too much on the alert when this discharge is discovered on their children, nor too early in the application of suitable remedies for its removal. It is in a great measure owing to this neglect, that fluor albus or whites become so common, and of such difficult management in adult age. If not interrupted in the beginning of its career, it is apt to continue until the period of puberty over the phenomena, of which it but too often creates an unfriendly influence."

Orfila gives a table to enable medical jurists to discriminate in all cases of stains on linen, whether by spermatic, leucorrhœal, gonorrhœal lochial, mucous, and salival fluids. The evidence afforded by this table is far from being positive, and I therefore omit it.

3. *Can a woman be violated without her knowledge?* Decidedly she can if under the influence of insensibility from violence, fainting, asphyxia, narcotics, or intoxication. I have recorded a case in which a female was impregnated during inebriation, and was of course unconscious of it during the first seven months of utero-gestation. She felt much offended when I hinted my suspicions as to her being pregnant, but soon afterwards her paramour revealed the secret to me. Though it is difficult to suppose a woman can be violated during sleep, yet under some circumstances it seems to me very possible. A married woman who has had children, whose sexual organs are dilated, may be violated during sleep; but a virgin could not be deflowered without her being awake. Drs. Beck, Gordon, Smith, Bartley, Fodéré, and Capuron, doubt the possibility of a married woman being violated during sleep.

4. *Can violation be followed by conception?* It was long decided in the negative, as it was supposed, that women who were influenced by the depressing passions could not conceive. (Bartley and Farr.) Capuron, Fodéré, Beck, Good, &c. agree with a majority of the profession, that conception may happen, and is not accelerated or prevented by the volition of the sexes. This

is the received and only rational opinion. How many women anxiously wish for children, and have none, and *vice versa*. From the foregoing observations, it is evident that medical science does not furnish positive proof of any of the questions discussed in this article, but merely probable and presumptive evidence. I may observe in conclusion, that the probabilities are greatest when a child of five, seven, nine, or ten years of age is the accuser, after due consideration of the sexual diseases of this period of life. Her age excludes all appearance of consent, as she cannot have desire, her organs being undeveloped, as stated in the section on disqualifications for marriage and impotence ; nor is it likely any foreign body will be introduced. The case will be stronger attested by any other marks of violence. However, great caution is required in these cases, as depraved mothers have induced their children to make accusations against innocent persons.

Section 2.—Signs of Utero-gestation.—Pregnancy.

This is a subject which requires great attention from the medical jurist, on account of the numerous relations it has to civil and criminal proceedings. It affects the honour of husband and wife ; it arrests the administration of justice, when offered as a plea for reprieve ; it aggravates an assault when abortion occurs, which renders the crime a felony ; it may be pretended, and deception attempted on the medical attendant and others ; or the female may accuse a person of causing abortion ; it may be concealed, and it may affect the honour and property of parents and children, as in its protracted state, which involves legitimacy.

For the better understanding of this important subject, it will be necessary to enumerate the signs of conception and pregnancy, superfœtation or second conception, and duration of pregnancy ; all of which will be described in the course of this work.

Signs of ordinary Pregnancy.—The signs of pregnancy may be divided into rational and sensible. The first result from the influence of the uterus on the moral and physical systems of the female, and these are disorders and derangements of the organic functions or vital properties. The second result from the development of the uterus, and the presence of the fœtus in that organ.

Rational Signs.—It was an opinion professed by Hippocrates

and Galen, that a fecundating copulation is accompanied by more vivid enjoyment than an ordinary coition. The following signs usually occur after conception; there is a change in the moral and intellectual faculties, in the temperament and constitution of the female; the eyes lose their vivacity, their brilliancy, and become languid; the eyelids are surrounded by a blackish, livid, or leaden-coloured circle; the nose is elongated, the mouth is smaller, the countenance is changed, the voice is stronger, the neck fuller, transpiration more odorous, the character more decided, and the passions more violent; the menses are generally suppressed, the mammæ are firmer, more sensible and more developed, sometimes secreting a thin, whitish, serous fluid; the nipple is more prominent, the areola is enlarged, and of a browner colour. Immediately after conception the female experiences unaccustomed sadness, a tendency to fainting, or complete syncope, horripilations, colic, and a vermicular motion of the uterus, which extends to the abdomen, borborygmi, and rigors. There is sometimes anaphrodisia, sometimes increased salacity. The pulse becomes more frequent, weaker, or fuller and softer, the temperature is increased, the transpiration is more abundant, the urine is more copious, turbid and cloudy, the secretions are increased, there is often ptyalism, the hepatic functions are disturbed, and there are spots and ephelides on the face and skin. The taste and digestion are depraved; anorexia, nausea, inappetence and vomiting supervene, the female desires innutritious or disgusting foods, as chalk, cinders, putrescent animal food, vegetables, fruits, acid drinks, vinegar, &c. This inappetence and depraved taste are followed in a few months by a keen, voracious appetite, but towards the last month of pregnancy the digestive functions become deranged, as the stomach is so confined by the gravid uterus, that it can contain but a small quantity of aliment.

The moral state is subject to numerous changes, some women, naturally gay and amiable, become sad, melancholy, and insociable, and *vice versa*. Many diseases appear, others disappear, as hysteria, chlorosis, chorea, and epilepsy. The whole of these signs are seldom observed in all cases, and are doubtful and uncertain. If all are present they afford strong proof of pregnancy, but never that positive certainty which enables us to give decisive evidence before magistrates.

Sensible Signs.—These signs consist in augmentation of the

abdomen, in the active and passive movements of the fœtus, in the perception of the fœtal and placental pulsations by means of auscultation, in the evidence afforded by the *touch*, or vaginal examination, or *ballotement*, as to the state of the os and cervix uteri in the different stages of gestation and the development of the uterus. The most certain of these signs are the touch, or ballotement, and auscultation. The touch consists of the introduction of the finger into the vagina, and the application of the other hand above the pubis, the uterus will be felt enlarged, and if gentle percussion be applied to the pubis, the fœtus will be made to strike the finger, which cannot happen unless there be a fœtus and a fluid in the uterus. However, the sign is not always conclusive, for it has existed in extra-uterine fœtation. The sign can only exist about the fifth or sixth month, and has led to mistake even at the approach of parturition. (Capuron, *Malad. des Fem.* p. 72.)—The results of auscultation exist in some degree, when the fœtus is dead, and also in extra-uterine fœtation. The changes of the neck and body of the womb enable us to distinguish pregnancy from hydropsy, tympanites, hydrometra, hydatids, moles, polypi, &c.

The spontaneous motions of the fœtus take place about the fifth month, but some women never perceive them during the whole period of gestation, others imagine them present when there is no conception. Nervous and hysterical women very frequently make the last mistake. The spontaneous motions of the fœtus and quickening, are not infallible proofs of pregnancy. Auscultation has been called into action to enable us to decide this point. M. Le Jumeau de Kergaradec has applied the ear and the stethoscope to the abdomen, and discovered the double motion of the fœtal heart, and also the pulsation of the placenta, which was synchronous with the maternal pulse. It is to be recollected, that the first must change with the infant, and consequently must be heard in different parts of the abdomen, at different examinations. Dr. Kennedy, of the Dublin Lying-in Hospital, has written in favour of auscultation, in the *Dublin Hospital Reports*, vol. v. 1830.—M. Velpeau has tried it in a great number of cases in vain.—Dr. Elliotson is in favour of it, 1831.—Dr. Fergusson, of Dublin, thinks it an unequivocal proof. *Dub. Med. Trans.* vol. i. 1830. Dr. Nagle, of the same city, thinks it equivocal. 1831. From the preceding considerations, the following conclusions may be drawn:

1. That the fœtal and placental pulsations, when discovered by auscultation, are positive proofs of pregnancy.
2. That in all cases before the fourth month, the diagnosis is extremely uncertain.
3. That during the five succeeding months, better evidence is afforded by the progress of uterine development.
4. That there are no infallible signs of pregnancy, except perhaps those afforded by auscultation.

Previous to the application of auscultation, it was held by the following authorities, that there was no infallible sign of pregnancy in the early months. (Hamilton, Burns, Mahon, Fodere, Capuron, Farr, Male, Beck, Smith; Edinburgh Med. & Surg. Journ. 1833, vol. xix; Med. Chir. Rev. 1824; Med. & Phys. Journ. 1825, Gooch, 1829.)

Dr. Beck concludes, that it is impossible to decide on pregnancy before the sixth month; but this opinion is refuted by subsequent experience. We may derive advantage from attending to the signs of the different epochs of pregnancy, which are afforded by the development of the uterus.

Section 3.—Signs of the different Epochs of Pregnancy.

During the two first months the diagnosis is extremely obscure, and cannot be attempted with any degree of certainty. At the end of the third month, the fundus uteri is on a level with the superior margin of the pubis; at the end of the fourth month, the uterus is in the hypogastrium the spontaneous motions of the fœtus are perceived by the mother, and the diagnosis, styled *ballotement* is afforded to the obstetrician. At the end of the fifth month, the uterus touches the inferior boundary of the umbilical region, and the cervix uteri is elevated in the vagina. At the end of the sixth month, the uterus is felt at the umbilicus, and this part projects; the motion of the fœtus may be felt by the practitioner. We can now avail ourselves of auscultation. Morgagni proposed the following plan for discovering the motions of the fœtus. In warm weather, let the hand be immersed in cold water and suddenly applied to the abdomen of the female, and in cold weather, let the hand be immersed in warm water and applied, when the motion of the infant will be distinctly felt. I have often acted on these suggestions with success. It is also to be remarked, that the cervix uteri begins to diminish in length at this period, as well delineated

by Gooch and Maygrier. At the end of the seventh month, the uterus approaches the inferior margin of the epigastric region. The abdomen affords a dull fluctuation, which differs from that of ascites; percussion affords a dull sound, which is distinguishable from tympanites or meteorism. At the end of the eighth month the uterus is in the epigastrium, the cervix nearly developed, directed towards the sacral concavity, round, gaping, and thickened; the limbs of the fœtus may be often felt through the abdomen. At the end of the ninth month, the uterus becomes depressed under the epigastrium, the orifice of the uterus is more easily felt, rounded, and often open; the head of the infant can be readily felt. In women who have had former pregnancies, the uterus does not ascend so high as in first cases, as the abdominal muscles have been relaxed, and it therefore inclines more forward. In diagnosing in cases of doubtful pregnancy, we should not forget to bear in mind the appearance of the abdomen in ovarian dropsy, and here a careful history of the symptoms will enable us to arrive at a correct conclusion. I have frequently known young women affected with this disease, and have all the appearances of pregnancy; the general health suffers little, and sometimes not at all; the catamenia are regular—the usual symptoms of pregnancy are absent, and upon close inquiry, it will be found that pain commenced in the ovary, and the tumor was first in one side. In this, as in all other cases, a knowledge of disease will alone enable us to diagnose correctly. This knowledge is to be obtained by reference to the best systems of obstetrics, and by actual experience. It would far exceed the limits by which I am circumscribed, were I to describe the various diseases which may be mistaken for pregnancy. I must refer the reader to the standard works upon this subject. After a luminous description of the diagnosis in the case before us and all its difficulties, M. Velpeau concludes: “But it is dangerous to forget that there exist causes without number (of deception), and that before the tribunals one ought never to give a decisive judgment, without having previously acquired a mathematical certitude of the fact upon which he pronounces.” This is the received opinion of the present time.

Dr. J. C. Fergusson has published one hundred cases of concealed pregnancy in the *Dub. Med. Trans.*, 1830, in all of which he was enabled to discover the pulsations of the foetal heart and

of the placenta. He says, "I conceive it to be sufficiently established, that either a placenta or foetal heart being heard, constitutes infallible evidence of pregnancy; evidence upon which a medical man may, if required, conscientiously and positively swear to the fact, which I believe all admit, and our legal records show, could not be done under ordinary circumstances. * * * * The absence of these phenomena amounts, if not to positive, at least to presumptive proof of the contrary." I cannot agree with these conclusions, because many practitioners may not be sufficiently dexterous with the stethoscope to detect the pulsations; and as further evidence is required to warrant the latter conclusion. It is very manifest, however, that auscultation ought to be employed in doubtful cases of utero-gestation.

In cases of extra-uterine foetation, should the Cæsarean operation, or rather gastro-hysterotomy be performed, the infant cannot inherit property according to the laws of this country. (Blackstone.) This is the only medico-legal point connected with the subject. A point of much importance to be decided is, whether twins be the result of one coition, or of superfœtation. The decision will affect primogeniture. The question has not been discussed by any British writer on forensic medicine except myself.

Section 4.—Generation of Twins.

Superfœtation.—Physiologists are at issue upon the question of superfœtation, that it is possible for a pregnant woman to conceive a second time. According to Aristotle, a female was delivered of twelve infants, and another of twins, one of which resembled her husband, the other her lover. Some writers maintain that superfœtation is possible during the first two months of pregnancy; the majority hold it possible in a few days after conception, before the uterine tubes are closed by the decidua. This is the received opinion, though cases are on record which justified Zacchias and other jurists, to conclude, that superfœtation might occur until the sixtieth day, or even later. Nothing is more common than to see a full grown infant born, and another of the second, third, fourth, fifth, or sixth month expelled immediately after. I need not cite authorities upon this point, as obstetric works abound with examples. But a few examples may be given. Dr. Maton published an account of a woman who

was delivered of a full grown infant, and in three calendar months afterwards of another, apparently at the full time. (Trans. Coll. Phys. vol. iv.)—A woman was delivered at Strasburgh, the 30th of April, 1748, at ten o'clock in the morning, in a month afterwards M. Leriche discovered a second fœtus, and on the 16th September, at five o'clock in the morning, the woman was delivered of a healthy full-grown infant. (Manuel Complet de Med. Leg. par Briand.)—Degranges, of Lyons, attests a case; the woman was delivered at the full time, the 20th of January 1780; in three weeks afterwards she felt the motions of an infant, and her husband had no intercourse with her for twenty-four days after delivery. On the 6th of July (five months and sixteen days subsequent to delivery) she brought forward a second daughter, perfect and healthy. On the 19th January 1781, she presented herself and both infants before the notaries at Lyons, to authenticate the fact. (Fodere, vol. i.) These cases prove the possibility of superfœtation, four, five, and six months after conception. This may be possible, as menstruation has occurred during pregnancy. Mauriceau, Deventer, Heberden, Francis, Hosack, Dewees, Capuron, and Mayo.)—Buffon related a case of a woman in South Carolina, who brought forth a white and a black infant; on inquiry, it was discovered that a negro had entered her apartment after the departure of her husband, and threatened to murder her, unless she complied with his wishes. Dr. Mosely relates a similar case. A negress of Guadaloupe brought forth a black and mulatto, having had intercourse with a white and black man the same night. Another negress produced a white, black, and a piebald infant. A domestic of Count Montgomery's produced a white and black child at one birth (Velpeau). Gardien relates a similar case on the authority of M. Valentin. A mare has produced a foal and a mule, she having been impregnated by a horse, and five days afterwards by an ass. In treating of this subject in the first edition of this work, 1828, I made the following remarks:

Another argument, which I have never seen, occurs to me from analogy, which deserves mention, namely, that each dog will produce a distinct puppy; this no one can deny, for the offspring will resemble the different males that fecundate the bitch in succession. If a number of healthy, vigorous men were to have intercourse in succeion, immediately after the first conception, I

think it probable and possible that similar superfœtation would happen. I am proud to say, that Dr. Elliotson is an advocate of superfœtation ; he explains Buffon's case this way. Magendie is of the same opinion. Medical men must bear in mind that women have had three, four, and five children at one birth. Various cases of infants of different sizes, being expelled in succession, are recorded in our own periodicals. (Medical and Physical Journal, vol. xxii, p. 47, vol. xxiv, p. 232 ; Medico-Chirurgical Transactions, vol. ix ; Philosophical Transactions, vol. 60.)

One of the Pennsylvania newspapers, in 1827, recorded the case of an Irish lady, who in eighteen months had at three births twelve living children, all born prematurely. She and her husband were healthy fresh-looking people, and only two years married. This case is not recorded, as yet, in any of the American Medical Journals ; but if it prove to be authentic, it will be the most extraordinary case of fecundity recorded in any country. Cases of twins, triplets, quadruple, and quintuple births are of very rare occurrence ; but of these more particularly hereafter. Dr. Golding of this city, delivered a woman of six infants during the year 1829.

I am happy to add that Professor Velpeau, of Paris, is of the same opinion. He says, " In according all possible authenticity to these observations, regarding their exactitude as demonstrated, the idea which prevails in physiology on generation, permits an easy explanation. Two ovules can be fecundated, one after the other, in a woman who accords her favours to two or more men the same day, or in two or three days afterwards ; that is to say, to the moment when the excitation of the first coition causes the effusion of coaguable lymph into the uterus, to form the caducous membrane (decidua). These ovules may not descend through the uterine tube at the same time, and may be differently developed." But he thinks superfœtation impossible after the decidua is formed. *op. cit.* The closure of the os uteri, after conception, does not take place for some days, weeks, or months (De-wees) ; but if the male semen be absorbed from the vaginal surface and conveyed directly to the ovary, as in the elephant, cow, sow (Gertner), such closure is no objection. Twins have generally but one amnios and placenta ; but in cases of superfœtation, each infant has its own membranes and placenta. I once attended a female who was delivered of one infant on Monday ; the par-

turient action ceased, and on the following Thursday the membranes presented, and she was delivered of a second infant. There was no hæmorrhage, and the placentæ were united. My friend, Mr. Whitmore, sent me a similar union of the placentæ a short time ago. Whether we suppose superfœtation or twins, the medical practitioner ought to notice which was born first, male or female, when the disposal of property or title depends upon the decision. The question is, which was born first, not which was conceived first. Admitting superfœtation to be possible, and it cannot be denied in the early weeks of gestation, we cannot decide paternity, unless, perhaps, when one infant is black or brown, and the other white; but if both males were of the same colour, the decision might be difficult, unless some physical mark on the infant existed in one of them. The following conclusions are admitted in cases of pregnancy. It is now decided that a female may become pregnant, and be ignorant of it until the time of labour. (Fodere and Sanders, of Edinburgh.)—This may occur in cases of idiots (Desgranges); when the female is in a state of stupor, either from inebriation, narcotics, coma, syncope, or during sleep. (Fodere, Orfila, Beck, Hebenstreit, and the author.)

Section 5.—Duration of Pregnancy.—Legitimacy.

Hippocrates, Aristotle, Galen, Pliny, Avicenna, Mauriceau, Riolan, La Motte, Hoffman, Stchenk, Haller, Bertin, Lieutaud, Petit, Levret, Louis, Astruc, &c., maintained that pregnancy usually terminates at the end of the ninth calendar month, but might be protracted to the tenth, eleventh, twelfth, and some of them said to the fifteenth.

It is also decided by a preponderating majority of the profession, in all countries, that the term of utero-gestation is not uniform; in other words, not invariably limited to nine months. This position is strongly attested by the analogy afforded by the inferior animals; for it appears by the extensive observations of M. Teissier, on the gestation of heifers, mares, sheep, swine, and rabbits, that all these animals exceed their usual period of delivery. (Trans. de l'Acad. des Sc., Paris 1817.)—Further evidence is afforded by the vegetable kingdom, in which we observe in the same field, on the same tree, shrub, &c., different parts of vegetables arrive at maturity with more or less celerity. Petit informs us that many faculties of medicine, forty-seven celebrated authors, and twenty-

three physicians and surgeons, concluded pregnancy might be protracted to the eleventh or twelfth month. He cites a case on the authority of Schlegel, in which pregnancy was protracted to the thirteenth month; the child was admitted to be legitimate, an account of the probity and virtue of the mother, which induced her shopman to marry her, and she bore two children by him, each at thirteen months. Tracy, a naval physician, relates a case at the fourteenth month. Dulignac, a French surgeon, positively asserts that his own wife quickened at four months and a half, and on two occasions she went on to the thirteenth month and a half, and on the third to the eleventh month. Desormeaux relates a case of a woman who was maniacal, who had three children, and whose physician, after all means had failed, recommended pregnancy. Her husband had intercourse with her once in three months, of which he kept an exact account. She was closely watched by her domestics, and she was extremely religious and moral; she was delivered at nine months and a half. (Velpeau.)—The last author attests a case which went to three hundred and ten days and Orfila two of ten months and a half. I have repeatedly known women mistake expected delivery four, five, and six weeks.

The medical evidence in the Gardiner Peerage cause, tried before the House of Lords, in 1825 and 1826, throws no light upon the subject. It is right, however, to observe, that the witnesses spoke from their personal experience, lost all sight of physiological science, and of the numerous opinions of ancient and modern writers; that "one and all have shown an extraordinary ignorance on the principles of evidence, will be conceded by every one who examines carefully their testimony. But it may also be doubted whether the question admits of better evidence than has been already proved, or at least arrived at by them and their professional predecessors." (Dr. Duncan, *Edin. Med. and Surg. Journ.*, 1827, vol. xxvii.)

The majority of the medical men, examined in the Gardiner Peerage cause, were in favour of protracted pregnancy, as Drs. Granville, Conquest, Blundell, Hopkins, Hamilton (of Edinburgh), and Power. Dr. Granville proved that his own wife went to three hundred and six days, even admitting pregnancy to have occurred the day before the interruption of menstruation; and three hundred and eighteen days, if from the middle of two of the last

and expected periods. Dr. A. T. Thompson, who attended her, was of the same opinion, that the child was ten months old at birth. Dr. Granville knew other cases of two hundred and eighty-five, two hundred and ninety, and three hundred; and one doubtful at three hundred and fifteen days. Dr. Conquest knew two or three cases at the tenth month.

His patient was a most sensible woman, who had been the mother of six children, and had engaged him and the nurse to attend her at a certain time, went five weeks after, and four with the next; she had other children afterwards at the ninth month. Dr. Meriman knew cases at two hundred and eighty, two hundred and eighty-five, three hundred and three, and three hundred and nine days, and thought the Gardiner case possible; Drs. Blundell and Hopkins, two hundred and eighty-five; Dr. Power, eleven months; Dr. Hamilton, ten calendar months; and Dr. Collins, of Liverpool, published a case at eleven months soon afterwards, which occurred two years before. (*Edin. Med. and Surg. Journ.*, April 1826, vol. xxv.)—This is well worthy of perusal. I know a delicate woman, who menstruated the last week in February 1826, quickened in July, and engaged me to attend on her in November. She had spurious pains in November, December, and January, 1827, and was delivered on the 28th of February, 1827, nearly twelve months from her previous menstruation. I had most serious business from home in November, but by her intreaties deferred my journey in that, and even the next month, and of course I then daily expected her delivery, yet she went two months later. The infant was a girl, and of the ordinary size, and she and all her friends thought she would die undelivered, from her protracted pregnancy; yet her labour was only of two hour's continuance, and perfectly natural. I shall ever have cause to remember this case, as I nearly lost some considerable property by deferring my journey to attend upon it. It was a first pregnancy. I most solemnly declare that the case was a true one, and not fabricated to support any particular opinion. This is the longest instance of protracted pregnancy which has hitherto been recorded in British medicine. Another argument in favour of protracted gestation is, that children often grow more in one year than in seven years before, which would prove the development may not be the same in the womb. The following accoucheurs were produced against the doctrine of protracted pregnancy, on the

Gardiner Peerage cause. Dr. Charles Clarke, who in twenty cases of unmarried females, never knew one exceed the term of nine months; his evidence does not controvert the opposite side of the question. Dr. Blegborough had practiced extensively for thirty-four years, and never knew pregnancy exceed the ninth month. Mr. Pennington contended for forty weeks and three or four days; and Drs. D. Davis and Gooch were of the same opinion. It is a strange, but positive fact, that these gentleman who came forward to prove pregnancy to be immutable and definite at a certain period, all admitted it might exceed nine months by four or six days; hence the justice of Dr. Duncan's critical sneer at their evidence. In the case under consideration, the claimant Jadis, otherwise Gardiner, was born eleven months after his father went abroad, and his mother had cohabited with Jadis, the father, soon after Lord Gardiner had been absent. On his lordship's return, he obtained a divorce against her, and married again; and the offspring of the second marriage, on claiming his father's title and property, was opposed by Jadis, who, at the adult age, took the name of Gardiner; and under these circumstances, and contrary to the medical evidence of the majority of the obstetricians, the House of Lords decided against him. The evidence in favour of the legitimacy of Jadis was founded on too few cases, to warrant a perfect confidence in it, or to settle the question of protracted pregnancy. The *Edinburgh Medical Jurist* justly concludes, by stating that there was not a single new fact advanced by the medical men, in elucidation of the subject at issue; and the reviewer smiles, and "wonders at the want of knowledge of the witnesses, who appeared to be unacquainted with the nature of legal evidence; and neither their evidence, nor that of the other side, was sufficiently accurate, in not being deduced from physiological science, which, however, in the present state of medical knowledge on the question, could not perhaps be more accurate." On the whole, the weight of the testimony was in favour of the advocates of protracted pregnancy; but the mother having cohabited with another, proved her incontinence, which fact influenced the House of Lords against the legitimacy. After all, the subject remains as obscure as before, and will require much more scientific medical evidence to decide it one way or the other.

Dr. Dewees relates a case of a lady, whose husband was absent on account of embarrassment of his affairs. He returned one

night clandestinely, had intercourse with his wife, whose menstrual period was expected within a week, and occurred, yet she was delivered in nine months and thirteen days from the coition. (Work, 1825.)—The question of protracted gestation, and more especially the Gardiner Peerage case, was discussed at the Westminster Medical Society, in December, 1829, when Dr. Granville adduced the following authors, in favour of the affirmative side of the question. Among the ancients, Hostius, (Horstius?) Sylvius, Harvey, Mauriceau, Levret, Lieutaud, Heister, Dulignac, La Clature, Benedictus, Petit, Smellie, and W. Hunter. Among the moderns are Osiander, Fodere, Schoreider, Lentosseit, Sprengel, Adelon, Bardt, Capuron, Orfila, Burns, Desormeaux, Dewees, Hamilton of Edinburgh, and Merriman. I have already mentioned many others. On the occasion in question, Mr. Chinnock related a case of a female who menstruated October 14, and had intercourse with her husband on the 29th. She was delivered on the 20th of February, a space of two hundred and ninety-eight days after the connexion, but labour commenced three days previously. I mentioned the cases narrated in the extract from my work inserted above, and Dr. Ley and Mr. North took the same side of the question. The whole of the Society were of the same opinion, with one or two exceptions. (Lond. Med. and Surg. Journ., 1830, vol. iv; Med. Gaz., 1830, vol. v.)—There is no doubt but the weight of medical authority, in ancient and modern times, is in favour of protracted pregnancy; but in the present state of science it is impossible to assign the exact limit. The law of this country assigns no limit to uterogestation; the law of France limits it to three hundred days, or ten months, and allows legitimacy to be contested after this period. (Velpeau.)

ARTICLE V.—TOCOLOGY—PARTURITION—NATURAL LABOUR.

Tocology, partus, puerperium, couches, accouchement, parturition, is a function which consists in the expulsion of the fœtus from the womb, and comprises the series of phenomena which immediately precede, accompany, and follow the exit of the infant. It is *spontaneous* or *natural*, which will now occupy our attention. *Artificial, manual, or instrumental*, which will be considered under the head of gynæco-pathology. It is uniparous or multiparous, as in cases of twins, triplets, &c.

Happily for humanity, the process of labor is safe and free from

danger, in a vast majority of cases, especially where females live according to nature's primitive laws ; but among the higher and middle classes, where these laws are violated or forgotten, where the constitution is impaired by the luxury and dissipation of modern times, the process of child-bearing is attended with considerable danger, both before and after it is completed. These observations are equally applicable to the lower classes in our cities, whose customs, habits, pursuits, and constant inebriation, render them liable to many accidents during parturition, and to a vast number of inflammatory and febrile diseases after delivery. The universal testimony of all unprejudiced medical men confirms the truth of this assertion. It is well for suffering humanity, the process of parturition may be greatly accelerated, and the greatest of mortal suffering relieved by the skilful exertions of the obstetrician, and with the most perfect safety to the parent and offspring. It is well known that the very presence of a medical man will often afford relief, without the performance of any manual operation whatever. The confident assurance to the patient of her safety will inspire that balmy hope, which will hasten delivery much better than any other means. On this account there are few intelligent females who do not prefer medical attendance during labour to that of any other description. This is the case in every civilized country, as women are well aware of the superior knowledge which medical men possess of their constitutions ; and hence, in modern times, we observe a wise and judicious preference given to male obstetricians, and midwives are scarcely ever exclusively employed, unless among the ignorant or lower classes.

Among the savage tribes of all nations, the process of labour is perfectly safe and expeditious. This universal declaration of travellers authenticates this position. We also find that many eminent medical men have practised obstetric medicine for many years, and had no occasion to use instruments. Dr. Dewees delivered three thousand women, and did not meet with one case that required the crotchet. Dr. Bland assures us, that out of one thousand eight hundred and ninety seven women, delivered in the Westminster Lying-in Hospital, one thousand seven hundred and ninety-two had natural labour ; and Dr. Smellie was of opinion, that out of one thousand cases, eight only would require instruments. Dr. Hagen, of Berlin, delivered three hundred and fifty patients, and employed the forceps ninety-three times, and

the crotchet twenty-eight, and no less than twenty of his patients died. Dr. Clarke, of the Dublin Lying-in Hospital informs us, in the first volume of the Transactions of the Dublin College of Physicians, that in seven hundred and twenty-eight cases of labour, the forceps were but once employed; and he is of opinion, that once in one thousand times would be nearer the point of accuracy. He further states, that in ten thousand cases there were but forty-nine examples of deformed pelvis; and he never saw a case of spontaneous evolution, or the passage of the full grown infant doubled, as described by Dr. Denman, and Dr. Douglass, of Dublin. I have met with two cases of spontaneous evolution at the full time. In ten thousand cases he met but four instances of sloughing of the bladder, or the vesico-vaginal fistula; and yet I solemnly aver, that I have met as many examples of it, in ten year's private practice. In ten thousand three hundred and eighty seven cases, the placenta was retained but twenty-one times, which required the introduction of the hand for its extraction. This report of obstetric practice is one of the most valuable in the medical annals of this or any other country. Again, if we peruse the bills of mortality in London, we will observe that twenty thousand deaths occur annually; and out of these two hundred and thirty in child-bed, and after delivery. While at the Hospice de Maternité, at Paris, Leroux reports the deaths to be one in twenty-five, in the year 1817; and Lobstein states, that in the civil hospital at Strasbourg, there were seven hundred and seventeen deliveries, and sixty-one deaths. (*Observations des Accouchemens.*)—In the Lying-in Hospital at Florence, there were five hundred deliveries, four deaths, five hundred and six children, six twins, four hundred and eighty-five head or natural cases, two hundred and seventy-nine males, and two hundred and twenty-seven females; three hundred delivered by day, two hundred at night; twenty-one births premature; one child weighing sixteen pounds troy weight, and only three cases of deformity in the whole. (*Lond. Med. and Phys. Journ.*, 1824, vol. lii. p. 438.)—Dr. Smellie reports, in one thousand cases, that there were nine hundred and twenty natural, seventy laborious, and ten preternatural. Dr. Bland reported, that out of one thousand eight hundred and ninety-seven deliveries in the Westminster Lying-in Hospital, one thousand seven hundred and ninety-two were natural, sixty-three preternatural; and nearly the same proportion in the British Ly-

ing-in Hospital. In two thousand eight hundred and sixty-four cases at the Hotel Dieu at Paris, there was but one case of Cæsarian section. Baudelocque reported, that at the Hospice de Maternité, in Paris, there were twelve thousand six hundred and five deliveries, twelve thousand seven hundred and fifty-seven infants, twelve thousand one hundred and eighty-three head presentations, three of the knee, thirty-six of the navel-string, and one Cæsarian section. The frequency of preternatural to natural labour is estimated at about one in seventy or eighty. From these reports, and I might have multiplied them to an indefinite length, we perceive that natural labour is by far the most common; but yet the preternatural or untoward, may be the first we might have to encounter. Various, indeed, were the opinions advanced as to the cause of the time of utero-gestation being limited to nine calendar months. All these opinions are purely speculative and theoretical, and are unsatisfactory and uncertain. I think they all resolve themselves into one—that proposed by Avicenna, namely, “that the appointed time having arrived, labour comes on by the command of God.” This exposition will also enable us to understand protracted pregnancies. The opinion that natural labour should be easy and expeditious, has been held since the sixteenth century, when Rhodion, the first popular writer on midwifery, remarked, “that in all labours the birth should be easy and instantaneous, or in a single pain or two;” and Raynold, the first British writer on the subject, translates the passage, “that if the byrthe be natural, the deliveyrance is easye without longe tarreyenge or lookynge for it.” (Byrthe of Man Kynde, b. ii. p. 48. A. D. 1540.) Diodorus Siculus informs us, that in his time the Corsican women had no care or attention paid them in child-bed, and that as soon as they were well, the husbands were put to bed, and nursed in their place. (Biblioth. Hist. fol. lib. v. p. 341.)—Strabo gives an account of a similar custom prevailing in Spain, in his time. (Rerum Geograph, fol. lib. iii. p. 165.)—It is little to our purpose to inquire into a custom so absurd, but it affords us proof, that woman in a state of natural simplicity did not suffer severely in labour.

In a state of nature there is little solicitude entertained, and very little preparation made for delivery. It appears from the accounts of various writers, that a seclusion of a few hours in some retired spot, or in a rudely constructed hut, is all that women liv-

ing in a state of quiet simplicity require, for the completion of their deliveries; and after some slight ablutions, if religious customs do not ordain a separation, they almost immediately return to their ordinary states of life. Bruce, the unfortunate but deeply lamented Abyssinian traveller, informs us that the women of Galla, a nation near Abyssinia, do not confine themselves, even a day after labour, but wash and return to their work immediately. (*Travels to discover the Source of the Nile*, b. ii. p. 2.)—Cangiamilia gives a similar account of the Abyssinian women, who retire by themselves, and are delivered with great ease and expedition. (*Embryologia Sacra*, p. 113.)—The same simplicity, expedition, and freedom of danger, attend the process of labour among the natives in most parts of Asia, Africa, West-Indies, and America. Hennepius states, that the Spaniards in the Brazils perform the duties of midwives for their teeming consorts, receive the infant, tear the navel string, and wash and paint it. The woman goes and washes herself, and immediately sets about her work; and he records the same of the Livonian peasants in North America. (*Ceremonies and Religious Customs of various Nations*, vol. iii. p. 30.)

Sagnier and Brisson assert that the Moorish women on the coast of Africa have no midwives, but are laid on the ground under a tent, and the day after delivery, depart to encamp fifteen or twenty leagues distant. *Voyage to Coast of Africa*, p. 494.—Dr. Hutchinson, the quondam editor of the *Medical and Physical Journal*, has included the unintellectual Irish, as being delivered without any preparation or concern; but that is not the fact. Dr. Power has cut the Gordian knot, by asserting “that women in labour are free from pain in the tropical climates, in Persia, Africa, Cape of Good Hope, Abyssinia, Tonga Islands, New Zealand, Greenland, and America;” but no traveller has asserted this, at least so far as my researches enable me to state; and how could any traveller ascertain the fact, for surely none of them attended parturient women?

Dr. Dewees of Philadelphia, was of Dr. Power’s opinion, that natural labour is not attended with pain, among those who live according to Nature’s laws. (*Lond. Med. and Phys. Jour.*, 1819. Review of his first work.)—But the Doctor in his work, 1825, speaks of pain and suffering. Dr. Power, in his second edition, 1823, attempts to prove that there is no pain in natural labour, nor

any uterine contraction during severe pain. This gentleman appears to have forgotten the primeval malediction, which for ever doomed the human female to the agonies of child bed ; and I am not aware that there is another accoucheur, in this or any other country, who coincides in his opinion. How unjustifiable for all profane and medical historians, in every age, to have described the painful process of parturition. I believe that the quickest and most easy labour is attended with more or less pain wherever it happens. I need scarcely remark, that in all countries where a high degree of civilization prevails, the parturient process excites much attention, and is conducted with great care ; and the annals of mankind and medicine fully confirm the truth of this assertion. If the converse held good, there would be no need of medical practitioners being engaged as obstetricians ; and their voluminous writings on obstetric medicine, from the time of Hippocrates to the present period, would be equally unnecessary.

Section 1.—Parturition in general.

Parturition usually occurs at the expiration of the ninth calendar month, or two hundred and twenty-fifth day ; but the period varies very much with different individuals, as well as with domestic animals. This was amply attested in the article on duration of utero-gestation. The exact moment of conception cannot be determined ; the date of it is differently estimated by women and medical practitioners. Some reckon the date of conception from the second week after the last menstrual evacuation, others from the time when the next appearance of the secretion ought to occur. Again, it is confidently asserted by Dewees and Duges, that menstruation may occur once after conception, and others say during pregnancy. (Vide p. 32.)—The exact duration of utero-gestation is not ascertained, but is limited by the French law to the tenth month ; while in this empire there is no limitation. In general, an infant born before the seventh month does not survive ; but Dr. Rodman, of Paisley, recorded an instance in which one of five months was reared. When the fœtus is expelled before the seventh month of utero-gestation, the delivery is called *abortion* ; when after the eighth month it is designated *premature labour*.

Remote causes of parturition.—The causes of parturition have occupied physiologists of all ages, some of whom ascribed them to the fœtus, to the uterus, to the abdominal muscles and diaphragm.

Hippocrates and the ancients held that the foetus, like the chicken, ruptured its membranes when capable of independent existence ; but this idea is refuted by the facts of abortions, and of delivery when the foetus is dead, or after the death of the mother. Again it has been ascribed to the violent motions of the infant excited by hunger, by a desire to respire and to expel the meconium ; but a dead foetus is not retained longer than a living one. The opinions of Lowder, that the uterus admitted of a certain degree of distention, and of Levret, Baudelocque, Desormeaux, and others, that the uterine fibres were developed more than the cervix, do not explain the case labour. All explanations as yet offered are objectionable, and of these Avicenna's is the best.

Galen, Fabricius, Harvey, Levret, Lowder, &c. maintained, that delivery was effected by the contractions of the uterus, of the abdominal muscles, and of the diaphragm ; while Petit contended the uterine contractions alone were the true cause. That this is the true cause must be admitted, when we recollect the direct observation afforded during labour, by placing the hand over the uterus when contracted ; and also when we refer to the cases of prolapsus uteri, in which delivery took place. (Peu, Jalouzet, Mme. Lachapelle, Ashwell, and Kingdon, in Lond. Med. & Surg. Journ. 1830. vol. iv.)—Again women enfeebled by hæmorrhage and a variety of diseases, ascites, asphyxia, mania, coma, &c., whose abdominal muscles have nearly lost their power of contractility, are delivered in due time.

Haller maintained that the contractions of the uterus, aided by those of the abdominal muscles and diaphragm, effected delivery ; but he ascribed too much power to the last ; for if these had so much to do in the phenomena, parturition should be a voluntary and not an involuntary process. Bourdon explains the action of the diaphragm more correctly ; he observes that during each parturient effort, the chest is dilated, the lungs filled with air, the glottis is closed, the diaphragm contracts, and gives the distended lungs an immobility and solidity a *point d'appui*, which enable the muscles to act exclusively on the contents of the uterus.

The uterus first contracts, presses the infant into the pelvic cavity, which excites a heaviness, an irritation, and pain that produce the action of the abdominal muscles, which are fixed to the pelvis and chest, and make considerable pressure on the fundus uteri. The repeated contractions of all these muscles gradually dilate the os uteri, and finally expel the infant.

Such are the natural causes by which the process of parturition is accomplished in a healthy subject ; but these may be diminished or arrested by moral affections, by a great variety of diseases, which prostrate the vital powers, as fevers, phthisis, over distension of the uterus, by dropsy of the amnios, distended bladder, preternatural presentations and deformities of the infant, deformities of the mother, rupture of the uterus ; in fine, all causes of preternatural labour, which will be hereafter enumerated, demand the intervention of medical aid for the completion of parturition.

Parturition divided into periods or stages.—The word labour or travail is applied to the whole of the phenomena which constitute parturition or delivery. As these phenomena are numerous and successive, they have been divided into classes, so arbitrary and conventional, that they are different in almost all works on obstetrics. Petit divided them into three classes, without assigning their limits ; Stein into four, as vaguely ; Millot into four : 1. the secret time (*temps secret*), in which women experienced the various symptoms which are often manifest four, five, or six days at the end of pregnancy ; 2. the stage which extends from the commencement of pains to the effusion of waters (*liquor amnii*) ; 3. commences after the rupture of the bag of waters ; 4. when the infant is on the point of being expelled. Chaussier and Adelon have five stages ; and Maygrier four. Denman's division is the best, and is usually adopted in this country ; it is as follows : 1. stage is dated from the commencement of pains to the dilatation of the os uteri, or discharge of the waters ; extends from this period to the complete expulsion of the infant : 3. the expulsion of the placenta, or what is vulgarly called delivery. This is the arrangement of Hamilton, Burns, and most British obstetricians. Desormeaux adopted this arrangement without any regard to the rupture of the membranes, or amniotic sac. Velpeau holds there are two stages : 1. the complete dilation of the cervix uteri ; 2. the expulsion of the infant. Duges, in his last edition, 1830, divides the phenomena into five distinct periods : 1. precursory ; 2. preparation ; 3. expulsion of the fœtus ; 4. delivery (expulsion of the placenta) ; 5. the consequences. Dewees adopts the following division ; 1. into nervous symptoms ; 2. into those which affect certain organs besides the uterus, as inclination to evacuate the bladder, suppression of urine, tenesmus ; 3. into those which affect the uterus, subsidence of the uterine tumour, secretion of

mucus, dilatation of the uterus and its alternate contractions. Blundell divides the process of labour into two parts, "the first of which terminates with the birth of the child, and the second with the expulsion of the secundines." It is unnecessary to multiply the arrangements of authors to a greater extent; and of all before us, Denman's division is the best, which I shall follow.

First Stage or Period.—Precursory Signs of Parturition, Dilatation of the Os Uteri, Rupture of the Amniotic Sac, and Escape of the Amniotic Fluid.

The process of parturition is sometimes completed without any premonitory symptom; but this is a rare occurrence, as we usually observe a series of signs, for two, four, six, eight, ten, or twenty days before delivery. In general the volume of the abdomen diminishes, the fundus uteri is depressed, the weight of the uterine contents is felt much lower than usual, the external labia are tumified by infiltration, they become soft and sometimes painful; the movements of the fœtus are stronger, there are pains about the loins and pelvis, and a frequent desire to evacuate the rectum and bladder. The ligaments of the pelvic cavity are softened and relaxed, and the patient is fatigued in making ordinary motion. A secretion of mucus takes place in the genital passages, and escapes from the vagina and vulva, which is designated "*the shows*" by midwives. The orifice and neck of the womb become softer and dilated; the abdomen is hard at intervals in all points, which correspond with the uterus; at the same time the orifice contracts, and the membranes become tense, these contractions are succeeded by relaxation of the abdominal parietes and os uteri, the latter being dilated. The recurrence of these contractions and relaxations effect the expulsion of the fœtus in the manner hereafter mentioned. These different phenomena vary in number, progress, and intensity in different cases, and indicate in general a favorable termination. The explanation of these symptoms is afforded by the change of the position of the uterus, the descent of which into the pelvic cavity causes pressure more or less intense on the rectum, bladder, nerves, and vessels; and hence the tenesmus and sharp cutting pains, the tumefaction of the labia and the formation of mucus. The precursory signs of labour vary in duration from one hour to a period of many days; when they are succeeded by spasmodic pains resembling colic, during which the

uterus contracts and descends into the cavity of the pelvis; the number, frequency, and duration of these pains are very variable. In general, they are at first short, continuing for a minute or two, and recurring with the greatest regularity every fifteen or twenty minutes, but gradually returning at shorter intervals every ten, five, or three minutes, and finally they are continued. During these pains, the lips of the os uteri become thin and effaced, and the orifice forms a circle, in which the amnios or membrane, which surrounds the fœtus, becomes engaged, is tense, and forms a soft wedge, which assists in dilating the uterine orifice. At this period women often become dejected, and apprehensive of danger or of death, or they are silent or weeping, and often attacked with shivering of the whole body. Even the inferior animals are depressed, and refuse to eat or drink, at the approach of delivery.

When the labour pains increase, the neck and orifice of the womb dilate, the mucous discharge is streaked with blood, the membrane surrounding the fœtus descends, and is vernacularly called "*the bag of waters*" and the blood proceeds from the rupture of the vessels of the membrane which attached it to the uterus. After the pain ceases, the membranes and head recede, there is a period of tranquility until its return. Each pain is followed by the same series of phenomena, and by a remission of less and less duration. The neck of the womb gradually yields by the contraction or shortening of the longitudinal fibres of the body of the organ, the liquor amnii and the inferior part of its membrane are pushed downwards, the dilation is gradually but steadily increased after each pain, until the sides of the orifice of the womb rest on the parietes of the pelvis, and thus afford sufficient space for the escape of the infant's head. The membranes are propelled more and more by each pain and by the pressure of the fœtal head, and sometimes through the vulva or genital fissure, which is a strong proof of a natural well conducted labour (Denman, Hamilton, &c.); but, in general, the membranes are ruptured in the vagina during the pain, a portion of amniotic fluid escapes, and this is called "*the breaking of the waters*," by women and midwives. When this occurs, the first state of parturition is completed.

During the progress of this stage, and according to the intensity of the pains, a great general irritation occurs, women are irritable, restless, impatient, and often governed with difficulty; they

cannot retain a certain posture, sometimes thirst and feverish symptoms supervene, and also nausea or vomiting; sometimes wildness of countenance and delirium, or convulsions appear. This stage may continue from half an hour to six hours in general; but I have known several cases in which rupture of the membranes were not followed by labour for three, four, five and six days.

Second Stage or Period. Descent of the Fœtus, dilatation of the external genitals, expulsion of the infant.—The duration of this stage is usually from half an hour to three or four hours; but in some cases I have known it continue for twelve and twenty-four-hours, without any morbid symptom. In such cases the woman is young, or advanced in life. Again, this stage may be completed in half a minute, and by a single pain.

After the rupture of the membranes, the fœtal head presses upon the uterus; pain is increased in intensity, as the uterus can now act more powerfully upon its contents, a portion of the amniotic fluid having escaped. The sufferings of the woman are so much increased that she seizes upon any fixed object, as the bed-post, an attendant, &c.; makes a full inspiration; the face and neck become red or livid, the jugular veins acquire an enormous size; the carotids pulsate violently; the pulse is strong and frequent; the face, neck, and chest are covered with perspiration, or signs of cerebral congestion may become apparent; these symptoms are diminished when the uterine pain ceases. Sometimes the pain diminishes in force, and the woman enjoys a tranquil sleep for a longer or shorter period. On the recurrence of each pain or uterine contraction, a small quantity of amniotic fluid escapes, until the head becomes impacted in the orifice of the womb. The head is forced through the orifice into the upper part of the vagina, which it gradually dilates, and then presses on the rectum and bladder, causes strangury and tenesmus, cramps of the thighs and legs; the fœcal matter is expelled, and the vagina is dilated in every direction. The head approaches the inferior strait or outlet; the coccyx is pushed backwards; the anus projects more or less; the perineum is elongated, forming "*the perineal tumour*" of obstetricians; the occiput presenting under the arch of the pubes; the vertex and forehead covered by the perineum, and the face in the concavity of the sacrum; and the parietal protuberances resting on the tuberosities of the ischia. When the pain ceases, the head recedes, and when it returns,

the descent is greater, the labia more dilated, and much more of the cranial surface denuded. The reiteration of the pains and pressure at length overcome the resistance of the perineum, and render it as thin as parchment, when it slips over the forehead of the infant, and the head is protruded through the genital fissure. After a few seconds, though sometimes not before the lapse of fifteen or twenty minutes, another pain expels the body, which is followed by the discharge of the remaining portion of the amniotic fluid. The mechanism of labour has been already described in the chapter on Gynæcotomy, and here I need only observe that the longest diameters of the infantine head are adapted with mathematical precision to those of the pelvis. The nymphæ are not obliterated, according to some French writers (Velpeau, Duges) ; the frœnum labiorum is generally lacerated, and sometimes, though I think very rarely, the perineum. After the expulsion of the infant, the genital orifice contracts almost to its natural size, while the uterus contracts, and occupies the hypogastric region. According to the obstetric writers of these countries, the forehead of the infant is turned to either sacro-iliac symphysis, or is in the transverse, or bis-iliac diameter, and is propelled into the pelvic cavity, the long diameter (occipito-frontal) of the head being in the short (bis-ischiatic) of the outlet, and this malposition is rectified by the contractions of the uterus in the axes of the brim, cavity and outlet, which produce a rotary motion of the head, which is further promoted by the pressure of the planes of the ischia, and thus is the face turned into the concavity of the sacrum, and the rest of the process completed in the manner already mentioned.

Third Stage, or period. The expulsion of the Placenta and Membranes ; Secundines or After-birth.—The expulsion of the human offspring is the most painful occurrence that can befall humanity. It is one of the most pitiable scenes and the most capable of exciting the finest feelings of the human heart. To the piercing cries, the excessive sufferings, the transports of despair, excessive efforts, inexpressible agonies, lacerating pains, which appear intolerable, instantly succeed a delicious calm, full of charms, says Professor Desormeaux, and which is only interrupted by the sufferer's good fortune in knowing she is a mother. The new-born infant cries, and then all the evils that the mother had so courageously suffered are forgotten ; expressions of satisfaction replace

those of pain ; the sobs of joy succeed those of despair, and excite our greatest admiration for a sex which contributes so much to our happiness. This delightful scene is, however, of short duration ; it is soon interrupted by the recurrence of pain, arising from farther contraction of the uterus, for the detachment and expulsion of the placenta and its membranes. About a quarter of an hour, or half an hour after parturition, the fundus uteri becomes painfully contracted, presses upon the placenta and detaches it, and two or three pains are sufficient for the purpose, and are popularly termed "*after pains*." The membranes are separated from the uterus during labour, and also the placenta if the process is tedious. The placenta is pushed into the vagina ; the vessels which attached it to the uterus are closed by the contraction of the organ, and by the total obliteration of its cavity. Hæmorrhage is thus prevented. The placenta may remain a longer or shorter period in the vagina, in consequence of the contraction of the external parts but in general it passes in the curved line traced by the three axes of the pelvis ; it descends first downwards and then forwards, and we must bear this in mind when we are called on to extract this body. After the expulsion of the placenta and membranes, the volume of the uterus is reduced by a firm contraction, and can be felt, about the size of a child's head, above the pubes, and is still attacked with pains, which may continue one, two, or three days, and cause an effusion of blood, called *lochia*. This is the name given to the puerperal discharge, which continues for eight or ten days after delivery, becomes serous, and acquires a disagreeable odour, and ceases at the period already described, though sometimes protracted to the period of a month, or until the next menstruation, which is generally more abundant than usual.

Sometimes before, but generally not until the second or third day after delivery, the secretion of milk takes place ; the breasts become hot, tumefied, and painful, accompanied with the usual symptoms of fever. This state continues about twenty-four hours, when the milk appears, which is at first yellow, oily, and of a disagreeable taste, and is technically denominated *colostrum*, and purges the infant. In some rare cases, the secretion of milk does not take place, and the infant must be nourished by other food, which is hereafter described. Such are the series of phenomena of natural parturition.

ARTICLE VI.—ARRANGEMENT OF LABOURS.

Section 1.—Of the Classification of Labours.

Every writer and teacher of obstetric medicine has a peculiar classification of labours; but, after all, that proposed by Hippocrates is the best, because most simple, *viz.* natural and preternatural. To these two classes can all others be reduced with advantage. Denman divided labours into four classes: natural, difficult, preternatural, anomalous, or complex; and to these Blundell adds one already included, namely, flooding. Hamilton adopts the classification of Denman. Burns divides them into natural, premature, preternatural, tedious, instrumental, and complicated. M. Baudelocque divided labours into three classes; natural, manual, and instrumental. Natural when no assistance is required as in presentations of the vertex, feet, knees, and thighs; unnatural, when the hand is required from vicious positions or accidents during labour; and laborious, when instruments are required from diseases of the sexual organs, monstrosities of the fœtus, or impotence of the organism. Dubois, Desormeaux, Boivin, and Lachapelle, agree with Baudelocque; but include face presentations among natural. Conquest, Dewees, Blake, and Merriman, divide them into natural, or Eutocia and preternatural, or Dystocia; and the last-named author has given the following orders of the second class, in his learned and excellent Synopsis. Dystocia diutina, lingering labour; D. anenergica, powerless labour; D. perversa, labour with malposition of the head; D. amorphica, labour with deformity of the pelvis; D. obturatoria, obstructed labour; D. ectopia, labour with displacement of the womb; D. transversa, preternatural labour; D. gemina, plural labour; D. laceratoria, labour with laceration; D. hæmorrhagica, labour with flooding; D. syncopalis, labour with fainting; D. epileptica, labour with epilepsy; D. inflammatoria, labour with fever; D. retentiva, labour with retained placenta; D. inversoria, with inversion of the uterus. Power has added several other orders to those now described, and they might be continued, perhaps to thousands more, including each and all the causes that may impede labour. Ashwell divides these into three classes: natural, difficult or preternatural, and complex. D. Davis divides labours into natural, preternatural, complex, and instrumental. Baudelocque has given ninety-four positions of the fœtus, and Gardien and Capuron

limit them to forty-eight; but we know that almost every part of the infant may be the presenting part.

Velpeau's classification is, eutocia or natural labour, which comprises all cases that terminate spontaneously, whether vertex, face, or pelvis; dystocia or preternatural labour, comprising all labours which require succour.

The following is the classification which I adopt in my lectures, and is most accordant with nature and phenomena of the parturient process.

TOCOLOGY—PARTURITION—LABOUR.

1st Class: Eutocia, Natural Labour.—2d Class: Dystocia, Preternatural Labour.—3d Class: Chiragotocia, Manual Labour. 4th Class: Organikotocia, Instrumental Labour.

First Class: Eutocia, Natural Parturition.

EUTOCIA verticalis, in which the vertex or crown of the head presents, the passage of the mother being natural, and the process being completed from the space of one minute to twenty-four hours.

Order I. E. protracta, protracted labour, in which the process is not completed in twenty-four hours.

- II. E. phrenalgica, in which the labour ceases from mental affections.
- III. E. anenergica, powerless labour, the process ceasing from want of power.
- IV. E. gemina, or twin labour.
- V. E. triplex, when three infants are born.
- VI. E. quadruplex, when four infants are born.
- VII. E. quintuplex, when five infants are born.
- VIII. E. sextuplex, when six infants are born.

Second Class: Dystocia, Difficult Parturition.

DYSTOCIA preternaturalis, preternatural labour, when any part of the infant, besides the crown of the head, presents.

Order I. D. frontalis, when the forehead presents.

- II. D. occipitalis, when the back of the head presents.
- III. D. auralis, when the ear, or side of the face, presents.
- IV. D. facialis, when the face presents.
- V. D. transversa, when the infant is across.
- VI. D. nuchalis, when the neck presents.
- VII. D. dorsalis, when the back presents.
- VIII. D. abdominalis, when the abdomen presents.
- IX. D. brachialis, when the arm presents.
- X. D. manualis, when the hand presents.
- XI. D. glutealis, when the breech or buttocks presents.
- XII. D. femoralis, when the thigh presents.

Order XIII. D. genualis, when the knee presents.

XIV. D. cruralis, when the leg presents.

XV. D. pedalis, when the foot presents.

XVI. D. placentalis, when the placenta, or after-birth, presents.

XVII. D. funiculis, when the navel-string presents.

XVIII. D. embryonosologica, when labour is impeded by diseases of the infant, as dropsy in the brain or abdomen, hydrorachitis, &c.

XIX. D. gynæconosologica, when labour is impeded by diseases of the mother.

XX. D. amorphica, when labour is impeded by distorted pelvis.

XXI. D. ectopia, when labour is impeded by displaced uterus, as inversion, antiversion, retroversion, and lateral obliquity.

XXII. D. vesicalis, when the bladder is prolapsed, or distended.

XXIII. D. hæmorrhagica, when labour is connected with flooding.

XXIV. D. syncopalis, when labour is connected with fainting.

XXV. D. convulsiva, when labour is connected with convulsion.

XXVI. D. epileptica, when labour is connected with epilepsy.

XXVII. D. febrilis, when labour is connected with fever.

XXVIII. D. inflammatoria, when labour is connected with inflammation.

XXIX. D. laceratoria, when labour is connected with laceration of the womb, or vagina.

XXX. D. retentiva, when the placenta is retained.

XXXI. D. pluralis, when labour is connected with plurality of children,

Third Class, Chiragotocia, Parturition effected by Manual Operation.

Manual labour, which is applicable in most of the orders of Dystocia, or preternatural presentations.

Fourth Class : Organikotocia, Instrumental Parturition.

Order I.—O. tractativa, where instruments are applied as tractors.

Order II.—O. incisiva, where cutting instruments are required, as in embryotomy, gastro-hysterotomy, and gastrotomy.

There are numerous other varieties in the class Dystocia, besides these enumerated; for example, the face may be turned to the sacrum, symphysis pubis at the brim, or may be turned to the side in the outlet of the pelvis. The head may present with one or both arms or legs, or with the naval string. Labour may be impeded by too great distension of the uterus, or partial action of that organ, rigidity of the membranes, imperfect discharge of the waters, shortness of the funis, weakness of the constitution, want of due irritability, by the rigidity of the soft parts in advanced age, scirrhus or adhesion of the os uteri, by disproportion between the dimensions of the cavity of the pelvis, and the head of the child,

original smallness of the pelvis, unusual size of the child's head, as by disease; by suppression of urine, stone in the bladder, excrescences, and tumours in the uterus, ovaries, vagina, bladder and rectum. (See Gynæco-pathology.)

The part of the child which descends lowest into the pelvis, is called the presenting part.

The intention of manual operation is to rectify the presentation, and save both mother and infant; and that of using the first order of instruments is the same: while that of using the second, is to preserve the life of the mother or infant.

The instruments now in use, which are intended to save the life of both mother and child are, the short forceps, long forceps, vectis or lever, and blunt hook, all of which act on the principle of artificial hands or tractors. Those in use for the safety of the mother, at the destruction of the life of the child, are the perforator, craniotomy forceps, crotchet, and scalpel; and when the child is to be preserved at the risk of the mother, a scalpel only is necessary for the division of the abdomen. The last class are named incisive instruments.

Section 2.—Eutocia—Parturition, Natural Labour.

The parturient power is a property essential to the uterus, and it may be exerted at any period of gestation. It may also be exerted by the womb, to rid itself of morbid formations.

Numerous conditions are necessary for the completion of natural or spontaneous labour. The pelvis and genital organs of the woman must be in a healthy state; the head of the foetus must be the descending or presenting part according to British writers; it is as well as all parts of the body must not be preternaturally enlarged, as in cases of hydrocephalus; or ascites, hydrorachitis, the existence of two heads on one trunk, or two trunks for one head, or the union of two bodies by the sternum (as in the case of the Siamese twins,) or by the side or back (as in the case of the Hungarian sisters, who were exhibited in this city in 1723), or in the various other examples of deformity related in my paper on monstrosities in the London Medical and Surgical Journal, 1830, vol. iv.

However numerous the impediments to natural labour, it occurs most frequently in a very large proportion of deliveries. This position is admitted by all obstetric writers; but we have always to

remember, that the worst forms of preternatural labour may be met with by the young practitioner ; and hence the imperious necessity of his being competent to manage all cases. In a former paragraph, p. 96, I have given some clinical reports, shewing the comparative frequency of natural and preternatural labours ; and I shall now add further evidence upon that subject.

Merriman gives a table of one thousand eight hundred cases, one thousand seven hundred and forty six of which were natural ; in one thousand six hundred and fifty-four, the vertex or crown of the head presented, in four the inferior extremities, in twenty-three the face, in forty-two the hips, and in twenty-three there was plurality of infants. Bland has recorded one thousand eight hundred and ninety-seven cases, of which one thousand eight hundred and sixty were natural. At the Maternité of Paris, from 1791 to the end of 1811, there were twenty thousand three hundred and fifty-seven deliveries, of which twenty thousand one hundred and eighty-three were natural. Madame Lachapelle had observed, in 1811, fifteen thousand six hundred and sixty-two labours, of which fifteen thousand three hundred and eighty were natural, and two hundred and seventy-two difficult ; and from January 1812 to December 1820, twenty-two thousand two hundred and forty-three, of which twenty-one thousand nine hundred and seventy-four were spontaneous, and two hundred and sixty-nine required the resources of art. Clarke, of the Dublin Lying-in Hospital, has recorded a table of ten thousand three hundred and eighty-seven cases, of which nine thousand seven hundred and forty-eight were natural, that is, the head presented, and the labour terminated within twenty-four hours ; of these seventy-one died ; one hundred and seventy-four had tedious labour, twenty-one died ; forty-nine were crotchet cases, of these sixteen died ; one hundred and eighty-four presented by the feet, one died ; sixty-one by the breech, four died ; forty-eight, the superior extremity, six died ; in fourteen there was uterine hæmorrhage ; in four the placenta presented, there were seventeen cases of convulsions before delivery, sixty-six presentations of the funis, seventeen born alive, there were seventeen fontanelle, and forty-four face presentations, and these did not give rise to tedious labour ; one hundred and eighty-four were twin cases. (Transactions of Dublin College of Physicians, vol. i. p. 367.)—Granville reports six hundred and forty cases, which occurred at the Westminster General Dispen-

sary in 1818, of which six hundred and nineteen were natural, thirteen manual, and eight instrumental; two vertex cases required forceps; one face, one ear, one arm, two nates, three feet, two placental; proportion of forcep cases, one in one hundred and twenty-eight; of perforator cases, one in two hundred and thirteen; of placental, one in ninety-two; proportion of manual labours to the sum total, two in one hundred; of instrumental, one in eighty. (A Report of the Practice of Midwifery at Westminster General Dispensary during 1818.)—Cusack gives a report of three hundred and ninety-eight deliveries in the Wellesley Female Institution in Dublin in 1828, of which one required the forceps, two the perforator, twelve were presentations of the superior extremities, and eight of the breech and inferior extremities. (Dublin Hospital Reports, 1830, vol. v.)—Gregory gives a report of the Coombe Lying-in Hospital, in the same work, and of six hundred and ninety-one cases, six hundred and forty-five were natural, two face, fourteen breech, seven feet, three arm, one shoulder, one funis, twelve twin cases. Boër gives an account of nine hundred and fifty-seven cases, which occurred in the Obstetrical School of Vienna, from September 1787 to the same month 1790, of which seventeen required turning, the forceps, and perforator; in 1791, nine hundred and fifty, eighteen dystocia; in 1792, fifteen hundred, eight turning cases, and seven forceps; from January 1801 to December 1802, of two thousand two hundred and thirty-four cases, thirteen required turning, eight the forceps, and two the perforator; from January 1803 to December 1805, of two thousand three hundred and ninety-nine deliveries, five turning, eleven forceps, and three perforation; in 1806, of two thousand and thirty cases, seven turning, two forceps, and one perforation. Nægèle records one thousand two hundred and ninety-six cases, of which one thousand two hundred and thirty were natural, sixty-four unnatural, which is a proportion of one in twenty; while that of Boër. of nine thousand five hundred and ninety, two hundred have required turning, the forceps, and perforator, which is one in ninety-five. Duges informs us, that during a period of eighteen years, thirty-seven thousand one hundred and twenty-six deliveries occurred in the Maternité of Paris; the head presented in thirty-five thousand three hundred and seventy-five cases; in twenty-seven thousand four hundred and forty-three, the back was forward and to the left, or in other

words, the forehead was to the right sacro-iliac symphises ; to the opposite symphysis in seven thousand five hundred and twelve ; the occiput was to the right in two hundred and seventy-six, and to the left in one hundred and forty-four ; the pelvis presented in one thousand three hundred and ninety, to the left in eight hundred and fifty-seven, to the right in four hundred and ninety-four, anteriorly fourteen, posteriorly twenty-six ; the face in one hundred and seventy-five, to the left ninety-nine, to the right seventy-six ; the right shoulder in one hundred and three, anteriorly in fifty-seven, posteriorly forty-six ; left shoulder, eighty-three, anteriorly fifty-two, posteriorly thirty-one. According to this author, the classes of labour are five—vertex, pelvis, face, right shoulder, left shoulder ; the species fourteen. Lovati, of Pavia, states, that of sixty-seven cases, twenty-two required succour. From all the reports I have been able to examine, it appears that practitioners have recourse to art in the proportion of one in six, ten, twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety, and one hundred cases. It also appears that dystocial labours are more numerous in public charities than in private practice ; and yet that fewer operations are performed in those institutions than in civil life, because nature is allowed fair play by men of science. On the other hand, how many, imprudent, rash, ill-timed, and unnecessary operations are performed in private practice, where men, from ignorance, or a desire to boast of difficult cases, are so fond of operations. I believe with my distinguished friend, Dr. Blundell, that it would be much better for humanity had no obstetric instruments ever been invented ; and with Denman, “that the abuses of the art were more numerous and grievous evils than all the imperfections of nature.” Such are the causes that render difficult labours more common in civil than in hospital practice.

From the preceding reports it is manifest that the infant in the natural labour presents by the head, and all other presentations may be fairly considered unnatural, or anomalous. This fact has been attested from the earliest cultivation of medicine, and led Hippocrates and his eminent successors to give the name of natural labours to those in which the head presented, and preternatural to those by the feet, breech, or knees. Some of the French writers hold a labour to be natural when it is completed by nature or spontaneously, and hence include those of the feet, knees, and breech ; but they lose all sight of the fact that in these cases the infants are generally born dead.

Section 3.—Of the Mechanism of Natural Labour.

Labour may terminate naturally by the presentation of either the head, or the feet, or the knees, or of the breech; but the three last presentations are so rare, they are excluded from the class of natural labours by British writers, and also by Velpeau.

Of Natural Labour by the Head.—Natural labour by the head may take place in the four positions which correspond to the oblique diameters of the pelvis; the position of the woman on the back.

First Position. Principal Relations.

The occiput answers to the left cotyloid cavity, or acetabulum, and the forehead to the right sacro-iliac symphysis. The posterior surface of the fœtus looks forwards and to the left; the anterior looks backwards and to the right; the feet are towards the fundus of the uterus.

Mechanism.—Pressed by the contractions of the uterus, the head is bent forward on the chest, and its occipito-mental diameter becomes parallel to the axis of the superior strait. It thus traverses the whole cavity of the pelvis; but, arrived near its inferior strait, it meets with the inclined planes, which give to it the rotatory motion by means of which the occiput is at length placed under the arch of the pubis, and the face in the hollow of the sacrum. Then the largest diameter of the head is in conformity with the largest diameter of the inferior strait, and there is no opposition to the escape to this part of the child, but the resistance from the external parts of generation. Continually pressed by the contractions of the uterus, the head advances further and further, and thus gradually effects the dilatation of the vulva; but after each pain it reascends, more or less, into the cavity of the pelvis.

At length, after a labour more or less protracted, the resistance from the external parts of generation being overcome, the head escapes through the genital fissure. At this moment the occiput ascends under the arch of the pubis, and the different points of the face appear in front of the posterior commissure. Having become free, the head resumes its relations with the trunk; the occiput is directed towards the groin of the left side, and the face towards the posterior and internal part of the right thigh. This movement of replacement has nothing in it surprising, since the

trunk has not participated in the movement of rotation which the head has experienced, in order to escape the inferior strait.

The shoulders, obliquely engaged at the superior strait, traverse the cavity of the pelvis, and when they are arrived at the inferior strait they meet with the inclined planes, which gives to them the same rotatory motion as to the head; the right shoulder is brought under the arch of the pubis, and the left into the concavity of the sacrum. At the same time the head changes its relations, the face gradually turning to the middle and internal part of the right thigh, and the occiput to the middle and internal part of the left thigh. The shoulder, which is behind, constantly receiving the contractions of the uterus, soon appears at the vulva, which it passes, whilst that which is under the pubis serves as a point of support.

When once the shoulders are without, the rest of the body is expelled with great rapidity, which is easily explained, since the parts of the fœtus become smaller, and as the passage has been dilated by more voluminous parts.

Second Position. Principal Relations.

The occiput answers to the right cotyloid cavity, and the face to the left sacro-iliac symphysis. The posterior surface of the fœtus looks forward and to the right, and the anterior backwards and to the left; the feet are to the fundus of the womb.

Mechanism.—The mechanism of the second position is completely the same as that of the first, with the exception of the movements of rotation being in an inverse sense.

Third Position. Principal Relations.

The occiput answers to the right sacro-iliac symphysis, and the forehead to the left cotyloid cavity. The posterior part of the infant is directed backwards and to the right, and the anterior forwards and to the left. The feet are to the fundus of the uterus.

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

Thus, at the superior strait, the head is bent on the chest, the occiput escapes first into the pelvic cavity. Arrived near the inferior strait, the head meets the inclined planes which give to it

the rotatory motion ; the occiput glides on the posterior and right lateral inclined plane, in order to place itself in the hollow of the sacrum, while the face slides on the anterior and left lateral plane, to place itself under the arch of the pubis. The occiput then receiving all the contractions of the womb, traverses the hollow of the sacrum, of the coccyx, and perineum, at the same time that the face reascends into the pelvis, and is bent further forwards on the chest. The occiput soon appears at the vulva, which it gradually dilates ; after each pain it reascends more or less into the hollow of the pelvis. At length the resistance offered by the external parts of generation being overcome, the occipital region of the head escapes through the genital fissure, the forehead resting on the posterior commissure, and the different points of the face disengage themselves from beneath the symphysis pubis.

Having become free, the head of the fœtus resumes its natural relations with the trunk, the occiput answering to the posterior and internal part of the right thigh, and the face to the groin of the left side.

The shoulders, obliquely engaged at the superior strait, traverse the cavity of the pelvis. Arrived near the inferior strait, they meet with the inclined planes, which give to them a rotatory motion. The right shoulder is placed in the curve of the sacrum, and the left shoulder under the arch of the pubis. The head at the same time changes its relations, the face looking directly towards 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 that situated under the pubis serves to it as a point of support.

The shoulders being without, the rest of the fœtus follows without difficulty.

Note. This third position is sometimes naturally changed into the second ; this favourable change takes place when the rotatory motion impressed on the fœtus is suitably directed.

Fourth Position. Principal Relations.

The occiput answers to the left sacro-iliac symphysis, and the face to the right cotyloid cavity. The posterior part of the fœtus is directed backwards and to the left, and the anterior part forwards and to the right. The feet are to the fundus of the womb.

Mechanism. The mechanism of the fourth position is entirely the same as that of the third, if it does not happen that the rotatory movements are made in an inverse sense.

Note. This position may naturally change itself into the first.

Section 4.—Duties of the Obstetrician in the First Stage of Labour—Dilatation of the Womb, and the Rupture of the Membranes.

The first rule to be observed by the practitioner of obstetric medicine is, to obey the summons to give his personal attendance to a parturient female, as soon as possible. This duty admits of no compromise, for it is of the first importance to ascertain the presenting part, before the disruption of the membranes; because, if preternatural, it can be more easily rectified before the completion of the first stage; for in such case, the practice is to rupture the membranes, when the os uteri is sufficiently dilated, to seize on the feet, and deliver the infant by the operation of turning. If the membranes have burst, the uterus is in close contact with the body of the infant; and if the pains be violent, as it mostly happens, the operation of turning cannot be performed, as the womb would be lacerated, which is a very fatal occurrence. Again, an early examination is most necessary, as flooding may destroy the patient, or the feet of the infant may be expelled, the body retained in the vagina, and such pressure made on the navel string as to impede the circulation of the blood between the mother and child, and kill the latter.

The obstetrician, on his arrival, should ascertain all delicate inquiries from the nurse or other female attendant, and not in the sick chamber. He should learn the duration of labour, the state of the bowels, and the history of the case, and impress the necessity of admittance to the patient as soon as possible. After admission into the sick chamber, he should approach the patient with his countenance contemplative, cheerful not grave or melancholy; his look pleasing, mixed with mildness and humanity, and expressive of a sincere desire of affording her alleviation. He ought to be polite and attentive, never proud, insolent, nor haughty, which would alarm the patient, who is generally timid and dejected. There should be nothing indecorous in his aspect or conduct, nothing rough or uncouth. He should display those good manners and politeness that characterise the well-educated medical practi-

tioner and the polished gentleman. Sympathy engages the confidence and affection of the patient ; she feels the approach of the practitioner, who displays it, like that of an angel ; while that of an unfeeling man, as of an executioner. Of all the diseases incidental to humanity, those of the female are most deserving of sympathy and attention. The weakness and peculiar delicacy of her constitution call forth our greatest tenderness and compassion, and on no occasion so powerfully as in the agonies of child-bed, when she is stretched upon the rack on which she is laid by nature. On entering the chamber, the practitioner should approach the patient with all the mildness and amenity of manners he may possess, and assure her, that from the history he has heard from the nurse, he is perfectly confident of her safety. After two pains have occurred, he should pass his hand over the bed or body clothes on the abdomen, in order to ascertain whether there be pregnancy ; for it has often happened that females and their medical attendants have expected delivery for days, when there was no pregnancy. Drs. Hamilton and Blundell record such cases, and I can bear testimony to the same fact. I have known a medical man remain four successive days and nights in attendance on a patient, who was not pregnant, so confident was he of delivery ; yet the pains gradually ceased, and in eight years afterwards she expelled an immense quantity of hydatids from the uterus. After having ascertained the fact of pregnancy, we should next proceed to discover all the essential characters of labour, by an examination through the vagina, called by the French "the touch." Before we proceed to examine, the proposal ought to be made through the nurse, its importance strongly dwelt on, the length of time the labour has continued, the urgency of the pains, and, above all the necessity of ascertaining whether the labour be natural. Some women of high delicate feelings will not permit an examination, until the labour becomes severe : but then we need little persuasion or reasoning, to induce them to comply. A medical friend informed me, that a patient, on his entering her chamber, covered her face with her hands, and exclaimed, "You shall not touch me ; I'll loose my life first." He withdrew ; but in a short time, when the pains became severe, he was anxiously recalled. In such cases, an intelligent nurse will be able to report whether the labour be natural or not. Other women are greatly terrified at the approach of the medical attendant, if never atten-

ded previously by an accoucheur; they are alarmed, lest they should experience violence and harsh treatment, which are now unknown; and these foolish fears are carefully fomented, rather than appeased, by the nurse, whose peculiar province she considers invaded. This is mostly the case in first labours, for women once attended by a medical man, who can never be guilty of rudeness, violence or harsh treatment, without a gross dereliction of duty and breach of established obstetric rules, will never submit to the ignorance and temerity of female attendance afterwards. Surely every educated female must be convinced, that an illiterate and ignorant nurse knows nothing of the mode in which nature accomplishes the wonderful mechanism of labour. How then can she render assistance in cases of difficulty and danger? What idea can such a one form of the almost innumerable difficulties that may impede labour? Hence the extensive employment of medical practitioners in every civilized nation in modern times. All doubts and fears, which a parturient female entertains must be obviated by reason and good sense, and the examination by the vagina instituted as soon as may be convenient.

Examination.—The patient is to lie on her left side, a coverlet being thrown over her, and her hips as near the edge of the bed as possible, her knees drawn up towards the abdomen, and the bosom bent downwards and forwards, towards her knees. The nurse and another female should be in the apartment, the light is to be excluded in some measure, and the curtains drawn close. The index and middle finger of the right hand, the nails being pared closely, are to be lubricated with some oleaginous substance, which is generally prepared by the attendants, as lard, butter, pomatum, olive oil, and passed under the right thigh, during the next pain, from the perineum into the vagina, when they are to be directed downwards and backwards, as the orifice of the womb in the first stage of labour is low down towards the sacrum. The orifice of the womb will be found dilated or not; if it admit the point of the finger, it is to be considered dilating, and will be pushed down during the pain. If it be dilated as large as the disc of a shilling, the head or other presenting part of the infant may be guessed at; and if the pains be those of labour, the vagina will be more or less lubricated with mucus increased by parturition. The presentation may be discovered through the uterus, and the capacity of the pelvis ought to be ascertained by passing the fingers round its parieties. The object

is to ascertain the commencement of labour, the part of the infant which presents, and the capacity or size of the pelvis. Then the hand should be withdrawn, when the pain ceases, and wiped under the bed-clothes with a napkin, previously in readiness by the nurse.

The introduction of the fingers is to be accomplished as speedily and gently as possible, and the greatest delicacy is to be observed. The examination gives no pain, and hence removes the dread, which many women, either from some misconception or former harsh treatment, entertain of this operation. A vast deal of useless suffering and fatigue will be saved the patient by an early examination; for if the labour be preternatural, it can be rectified readily before the rupture of the membranes. If labour be about to commence, the practitioner is generally consulted, and his superintendence requested, concerning the arrangement of the sick chamber, and of the bed especially. The nurse usually attends to the adjustment of the bed, but often enquires, especially of young men, how the bed is to be arranged, in order to discover whether they have had much practical experience. In the better ranks, the mattress is covered with a skin of red or brown leather, and over this a folded sheet or blanket is placed, to absorb the moisture. A sheet is pinned over all, to keep them in their places. Others recommend a folded blanket alone, having turned up the pallet and blankets towards the head of the bed, and this mode is most prevalent among the middle and lower classes. A coverlet is to be thrown over the patient, or more covering if the season require it. The woman is to put on a night wrapper, or other loose dress; but when the head of the child has descended low down into the cavity of the pelvis, she must undress and remain in bed. The chemise may be folded up on the hips, and its place supplied by a loose petticoat. A long napkin is tied around the bed-post, by which the woman takes hold during the pains, lest she frustrate the assistance of her obstetrician, by seizing his hands during her suffering. The bed-clothes ought to be light and comfortable, the chamber to be kept cool; no fire in summer, although a small fire tends to ventilate the chamber; and no more persons should be admitted into the apartment than are absolutely necessary. One female friend, to whose kind and sympathising ear the poor sufferer may communicate her sorrows and anxieties, and the nurse, are quite sufficient for every useful purpose. The

relation of all bad cases and frightful stories should be avoided, especially during a first confinement ; as they do infinite mischief, by depressing the mind of the suffering patient, who naturally becomes alarmed, lest her case might be equally unfavorable ; she loses confidence in her own power, and retards, or perhaps entirely impedes, the process of labour. All nurses, and some medical men, are guilty of great imprudence, in narrating such stories. Dewees observes, " the poor suffering woman is entitled to all the consolation a well-grounded assurance of a happy termination of her case can afford ; yet she must not be betrayed by false promises, as to a speedy issue ; for it requires great experience to be able to state with certainty, when any case will terminate. Her mind should be kept as free from anxiety as the nature of her situation will permit ; therefore no conversation should be indulged in, which might for an instant excite her apprehensions. Conversation should be cheerful, and free from idle discussions of danger from similar situations, and should be as void of levity or want of feeling and sympathy, as of gloominess. Levity ill suits the situation of a woman in labour, and moroseness or ill-humour is quite brutal, when the poor sufferer has a reasonable claim to pity and compassion. " The patient's mind should be diverted by a well-chosen and general conversation, always combined with a confident assurance of her safety. The practitioner can afford no assistance during the dilatation of the womb in natural labour, and therefore he ought to withdraw from the parturient chamber, as his presence is a restraint ; and his absence will allow the evacuation of the bowels and bladder, and also abridge the period of his watching. He may even visit other patients, as the first stage of labour may occupy several hours. The woman may walk about, sit, lie in bed, or lie on a sofa, during the dilatation of the womb ; and she may have any light food, such as tea, toast, coffee, water gruel, sago, arrow root, tapioca, broths, &c., but no cordials, unless she is really debilitated, which is not the case once in a thousand instances. The exhibition of ardent liquors, although a popular custom, is highly improper ; for few women ever die of weakness during natural labour. The middle and lower classes are greatly prejudiced in favour of the use, or rather the abuse, of ardent and fermented liquors during labour ; and hence the frequency of inflammations, fevers, and deaths among them. There is no medicine necessary during the first stage of labour, except

the bowels be confined, when they are to be regulated by some castor oil, or a clyster. If the pains be trifling and very inert, for twelve or twenty hours, a dose of tincture of opium will be of advantage. These are called "false pains," and are known by the irregularity of their return and situation, by cardialgia, borborygmi, or diarrhœa. These are dissipated also by an enema of starch and laudanum, from ℥ss to ℥j of the latter. I agree with Dupuytren, that danger may arise even from ℥ss, though a ℥j is often used with impunity. Mr. Appleton, of Holborn, can also attest the fact. Every accoucheur should carry about him some tincture of opium, some ergot of rye, a catheter, a tracheal pipe, and a lancet. The opium is invaluable in allaying irritability, produced by false or spasmodic pains, and the other articles are equally valuable under certain circumstances. During the dilatation of the uterus, or first stage of labour, it is an established rule, that the practitioner need not examine by the vagina, more than two or three times; Velpeau says three times during the three stages. Frequent examinations, or attempts to dilate the vagina or uterus prematurely, a common practice with nurses, are highly injurious, by inducing irritation, inflammation, and swelling of these parts, which not only oppose invincible obstacles to delivery, but also lay the foundation of many of the fatal fevers and inflammations so common after parturition. Osborne used to remark, "that the practitioner should sit quietly and observe nature." The less manual interference in natural labour the better. Nature is the best obstetrician—"a meddling midwifery is bad." How many thousand women are delivered annually on the face of the globe without any assistance!

Section 5.—Duties of the Obstetrician in the Second Stage of Labour—Passage of the Infant.

As soon as the head of the infant is about to escape through the womb, and descend into the cavity of the pelvis, the female should be confined to her bed, and lie on her left side, in order to be assisted by the right hand of the medical attendant. This is not always practicable, from the position of the bed; and sometimes we must deliver on the other side, or back, as recommended by the French, German, and American obstetricians. In strictness, a strong woman may be delivered in all imaginable positions, in a chair, on the floor, &c. but the left side or back is the best posi-

tion to enable us to afford a proper aid. In cases of hydrothorax, ascites, asthma, and rachitis, women must be delivered in the sitting posture, on the knees, &c. but these are exceptions, and do not belong to eutocia. The back is the best position, and that selected by women themselves. During the intervals of pain it is cruel and unnecessary to confine the woman to a certain position unless the head press on the perineum. The position varies in different countries; thus the German and Swiss ladies were formerly delivered while sitting, so that the full effect of the pains was exerted over the child's head, when over the centre of the os uteri. Formerly the lower orders of women in Scotland and Ireland, were placed upon their knees and elbows; but this practice has been discontinued for some years, in consequence of the increase of male practitioners, and also from the education of medical men in both countries being similar, and derived from the same sources. Immortal thanks to the medical press, for this diffusion of knowledge and assimilation of scientific opinions in every part of the British dominions.

When the second stage of labour commences, the nurse should procure pomatum, a number of napkins, a pair of scissors, some strong thread or tape, and a flannel cloth to receive the infant. Here also the practitioner has nothing to do, until the head comes to press on the perineum. He then places his hand during each pain across the perineum, in order not to permit the sudden escape of the head, which in general does not take place until several pains have gradually dilated the supported part and vulva. The perineal tumor is well illustrated in Smellie's plates. The pressure with the naked hand should be made with the index finger on the infant's head towards the pelvis, and not much on the perineum, which would impede its expansion. When the perineum is expanded by the head, so as to be as thin as paper, the palm of the hand is to be applied against it, and the head is to be pressed in the natural course of its transit, towards the pubis. The fingers are never to be passed between the scalp and perineum to expedite the delivery, for laceration of the part, which is our most anxious endeavour to prevent, would be produced. A lever has been introduced over the head and forehead to elevate them, by Roonhuysen and Gehler. Sometimes the head will expand the perineum, after a pain or two, in one minute; at other times, an hour may elapse, and the pains be urgent, before the

head will escape. The pain becomes severe when the head is descending into the outlet of the pelvis, because its progress is impeded by the sacro-ischiatic ligaments, the spinous processes of the ischia, and by the position of the shoulders, as they are opposed to the short, or antero-posterior diameter of the brim of the pelvis. Pain in the back is now very severe, and may be greatly relieved by pressure of the hands on the affected part, and this pressure is to be made during the pains only. Some women will not bear it; but in general it affords great relief. Various constitutional symptoms may arise, during this part of the parturient process. The pressure of the head on the nerves in the pelvis, causes pains and cramps in the parts they supply, as in the front of the thigh or leg of one side. These are favorable symptoms; but the patient complains of "the cramp," which is best relieved by tying a piece of roller or a handkerchief tightly below the knee. Rigors, vomiting, inclination to pass water, and to discharge the bowels, are now experienced; but these last are not natural, they arise from the pressure of the head on the bladder and rectum, and the former are sympathetic of the irritation in the womb. They are all indicative of the rapid descent of the head, and require no attention. The patient should be cautioned against inducing pain, but should allow it to come on of itself; for such pain will be of no use, and will tend to injure the sufferer; she should save her strength as much as possible. The chief duty of the practitioner in this stage of labour, is to prevent the head from suddenly escaping through the perineum, before the latter is sufficiently dilated. Many women force down the head under such circumstances, and lacerate the perineum partially or completely, causing a most deplorable accident. If the laceration be complete, the contents of the bladder and rectum will have to pass through a common outlet, and render the patient a most miserable object. Although we use every precaution, a partial laceration may occur, especially in first labours. In some rare cases, the membranes are dense and flattened, the os uteri undilated. The rupture of the membranes almost causes an immediate dilatation by the head pressing down, and delivery is rapid. Such cases are very rare, and nothing is more injudicious than a premature rupture of the membranes, which is sure to protract labour. When the head is expelled, great caution ought to be employed lest the woman force the body away, without real uterine contrac-

tion ; for the pain usually ceases after the expulsion of the head. The shoulders should be impeded, under such circumstances, as recommended by Osborne and Clarke, of Dublin, who pressed against the infant with one hand, and on the womb with the other; thus preventing the too rapid descent of the shoulders, and allowing the uterus gradually and regularly to expel them, which will prevent hour-glass contraction, and flooding after delivery. The body should never be drawn forwards, it should be left to be expelled by the regular contraction of the uterus. It is generally expelled by the next pain or two, which occur after the birth of the head, and the perineum is to be protected during the passage of the shoulder next to it. As soon as the body is expelled, the infant is to be raised, so that the gush of the water which follows may not suffocate it ; the next pain will contract the uterus so as nearly to annihilate its cavity, and the womb will feel hard below the navel, and the parieties of the abdomen will be wrinkled. The woman is now to be left at rest for some time, a warm cloth applied to the genital fissure, and a spoonful of brandy and water given her, and the infant to be attended to. In these countries the woman is placed on her left side, a pillow between her knees, and perineum supported with the right hand.

Section 6.—Management of the new-born Infant.

As soon as the infant breathes, which it does after a few seconds it is to be drawn from under the clothes, and a ligature, consisting of a piece of tape, or a few threads, is to be firmly tied round the navel-string, about two inches from the infant, and a second ligature is to be placed an inch nearer the mother, when the funis or cord is to be divided by the scissors between both, and care is to be taken that no other part be included in the incision. Dr. Conquest observes on this point, "all this should be done under the bed-clothes, it being indelicate and unnecessary to expose either mother or infant." I have dissented from this assertion, so far as the infant is concerned, because there would be evident danger of not applying the ligatures properly, and of including other parts of the infant in them and the incision, as the records of obstetric medicine fully prove, if the operations were performed under the bed-clothes. The infant has bled to death by an imperfect application of the ligature ; and cases are recorded where its fingers, toes, and the genital organ of the male have been included in the

incision. This could scarcely happen, if the body of the child were exposed during operation. There is no pain inflicted on the mother or infant, by the division of the navel-string, which proves the want of nerves in the latter, a fact that is very much opposed to the opinion of Sir E. Home, who maintains that there is a direct nervous communication between the mother and the child. (See p. 66.) After the division of the navel-string, the infant is to be transferred to the nurse, and then enveloped in a warm flannel cloth. Its body should be washed with tepid water and soap; and should this ablution fail to remove the unctious matter attached to it, some hogs'-lard ought to be applied to whatever part such matter adheres. It is a cruel practice to wash a new-born infant in cold water; it has left a blood-heat, or perhaps a higher temperature, and therefore should never be suddenly subjected to so great a difference of temperature as that of cold water. It is also a cruel and reprehensible practice to wash the face and head with ardent spirit, a portion of which may get into the eyes, and bring on severe inflammation. A piece of soft rag is to be rolled round the navel-string, and then the part turned upwards, and secured with a soft roller against the abdomen. There is no necessity for a burnt rag, as most nurses imagine; and this is the only remnant of the ancient treatment of the cord, which was a very ceremonious proceeding. The infant is next to be dressed, and the fewer pins employed the better.

As soon as the obstetrician has separated the infant from the mother, and given the necessary directions for its management, he is to pass a broad bandage round the abdomen of the mother, so as to cause gentle pressure on the womb, which will render the patient comfortable, prevent the dilatation of the uterus, and materially aid that organ in expelling the placenta and membranes. This roller is to be left on during the first month after delivery, as it prevents much unpleasant feeling in the stomach. It ought never to be neglected by delicate women. It is sometimes applied during labour, and tightened as the process advances; but the pressure produced on the abdominal muscles and uterus, instead of promoting, absolutely impedes the uterine action. The greater number of women have no bandage applied during labour; and few judicious practitioners, if any, employ it.

When the infant does not breathe after birth, or shew other signs of vitality, it is said to be still-born. This effect is produ-

ced by pressure on the navel-string, or the head being too long compressed in the pelvis. The best mode of resuscitation is artificial inflation of the lungs, by means of the tracheal pipe. Le Gallois, of Paris, decapitated a rabbit, and secured the larger vessels of the neck ; the animal seemed dead, but when artificial respiration was commenced, signs of vitality soon became apparent the heart acted, and pulsation went on through the whole system, for one, two or three hours. No stronger proof could be adduced of the efficacy of pulmonary inflation, in renewing and supporting the action of the heart and arteries. This operation was performed on still-born children, and with success. A woman, in the last stage of pregnancy, was run over by a coach, and died in a few minutes after her removal to St. Thomas's Hospital. The infant was extracted by hysterotomy, by Mr. Green, in thirteen minutes after the last respiration of the mother. In two minutes more Dr. Blundell commenced the artificial respiration, and in fifteen minutes, that is seventeen minutes from the death of the mother, the infant was resuscitated. The tracheal pipe is a little silver tube, somewhat similar to a female catheter, but with a fissure on each side, to allow the escape of air and mucus. The finger is to be passed down to the rima glottidis, and the tube inserted with the right hand into that opening. The practitioner is now to inflate the child's lungs from his own, and force out the air by pressing on the ribs. Pulsation will soon be felt in the heart, and after a little time the respiration will commence. The operation ought to be persevered in for an hour and a half, and the warm bath may be used during that time. As soon as the respiration has commenced, the tube may be withdrawn and passed into the œsophagus, and a little warm brandy conveyed into the stomach. This is another splendid discovery in obstetric medicine, and one that will save many lives. Hitherto there were little attempts made to resuscitate the still-born infant, and thousands of them were consigned to the tomb, whose lives might have been preserved. The operation will prove valuable in all cases, where the pregnant woman, near the approach of her delivery, shall unfortunately lose her life.

I have succeeded in resuscitating infants by this process, aided by warm bathing. It is objected to by Piorry and other French writers, as it is not atmospheric air that is employed, and to obviate this defect they attach a gum elastic bottle, with a valve, to the

pipe. The former proposes a new method, which consists in compressing the ribs and abdomen with the hands, and thus diminishing the thorax. On removing such pressure, the elasticity of the ribs amplifies the chest, and air rushes through the trachea. By reiterating this operation, respiration is finally established (Lancet Française, Lond. Med. and Surg. Journ., 1829, vol. iii.)

Section 7.—Duties of the Obstetrician in the Third Stage of Labour—Expulsion of the Placenta.

The exact time in which the womb, by further contraction, expels the placenta, is uncertain; it may vary from a few minutes to an hour or more, but generally the expulsion takes place in a few minutes after the birth of the infant. The woman experiences slight or severe pains, which are caused by the contraction of the uterus, which soon detach the placenta, and force it into the vagina; but here it is usually retained, on account of the contraction of that passage and the external genitals, which occurs after the birth of the infant. The navel-string is to be coiled round the index and middle fingers of the left hand, and two fingers of the right are to be passed along it into the vagina; and if its attachment or root can be felt, the placenta is detached. We are then to desire the woman to cough or bear down, when we are, if possible, to hook down an edge of the placenta, when the whole will readily follow. We are to recollect that the foetal surface of the placenta is smooth, and may present; and that if the cord be in the centre, which is generally the case, then we cannot easily hook down an edge for some time. But if the placenta be in the vagina, and the womb properly contracted, there is no cause of alarm, for there can be no hæmorrhage. I am satisfied that in nine-tenths of the reputed cases of retained placenta, that organ is in the vagina, and retained there by the contracted state of that canal and of the external parts. This is generally the case in young muscular subjects. Dr. Hamilton recommends the cord to be seized with the left hand, as now stated, and Dr. Conquest with the right hand, a difference for which I am unable to account. The operation can be performed either way, but I would certainly prefer the former, though I employ the latter when the position of the bed obliges the patient to lay on the right side. The extraction should be made in the axis of the inferior strait or outlet.

Dr. Conquest makes a very valuable and scientific observation

on this subject, which I think has been unattended to by ordinary practitioners, which is, "in order to facilitate its extraction, the funis should always be directed in the axis of the brim, cavity and outlet of the pelvis, as the placenta passes those parts." If the insertion of the cord is not felt, and the afterpains slight, gentle friction should be made over the uterus, or the *secale cornutum* exhibited, after the expiration of an hour from the birth of the infant. As soon as the placenta is expelled, it should be placed on a napkin or in a basin, and an aired napkin applied to the genital fissure; it is then to be examined, in order to ascertain whether it be entirely expelled, as also the membranes. This satisfies the mind of the practitioner, patient, and attendants, and should never be neglected. The parturient woman always enquires, "Is all right?" and if answered in the affirmative, she thanks Heaven in the most flowing and emphatic language for her safety. She is next to have some wine, or brandy and water, and remain tranquil for a few minutes; her soiled clothes being withdrawn, she may, after half an hour, be drawn up to the head of the bed; but on no account is she to arise for that purpose, lest hæmorrhage, fainting, or inversion of the womb should supervene. She may have some light covering, so as to be made comfortable, and then may compose herself to rest, her infant being first given to her. Such are the duties of the obstetrician, during the wonderful mechanism of the nativity of man, and they are but few and simple. No attempt should be made to extract the placenta for one hour after the expulsion of the infant, unless hæmorrhage come on, and then it must be removed as soon as possible.

Section 8.—Remarks on the different Orders of Natural Labour.

The uterus is to be examined as soon as the woman is put to bed, in order to ascertain that it is duly contracted; the pulse is to be felt, and if found natural, we may conclude that the patient is safe, and "as well as may be expected." We are then to give directions as to her diet, which is to consist of any of the vegetable jellies, and to order a draught, composed of twenty-five minims of *tinc. opii*, and an ounce of *aq. pulegii*, to be given if the after-pains become troublesome. These are excited by clots of blood in the uterus, are periodical, unattended with rigors, and ought not to be confounded with those caused by hysterities; they constitute *hysteralgia*, when violent. These pains arise from a

further contraction of the uterus. The infant may be applied at the breast, if there be milk; if not, a few teaspoonsful of sweet milk with loaf sugar, or some sweetened arrow-root, may be substituted. The infant may have some aperient, as half a teaspoonful of castor-oil, a little manna, soft sugar, or treacle and water, to purge off the meconium. If the woman have milk, these are unnecessary. Pap, panado, biscuit and water, and water-gruel, are too tenacious and indigestible for infants; they cause acidity, flatulence, gripes, &c. &c., and, in nine cases out of ten, the infant receives too much food. The stomach of a new-born infant is very small and delicate, whereby we can understand why it vomits so frequently after being fed, for it is generally crammed to the throat by mothers and nurses. It will be a considerable time at the breast, before it extracts a tablespoonful of milk, and this ought not to be forgotten.

The whole process of labour may be completed in an instant, or may be protracted for several days. The different periods of labour are often indistinctly marked. Thus the pains may be severe for an hour or more, and the orifice of the womb not dilated; it may be indiscernible, or have its unimpregnated feel; on the other hand it may dilate quickly. If it feel soft and rough, it will dilate freely; but if smooth, like the leather of a glove, it generally dilates slowly. It is supposed, that if it requires three hours to dilate the orifice an inch, it will require two to dilate it another inch, and three more to dilate it completely. This calculation is merely hypothetical, for the dilatation may be completed in a few minutes. It is impossible to determine the duration of labour in any case, and young practitioners should never state that it will be completed at a certain hour. I give this caution, as the patient and her friends invariably inquire, "When will it be over?" or, "Will it in one, two, four, six, or twelve hours?"

The different stages of labour are distinguished by a difference in the mode of expressing pain. In the first stage the pains are sharp, the patient moans, frets, or bears in silence. The completion of the second stage, or expulsion of the head, is distinguished by a groan, indicating a straining exertion, or the woman holds in her breath, and is scarcely heard to complain, or screams aloud. The epithets in common use, as to the kinds of labour pains, are small, short, regular, true or false, sharp, spurious, bearing, lingering, strong, violent, thundering, &c. The labour is said to be

quick, slow, tedious, lingering, dry, wet, sleepy, sick, hard, laborious, weak, strong, good, bad, &c. It should be borne in mind, that according to the definition of *Eutocia verticalis*, or natural labour, the pains are to be regular and constant for twenty-four hours, before it can fairly come under the definition of *E. protracta*, protracted, tedious, lingering, or laborious labour. In the greatest number of cases, the pains are not continued in the first order, but go off, so that in the space defined there may not be three hours of real labour. The woman in a first labour thinks, from rather acute pains, that she is really ill three or four days before the uterus begins to dilate; and this has been confounded by obstetric writers with *Dystocia*. I have had numerous cases of this kind, and assured the patient and her friends, after examination, the pains being very severe, that the labour had not commenced; and I reiterated this declaration until the fourth day, when the uterus began to dilate. In such case, the labour is natural, and not difficult, as almost all other writers have asserted. The treatment in such cases consists of giving an opiate, twenty-five or thirty minims of tinct. opii, and a clyster, composed of half a pint of starch and half a drachm of laudanum, at bed-time. This plan may be repeated daily, the bowels being duly regulated. If the labour be delayed after the dilatation of the womb, so as to come fairly under the second order, the same treatment as now described is proper, if the patient be delicate; it relieves irritability, arrests useless pains for some time, causes sleep, and such refreshment, that the labour becomes active and efficient in a short time. If the patient be of a full habit, or a young subject, Dr. Hamilton asserts that bleeding from the arm is the best remedy, and that it expedites labour in a most wonderful manner, a truth I have often witnessed. In this country women have a strong prejudice against blood-letting. Dr. H. explained its mode of action by relieving the respiration and circulation. The *secale cornutum*, or ergot of rye, has superseded in a great measure. For an account of this medicine, see next section.)—The second order, or *E. phrenalgica*, is to be relieved by soothing the mind and removing the mental affection. The other treatment must vary, according to the urgency of the symptoms.

The third order, or *E. anenergica*, powerless labour, may occur in cases of extreme debility, but is seldom met with. It is more frequently induced by hæmorrhage, or some other preternat-

ural cause. Opiates and the ergot of rye are the chief remedies.

The fourth, fifth, sixth, seventh, and eighth orders, or plural labours, are to be treated as the first.

Women are to be relieved in the first, second and third orders of natural labours, by time and patience, encouragement to hope for a happy event; and no manual or instrumental aid ought ever to be given until the labour has been active and uninterrupted for twenty-four hours (Hamilton); for six hours (Denman, Aphorisms). It is an established general rule in the practice of midwifery, that instruments are never to be used; and the very few cases in which they are necessary are to be considered exceptions to this rule. Many eminent accoucheurs, in very extensive practice, have never used the second class of instruments. Again, it is an established rule, that three examinations by the vagina, in each of the two first stages of labour are sufficient. Some oleaginous matter is to be smeared on the fingers during such operations. It is a useless, dangerous, and barbarous practice to attempt to expedite labour by any mechanical force; the uterine contractions alone can effect it with safety. I have already mentioned the authorities of the most extensive practitioners of every country, as to the very few and rare instances in which instruments are necessary. It appears from the records of obstetric medicine, that the best, safest, and most successful obstetricians, are those who employ manual or instrumental aid the most infrequently.

From what has been already stated, it is evident that labour may be protracted by an immense, perhaps an innumerable variety of causes, and to a few only of the most frequent of these do my limits allow me to allude. The various depressing passions of the mind are among the most frequent of the causes of protracted labour. These are to be obviated by consolation, sympathy, confidence, amenity of manners, &c. Feeble and irregular uterine action have the same effect, and arise from all the causes that debilitate the constitution. Nutritious aliments, opiates, and the ergot are the best remedies. A premature rupture of the membranes, and the disturbance of the natural progress of labour are the most frequent causes of protraction. These are always to be avoided. The over-distension of the womb, by the amniotic fluid, is a very rare cause of protracted parturition; and therefore puncturing the membranes on this account is seldom necessary. In

cases of rigidity of the membranes the labour may be delayed; and here disruption of them, where the womb is fully opened, by a strong piece of wire, probe, &c. is useful. In cases of rigidity of the vagina, or womb, blood-letting and opiate clysters are to be employed, otherwise labour may be protracted for several days. The French apply two drachms of extract of belladonna to the affected parts, in such cases, to dilate them, a practice disregarded in this country. This is a rare occurrence, except in cases of scirrhus, when an incision must be resorted to. If the external parts be rigid, a frequent occurrence in those who marry late in life, lard and other similar substances are to be applied freely. The perineum in spite of all our efforts, will be more or less lacerated in such cases. The os uteri becomes tumefied by the pressure of the child's head, and so congested as to feel like a roll of dough, and consequently impede labour. The orifice, in such cases, must be dilated by the fingers, gradually and cautiously. If pain be produced, we must cease; take blood from the arm, if the pulse warrant it; exhibit an opiate, and order an anodyne clyster.

An undeveloped band of fibres of the neck of the uterus is a frequent cause, and is to be relieved as the last.

The various malpositions of the womb, as stated in the second class, twenty-second order, will impede labours. In all these cases the os uteri is to be hooked on the finger, and brought into the proper axis of the pelvis, and the position rectified. Dr. Dewees's directions on these subjects are highly valuable, and deserve attentive perusal. Unless the orifice be brought in the natural direction, the woman will suffer very severely.

Labour sometimes continues two, three, four, six, or eight days, especially in first cases: 1. in young, nervous women, of irritable, rigid fibre; 2. in those of a delicate, feeble, lymphatic constitution, in whom the orifice of the womb is soft for some time before the end of pregnancy. In the former, the orifice resists from too much sensibility; and here depletion, mild narcotics, and the application of belladonna, are advantageous. Chaussier, Conquest, Lachapelle, and Velpeau, speaks in favourable terms of the last remedy. It is prepared by mixing a ℥j of the extract of belladonna, with ℥j of simple cerate or adeps, about the size of a filbert of which is rubbed on the circumference of the neck of the womb. It is said to act in the same manner as on the iris, and

often with surprising promptitude. I have not as yet employed it.

In the second case, nutritious aliment, and a moderate use of wine and cordials is beneficial.

In other cases, the pains are strong and regular, but soon cease for long intervals, and sleep supervenes. A dose of opium is of great value in such cases, when unattended by sleep. This remedy sometimes increases or diminishes uterine action, and is therefore uncertain. Here the good old remedies, "time and patience," are of infinite value.

In cases of *multiparous, plural or twin* labour, we are to treat them as natural, or effect delivery by turning, which will be described hereafter. In general the vertex of one, and the feet of the other infant present. Immediately after delivery, in all cases, the hand is to be placed on the abdomen to ascertain whether another infant be present, and if such is the case, the labour should not be provoked for ten or twelve hours, unless some untoward symptoms occur. I have known a woman delivered of one infant on Monday, and the second on the following Thursday, without a bad symptom during the time; both infants were born alive. Another case fell under my care, where there was a period of thirty-six hours between the births, and not a pain during the time; the second infant was born dead. The *secale cornutum* had its usual good effects in this case. When the inferior extremities present, we must ascertain if they belong to the same individual. If both heads present at once, a case of which was mentioned by Dr. Hamilton, we should endeavour to return that which is less advanced. It is difficult to comprehend how the Siamese twins, and other similar monstrosities, could have passed through the pelvis. The division of the funis of the first infant may cause a fatal hæmorrhage, unless a second ligature be applied, both to the mother and infant, either by an union between the placentæ, or by the insertion of both navel strings into the same placenta. From the great distension of the uterus in twin cases, the organ does not contract from the inertness, and fatal hæmorrhage to the mother may be the consequence, unless prevented by the use of the *secale cornutum*.

From time immemorial, various oxytotic remedies, that is, such as promote speedy delivery, have been employed. Among these borate of soda was strongly recommended by the ancients as pos-

sessing a specific power on the uterus. Homberg, and lately Lobstein, have lauded it ; but I have tried it without the slightest effect. There is only one remedy which possesses a specific effect on the uterus, of which I must speak in detail, and this is the *secale cornutum*, or ergot of rye.

The ergot of rye, *secale cornutum*, seu *calcaratum*, *secale luxurians*, *secale mater*, *secale cereale*, *clavus secalinus*, *scleroticum clavus*, ergot ou siegle ergote, *blé farouche*, *ble noir*, *ble cornu*, *ble ivre*, *siegle eperone*, *clou de siegle*, *siegle matrice* of the French, *Mutterkorn* or *Rogenmutter* of the Germans, and *ergot* or *spurred rye* of the British, was employed from time immemorial for expediting labour, and was described under the name of *siegle matrice* in the *Actes des Curieux de la Nature* for 1668. Its poisonous effects, and its powers of producing gangrenous ergotism, or the creeping sickness, the *Kriebelkrankheit* of the Germans was described by the Marberg Faculty of Medicine in 1597. Its oxytocic properties were first described by Desgranges in the *Gazette de Sante* for the year 1777. It was noticed by Stearns, *New York Med. Rep.* 1807 ; by Bigelow, *New England Med. and Surg. Journ.* ; and Prescott, *Lond. Med. and Phys. Journ.*, vol. xxxvi. Since this period, it has been noticed in the American, French, and British Journals, especially by Chapman, Bordot, Goupil, Chevreul, Legras, Bigeschi, Gendrin Neale, Mitchell, Villeneuve, Velpeau, and myself, all of whom attest its efficacy ; while Desormeaux, Gardien, and Madame Lachapelle in France, and a great number of young and unknown practitioners in this country, deny its powers. I have lately arranged a paper on the physical, chemical, and medical properties of this medicine, which was read before the Medico-Botanical Society ; and I regret I cannot insert it at full length here ; but a few extracts may be given, especially on its chemical composition and medicinal properties.

Chemical Properties.—The chemical constituents of the ergot are, a deep yellow colouring matter, soluble in alcohol ; a white oily matter, a violet matter, insoluble in alcohol ; a free acid which appears to be phosphoric, and free ammonia, an azoteous matter very putrefiable. Water and alcohol extract the active principles of this substance. Such is the analysis of M. Vauquelin ; but Dr. Neale and others assert, that it contains an alkali. It is found on the continent of Europe, in America, in this country, by Mr. Ha-

merson, of Elland, Yorkshire, and has been first employed medically in Germany, and afterwards in France. It must be kept in closely-stopped bottles, and is impaired by exposure to air or moisture, by which it contracts a black mould and becomes inoperative.

Medical Properties and Uses.—If employed as an aliment, the ergot produces very injurious effects, such as violent convulsions, acute and burning pains in the extremities, followed by gangrene and death. Its noxious effects are comprehended in the term, *ergotism*. Like almost all medicines, it acts as a poison in large doses. In small quantities it is a safe and valuable remedy, and has a specific effect on the uterus, exciting gradual but powerful contraction of that organ, when the natural parturient action is diminished, or has entirely ceased. It does not produce permanent contraction, but merely renews the labour, pains, and augments their force. Such are its ordinary effects when properly administered. It has therefore been resorted to in tedious and powerless parturition, arising from cessation of the parturient action, or from inertness of the uterus; in uterine hæmorrhage dependent on the same cause. Dr. Neale, who has written an instructive work in defence of the efficacy of this substance, corroborates this opinion. I have been frequently called to cases of supposed incipient parturition, in which the ergot had been prematurely and improperly exhibited, it produced more or less tormina; but delivery did not take place for days or weeks afterwards. In describing the use of this remedy, in the former edition of this work, I have laid down a rule for its administration, which ought never to be forgotten; namely, “that the parturient process must have commenced, the os uteri be considerably dilated, or dilatable, that the presentation and pelvis be natural, and the digestive organs in a healthy state.” If this simple but important rule were followed, we should have heard much less of the failures of the medicine. If we examine the assertions of those who have denied its efficacy, we shall invariably discover, either that the medicine was improperly preserved and consequently inert, or that it was administered prematurely, or in preternatural cases, which ultimately required operation, in which no man acquainted with the mechanism of parturition, or the numerous difficulties which may impede it, would have employed the medicine at all. It should never be used in preternatural cases, either arising from presentations, disease, or malforma-

tion of the mother or infant. In such unfortunate cases it is only calculated to produce rupture of the uterus, or the death of the infant, by causing useless but powerful uterine action, which may either interrupt the circulation between the uterus and infant, or cause such compression on the latter, as to produce asphyxia or death. If practitioners would trust more to the good and safe old remedies, "time and patience," and follow the rules laid down by all eminent obstetricians, to wait for twenty-four hours in all natural cases, that is, until labour has really continued for that period," their interference would be seldom necessary. Were it not invidious, I could easily enumerate a long catalogue of reputed failures of the ergot, selected from our medical periodicals, in which the medicine was most improperly employed. But this can be readily explained, when it is recollected, that obstetricity formed no part of the medical education in this section of the empire until within the last two years. Hence it is that the great majority of practitioners are unacquainted with the principles or scientific practice of obstetrics; and hence it is that we peruse a series of cases in which the *secale cornutum* had failed to effect delivery, and in which, if it had effected parturition without manual or instrumental aid, it would have effected an impossibility.

Another cause of the depreciation of the effects of this remedy is its exclusion from our pharmacopœias, and consequently a want of information on its physical, chemical, and medical properties. The only works published on its properties were those of Dr. Neale, Mr. Mitchell, and this Manual, all of which have appeared within the last three years, and of course are only partially known to the profession. These reasons satisfactorily explain the diversity of opinion that prevails on the properties of the medicine. In fact no two practitioners agree as to the quantity and mode of its exhibition. I shall therefore state the formulæ which I have found most successful, and the remaining portion of the cases in which it is of invaluable service. First of all, the labour must be natural and somewhat advanced, or, in other words, the pelvis must be natural, the vertex the presenting part, and the os uteri considerably dilated or dilatable. This is the general rule, to which there are some exceptions. Thus, in presentation of the nates or breech, and in cases of hæmorrhage, in what is called the natural presentation, forming (the complex labour of some writers,) in cases of hour-glass contraction, adherent placenta, and after dilatation of

the uterus, the ergot expedites delivery, thereby prevents hæmorrhage, and saves the strength and lives of parent and offspring. In the other cases it contracts the uterus, expels the placenta, and arrests hæmorrhages. Besides effecting these important objects, it saves the medical attendant much time, and that extreme anxiety which depresses the mind of every humane individual, when he beholds the lives of two of his helpless fellow creatures on the brink of destruction. In making these statements, I am fully sensible of the great responsibility which every man ought to feel when giving evidence upon a subject which involves the welfare and lives of such a great proportion of society ; and it is this feeling, and the firm conviction that the injudicious employment of the medicine, is now productive of incalculable mischief to science and humanity, that impel me to attempt to inform young practitioners on the use and abuse of the remedy.

Various objections have been raised against this medicine. It has been said, that it destroys the infant ; and that the proportion of still-born or dead infants has considerably increased since its introduction into practice. I have been unable to discover any conclusive or satisfactory evidence in support of this assertion. I am ready to admit that the indiscriminate employment of the medicine has done mischief ; but so far as I have read the details of the cases in which the infants were still-born, they were first deliveries, which every practitioner must admit are generally tedious and destructive to the infant, where no recourse is had to the medicine. In such cases the importunities of the sufferers and the remonstrances of relatives, too often lead to premature interference, where there is no actual necessity, and to the exhibition of the ergot, where unassisted nature would have more auspiciously effected her object. Another objection has been urged by Dr. Hossack, of Philadelphia, in a letter to Dr. Hamilton, of Edinburgh, that the violent contraction of the uterine parietes compresses the vessels, and interrupts the circulation between the placenta and fœtus. This objection appears to me invalid, when I consider the immense size of the uterine vessels at the period of parturition, the presence of the infant in the uterine cavity, and the utter impossibility under such circumstances of the uterus, by any degree of contraction, being capable of compressing the vessels completely, and arresting the flow of blood through them. In corroboration of this position, it may be stated, that frightful hæmorrhage

from the uterus may occur during labour though the organ be powerfully contracted, so that here the circulation in the uterine vessels is not arrested. Dr. Houston, of the same city, agrees with my opinion; but contends that "the powerful and *constant* compression of the placenta between the firmly contracted uterus and solid parts of the highly compressed infant must impede the circulation." To this I reply, that there is no *constant* compression of the placenta or permanent contraction of the uterus, if the ergot be not improperly pushed too far: for every man who has employed it in proper doses will and must admit, that though it increases the violence of the pain, yet the contraction produced is periodical. The same answer refutes his assertion of constant contraction of the uterus destroying the infant by compressing its brain. If the uterus were permanently contracted on an impacted head, or on a transverse presentation, the compression of the funis umbilicalis, or detachment of the placenta might as readily destroy the infant, while rupture of the uterine parietes must frequently destroy the mother. From these facts it is obvious that great caution is required in the administration of the medicine, and especially as to the quantity to be employed. The last objection is, that the medicine may poison the infant. This position is too ridiculous to deserve a serious notice; but I may remark, that the medicine acts before it can pass through the circulation of the mother, and often effects delivery before it can be transmitted to the infant. I have exhibited the medicine in numerous cases, and can aver, I have never seen it injure the infant. There is another observation I should make in this place, which is, that an over dose of the remedy may produce such contraction of the uterus after the birth of the infant, as to cause retention of the placenta for some hours. Again, it would do much mischief if the soft parts were rigid; in such cases repeated pressure on the infant's head would destroy it, and rupture of the uterus might be produced. Dr. Cusack, of Dublin, has lately related a case, in which it produced apoplectic symptoms; but he is not completely convinced of the fact. (Dublin Hospital Reports, 1830, vol. v.)—This leads me to describe the dose and mode of administration of the remedy.

Dose and Mode of Administration. It is recommended in powder, infusion, decoction, watery extract, spirituous tincture, spirituous extract, syrup, oil, and in the alkaloid form. In this

country the powder, infusion, and decoction are most commonly employed, and the tincture occasionally. This medicine cannot be reduced to fine powder, unless very much dried, and the heat necessary to effect this exsiccation, I apprehend almost destroys its properties. If the powder be exposed to the air it becomes useless, and ought to be kept in a closed bottle, a piece of camphor introduced to preserve it from the attacks of insects, which injure it very much when kept in drawers. It is also very often rejected by the stomach. If purchased from druggists and chemists, it is so much adulterated, that no reliance can be placed on it. The dose of the powder is a \mathfrak{v} in some warm tea, and to be repeated every ten minutes, until it produces its effects. The maximum quantity in any case is \mathfrak{z} iss, which seldom fails to produce its effects, if the medicine be good, and have been properly preserved. I have known the powder given in drachm doses without effect; but the medicine had been exposed to the air. An ounce of this powder was given in infusion with the same results; but how could it be expected that any quantity of a substance, deprived of its properties, could have effect. It is seldom necessary to exhibit more than three scruples. The infusion is prepared by adding \mathfrak{z} i-ij of the contused ergot to \mathfrak{z} vj of boiling water—the dose \mathfrak{z} j every ten minutes. The decoction is prepared by boiling \mathfrak{z} j of the contused ergot in \mathfrak{z} iij of water to \mathfrak{z} iss—the liquor to be poured off, and some milk and sugar added to it: the dose a tablespoonful every ten minutes, or at longer intervals, according to the effects produced. This is the form of prescription which I have found most certain; the addition of the dietetic articles renders the medicine more palatable, and seldom need the quantity be exceeded. The uterine action is gradually but steadily increased, the infant advances slowly but satisfactorily, and parturition is usually completed from half an hour to an hour after the exhibition of the medicine. Here again time and patience are requisite; nature is to be assisted, but not superseded, anticipated, or hurried. Of its efficacy there can be no doubt, if properly preserved and judiciously administered. It abridges human suffering, which might continue hours and days unalleviated; it supersedes the use of instruments in many cases; and it saves the attendant much anxiety and useless loss of time. It has superseded the use of the short forceps in a very large number of cases, which I need scarcely observe is an important improvement in obstetric medi-

cine. Dr. Marshall Hall states, that the ergot possesses considerable powers in controlling chronic uterine discharges. In a case of menorrhagia of four years' continuance, alternated with leucorrhœa, five grains of the powder were given four times a day before the expected catamenial appearance, with the effect of retarding the evacuation and suppressing the leucorrhœa. In several cases of the latter disease, he has employed the medicine with decided success. Its good effects were apparent about the fifth day ; but it ought to be continued longer. When we recollect the pathology of leucorrhœa, and the various grades of inflammation of the mucous surface of the vagina, which cause many forms of the disease, it is not easy to comprehend the efficacy of a medicine which acts on the uterus only. In the simple or common form of the disease, perhaps uterine irritation may diminish the diseased action in a vicinal tissue, and thus act beneficially. From the former account of the medicine, it appears to be the general opinion, that it has little, indeed no action on the unimpregnated uterus ; but that is not easily reconciled to physiological induction. Dr. Chapman, of Philadelphia, who has written well upon the subject, does not consider the medicine an emmenagogue ; yet it is often given in America to produce abortion, and was interdicted in Germany for this reason. I am disposed to admit its efficacy on the uterus in the unimpregnated state ; or in early months of utero-gestation ; for in cases of abortion before the fifth month, when the ovum was expelled, but the placenta retained, I have exhibited it with much effect ; its action was slight and transient, but scarcely ever was the placenta expelled. This can be readily understood, when we recollect the comparative size of the uterus in the early and latter months of pregnancy ; and more especially when we remember, that there is a great disinclination of the organ to part with its contents in the former period. If the statements of Dr. Hall be borne out by the observations of others, the power he ascribes to the ergot is calculated to enhance its value very considerably. As yet we have no fixed formula for the tincture. Some order an ounce, others two ounces, to the pint of alcohol. I shall endeavour to ascertain the exact quantity necessary for the tincture. This form would be the most convenient. The extracts, oils, and alkali are not used in this country ; nor have I been able to discover them in any of the European or American pharmacopœias. It has lately been

tried by Dr. Spairiani with success in menorrhagia, uterine congestion, hæmaturia, epistaxis, and hæmoptysis. He thinks it a contra-stimulant, and possessing a peculiar action on the minute vascular ramifications. (Annali Univer. de Med. 1830.)—In doses of ten grains three times a day, it was said to have cured five out of seven cases of intermittents. (Mehlhausen, in Rust's Magazine, vol. xxix.)—In conclusion, I have to state that repeated experiments and careful observations have convinced me of the power of this medicine in promoting uterine action during parturition; and I am as certain of its effects when properly preserved, and judiciously administered, as I am of those of any medicine in our pharmacopœias. I have lately ordered the tincture composed of ξ ij to \mathcal{O} j of alcohol, in case of menorrhagia, with success: the effect was witnessed by Mr. Matthews, of Hunter-street, Brunswick-square.

ARTICLE VI.—MEDICO-LEGAL QUESTIONS RELATING TO ABORTION—PREMATURE LABOUR—DELIVERY—FŒTICIDE AND INFANTICIDE.

Section 1.—Medico-Legal Questions relating to Abortion.

IN judicial investigations relative to abortion, medical jurists are required to decide the following questions: 1. Has there been abortion produced? 2. Is abortion natural or provoked? 3. Has the fœtus quickened?

Signs of Abortion.—To determine whether abortion has taken place, we must always examine the product of abortion, and also the female who is said to have aborted. If we do not see the substance expelled, we cannot give a satisfactory, much less a decisive opinion.

Examination of the Embryo or Fœtus.—During the two first months of utero-gestation, we must be extremely cautious, and take care not to confound the fœtus with a mole or false conception, or with a sanguineous concretion or false mole. At this period the embryo is enveloped in a capsule; formed by two membranes (the chorion and the amnios,) united to a spongy mass (the placenta,) more voluminous than itself. The first of these membranes is torn, and allows the second to escape, in the form of a membraneous sac, to which is attached a clot of blood. On opening this sac, a quantity of fluid escapes, and the embryo will be

found in an organized condition. It is a gross mistake in those works on obstetrics, in which it is stated that the fœtus cannot be reorganized at this period. I have a preparation which shews it perfectly formed at two months and a half. There is also an illustration of the embryo at the forty-fifth day, in a perfect form, in the excellent plates of Maygrier. We seldom see the substance expelled in early abortions, as it is generally destroyed by the female attendants; and every obstetrician must have been embarrassed by this circumstance, and must have seen cases of supposed abortion, in which the expelled substance was a clot of blood. Hence the necessity of washing such substance, when any doubt exists, in order to determine whether the substance be blood, a mole, or a real conception. We should also remember the frequency of catamenial obstruction for two or three months, and how often women suppose themselves pregnant when they are not so. In such cases, the want of coagulation in the menstrual fluid proves it not to be blood. In the cases before us it is absolutely necessary to know the appearances of the fœtus at the different periods of gestation. These have been already described, p. 47.

The law of this empire is extremely defective on abortion, for it abounds with the greatest absurdities. Its intention is humane and excellent, but it is based upon erroneous physiological principles. It enacts, for instance, that the embryo is not animated until after quickening, that is, until half the period of utero-gestation has elapsed, though the fœtus is alive from the very moment of conception. I have described its development before the period of *quickening*, which, I need scarcely observe, could not happen if it were inanimate.

Again a jury of matrons is to decide whether a woman be pregnant or have quickened, questions which the whole faculty of physic, in every part of the world, could not determine in the early months of pregnancy. It would be as wise to appoint a jury of infants to determine these questions. The law also enacts it felony to procure abortion before quickening, and subjects the person who does so by any means, or even advises it, to transportation for seven or fourteen years; and to death, if after quickening. Every man must applaud this philanthropic legislation; but it places the medical practitioner in a most dangerous predicament. Thus, in thousands of acute diseases, where life is in the greatest danger, treatment must be employed which may produce abortion;

and is the practitioner to allow his patient to die without the benefit which his art affords? In some cases of uterine hæmorrhage the life of the female can only be saved by extraction of the infant; yet this is producing abortion in the eye of the law. Again, if the woman is so deformed that a full-grown infant cannot be born at the full time, that is, at the termination of the ordinary period of utero-gestation, without a fatal operation, is the medical man to allow the female to be placed in this predicament, when he can save her life and that of her infant by inducing premature delivery? If the infant arrive at the full term of utero-gestation, it must be destroyed by nature or by art, and by the latter to save the life of the mother. I have lately been consulted in a case of this kind by my friend, Mr. Appleton, of Holborn. As the statutes now stand; this is felony; but a talented legal writer observes, "It may be presumed the operator, in such cases, only commits *justifiable* homicide, and not the crime of abortion." (Cabinet Lawyer, 1831.)—Surely the operator can be influenced by no clandestine or sinister motive in endeavouring to save the lives of the parent and offspring. But to resume the medical part of the subject. We should examine the woman, to ascertain whether abortion has really happened. It is impossible to determine this point during the first two months of pregnancy, as the fœtus is too small to leave any trace of its passage. When it occurs in the last months of gestation, the usual signs of delivery will be present which will be described hereafter. The expulsion of moles, hydatids, or other morbid growths, should not be lost sight of, and should be carefully examined. The phenomena presented by the abdomen and external genitals can only be valuable in proof of abortion when conjoined with the following circumstances: 1. When there is a certainty of pregnancy, and a comparison made between the development of the fœtus and the period of gestation. 2. When the pregnancy is so far advanced that the changes in the os and cervix uteri are appreciable. 3. When examination is made immediately after abortion has taken place.

The practitioner should bear in mind the immense number of causes which produce abortion, and therefore ought to be extremely cautious in making a judiciary report in such cases. Many of these causes are peculiar to the woman, as excessive sensibility, and too great contractility of the neck of the uterus, rigidity of the fibres of the body of the organ, or laxity, or flaccidity of its

neck; habitual delicacy of health, menorrhagic disposition, or debility of constitution; all acute, and a great number of chronic diseases, fevers, continued and intermitten, inflammations of the various organs, peritonitis, gastritis, enteritis, cystitis, hysteritis, rheumatism, pleuritis, variola, scarlatina, hæmorrhoids, convulsions, pertussis, chronic catarrh, colic, cholera, diarrhœa, dysentery, constipation, gonorrhœa, leucorrhœa, scirrhus (Bonetus,) cancer, retroversion, polypi (Levret,) dropsy, and various diseases of the uterus, hydramnios, hysteria, moles with the fœtus, &c. (Morgagni.) The diagnosis of these diseases is easily established. When abortion depends on the rigidity of the fibres of the uterus, it recurs at latter periods in successive pregnancies, as the uterus gradually expands; but when abortion is caused by laxity of the neck of the organ, the laxity increases in each pregnancy, and the abortion happens earlier. Among the ordinary or hygienic causes, may be enumerated violent mental emotions, the impression of strong odours, the fright caused by thunder, noise of artillery, sight of extraordinary and frightful objects, errors in diet, stimulating food and drink, abuse of spirituous liquors, too much exercise, as walking, riding, dancing, running, the agitation of carriages, or other vehicles, accidental falls, or blows on the abdomen, wounds, tight clothing, immoderate laughter, abuse of venery, surgical operations of any kind, even the extraction of a tooth, &c. Sometimes abortion depends on the death of the fœtus, from debility, ill-cured syphilis, monstrous conformation, diseases of the placenta, or amnios, its implantation over the neck of the uterus, scirrhus, calculus, hydatids, &c. Again, we know that a peculiar constitution of the atmosphere will produce abortion, as an epidemic. (Hippocrates, Fodere.)—All powerful medicines, as emetics, purgatives, mercury, &c. may cause the premature expulsion of the fœtus. Venesection has been employed to produce abortion, but it seldom or never succeeds. A woman has been bled forty, and another ninety times, and yet arrived at the full period. (Mauriceau.)—This remedy is successfully employed to prevent miscarriage, and has been repeated seventeen times in a case with success. (Dewees.)—Emetics and purgatives often fail to produce the desired effect, and the latter often destroy the female by inducing abdominal inflammations. Emmenagogues also fail in most cases. Various herbs are employed by the vulgar, mentha pulegium, sabina, secale cornutum, artemisia rubra,

&c., and sometimes with effect. But we must conclude that there is no medicine of abortive means which always produces abortion and nothing but abortion; there is none which does not endanger the lives of the mother and infant. Irritation of the cervix uteri by mechanical means, and piercing the membranes, justify the truth of the remark, "*Sæpe, suos utero quæ necat, ipsa perit.*" "Every woman who attempts to promote abortion, does it at the hazard of her life." (Bartley.)—"There is no drug which will produce miscarriage in women who are not predisposed to it, without acting violently on their system, and probably endangering their lives." (Male.)—"It has frequently occurred," says Dr. G. Smith, "that the unhappy mother has herself been the sacrifice, while the object intended has not been accomplished."

When called on in courts of justice to report on an abortion supposed to be provoked or criminal, we should duly consider the causes already enumerated, the circumstances which preceded it, whether the female has denied her pregnancy, procured abortives, used drastic medicines, applied to various practitioners without acknowledging her real condition, and a variety of other inquiries, which will suggest themselves to every well-informed practitioner, before we can decide that she premeditated the crime. If the woman had died, we should examine the uterus, to discover wounds, and also the abdominal viscera, as it often happens death is produced by enteritis or peritonitis, though the uterus may have been punctured a few hours previously. This was the fact in a case tried at the Old Bailey, during the last year. The medical witness for the prosecution ascribed the cause of death to the punctures, which were not inflamed; but the witnesses for the prisoner, to enteritis. According to the law of this country, the exhibition of any medicine, for the purpose of causing abortion, renders the accused liable to a prosecution for felony; and therefore those young men who sell medicines ought never to commit themselves by vending the most harmless drug to applicants in the case under notice. Should the female acknowledge that a certain apothecary sold her medicine for the purpose, he could have no witness to disprove her allegations, and consequently must incur the greatest danger to his liberty or life. Too many young men forget that the crime of abortion is the destruction of a human being, and hence they incautiously supply medicines, in general harmless ones, without the slightest recollection of the perilous situation in which they

place themselves. I trust that this caution may be useful to my junior readers.

Medical jurists designate criminal abortion foeticide, that is, destruction of the fœtus in utero ; and apply the term infanticide to the destruction of the new-born infant. Both terms are included in the word prolicide. Before we consider this part of our subject it is necessary to describe the phenomena of parturition, and the viability of the infant.

Section 2.—Medico-Legal Questions relating to Delivery.

The medico-legal questions relative to delivery are, 1. Do signs exist by which we can determine that a woman has been recently delivered ? 2. At what period afterwards can we find traces of delivery ? 3. Can a woman be delivered unconsciously ? 4. When the mother and infant are found dead, which was the survivor ?

Signs of recent Delivery.—The signs of recent delivery are observable in the sexual organs, uterus, abdomen, the lochial discharge, state of the breasts, and secretion of milk. In the first days after delivery the labia majora et minora are dilated, red, tumified, and often inflamed ; the vulva is open, the fourchette is partially or completely torn, the orifice of the womb is so dilated as to admit the introduction of one or two fingers into the cavity of the organ ; the posterior lip is elongated and thickened ; both lips are much thicker than during pregnancy. The womb itself is more voluminous, can be felt above the pubis, or may be felt enlarged by placing one hand on the hypogastrium and a finger in vagina. The size and flaccidity of the abdomen, its wrinkled condition, the lochia and milk, are signs of recent delivery ; but all may be present after the expulsion of a mole, or other morbid growth in the uterus. The lochial discharge has a peculiar odour, and when present is a good sign ; but it is liable to be suppressed from a variety of causes, and is entirely absent in some natural cases. Any one of these signs is not conclusive, and does not prove recent delivery, but taken collectively, and above all, if we can learn the history of the pregnancy, or anterior condition of the woman, we may arrive at a correct conclusion.

We can only arrive at a proper conclusion during the first six or eight days, for at the end of ten or fifteen days, it is impossible to decide the reality of delivery. It is now decided that a wo-

man may be delivered without her knowledge, if completely intoxicated ; if stupified by narcotics, a case which I have recently witnessed ; if attacked with apoplexy, syncope, delirium, or idiosyncrasy ; and this fact ought never to be forgotten when we are called on to decide questions of infanticide. Another question of great interest is to determine the survivorship of the mother or infant, when both are lost in parturition ; for in some cases, if the infant survives the mother, the father inherits the property he had by his wife ; and if the mother, the property passes to her own family. This is the law of tenant by courtesy. It is impossible to decide this question unless some person has been present at the delivery. It was decided by the Court of Exchequer, in 1806, that the motion of the lips of the infant proved its vitality. (Smith.)—It is now universally known to judiciary physiologists, that a still-born infant may be resuscitated an hour after birth ; and one case is recorded, in which the infant was pronounced dead, and placed in the corner of the apartment, and at the next visit, which was at the end of twenty-four hours, it was found alive.

It is almost unnecessary to allude to the substitution of a dead child for a living one, as such cases are of rare occurrence.

Women have shewn dead children, to appease the wrath of their husbands, who accused them of sterility. (Male's Forensic Med., p. 211 ; Capuron, p. 110 ; Beck, p. 99.)—A woman has substituted a living for a dead child. The law only requires that the medical witness shall prove whether the signs of conception were present or not. An infant must be found in order to bring the charge of infanticide. A woman may be delivered unconsciously, if labouring under coma, or the effects of narcotics (Fodéré, vol. ii. p. 10) ; and a woman who died before delivery was placed on the bier for interment, when the child was born, *op.cit.* 11. These are exceptions to the general rule, namely, that healthy women must be conscious of labour. Dunlop records an instance of a lady having a child, though she and her husband did not think she was pregnant. (Edition of Beck, p. 107.)—Again, a woman without assistance may have her child so suddenly on the floor, in the street, or water-closet, and not be able to prevent its death.

Circumstantial evidence on the incidents of time and place, of situation and character, most generally guide the decision.

With regard to the death of the child before or after delivery,

it is a question that may be agitated in civil and criminal cases ; as when the succession to inheritance is mooted, or when a pregnant woman has been mal-treated, and her child supposed to have died in consequence.

The life of the infant is inferred from the good health of the mother, the progressive increase of the abdomen, and the motion of the foetus ; but healthy females may bring forth dead children. Delicate females have produced healthy children, and the increase of the abdomen may depend on moles, hydatids, dropsy, &c., while the motion of quickening has been caused by flatulence. A woman may suppose she feels the motion of the infant during delivery, yet a putrid infant may be produced. Various causes may act on the mother and destroy the infant, as unhealthiness of habitation, mode of dress, want of food, or improper use of it, violent exercise, too great labour, violent passions of the mind, venereal excesses, intemperance, hæmorrhage, convulsions, syphilis, small-pox, falls, wounds, and accidents, inordinate evacuations, in fact, all the causes of abortion which were enumerated. Pressure in difficult labours may destroy the infant ; improper use of instruments, fainting, and diseases of the placenta, will produce the same effect ; yet the child may recover in despite of most of these causes.

The following signs occurring during pregnancy are indicative of the death of the infant ; want of motion in the child ; the womb feels as if it contained a dead weight, which rolls according to the position of the woman ; the navel is less prominent ; the milk disappears ; the breasts are brown, flaccid ; the mother experiences a sense of lassitude and coldness, accompanied by head-ache and nausea. If actually dead, and long retained in the womb, putrefaction sets in, the membranes become black, and fetid discharges take place. Maceration of the body, presence of the meconium on the skin, violet or brownish-blue colour of the lungs, these sinking partially or entirely in water, weighing about the seventieth part of the body, and the mouth and throat being filled with a glary sanguinolent fluid.

Many of these symptoms are equivocal. The fetid discharges and state of the skin and bones cannot be depended on. If the medical examiner be called immediately after birth, he can distinguish these symptoms ; but he is seldom called so early, and generally not for many days afterwards. The skin will exhibit

marks of putrefaction, and will be of a purplish-brown or red colour. The umbilical cord is livid, soft, and easily torn. The cranium and thorax are flattened, the sutures of the head are disunited, the brain is almost fluid, and has a fetid odour. If the death takes place after birth, there will be characters of viability and complete development, signs of external violence, fractures, bruises, perhaps omission of the ligature on the cord, development of the pulmonary vessels; the arterial and venous canals are straightened or obstructed, lungs spongy, rose-colour, swimming in water, also after compression of them; but this happens, if filled with gas, by putrefaction; but if the gas escapes by compression, the lungs will sink; the lungs will weigh about the thirty-fifth part of the body. The lungs of an infant already dead, if inflated by the trachea, will preserve the air, as if respiration took place, but they will not weigh more than compact lungs. From the fourth to the eighth day after birth, the cord desiccates and falls off, there is a slight desquamation of the epidermis, a yellow colour of the skin, disappearance of the thrombus, ecchymosis, or inflammation, and œdema of different parts; on pressing the breasts of either sex a serous fluid appears. From the eighth to the thirtieth day after birth, the navel will be healed, the foramen ovale, arterial, venous ducts, and umbilical vessels will be obliterated by adhesion, the sutures will be more solidified, and the fontanelles diminished. Such are the chief signs of the death of the foetus before and after delivery, which must be borne in mind in deciding questions of infanticide.

Séction 3.—Medico-Legal Questions relating to Prolicide, Fœticide, Infanticide.

Medical jurists have employed the word *prolicide* to designate the destruction of the offspring, and divided the subject into *fœticide*, or the destruction of the foetus in utero, and *infanticide*, or the destruction of the new-born infant. I have already stated the law on this subject, 9 Geo. IV. cap. 31, which makes no distinction between the murder of an infant not viable, that cannot live, and one that is viable. A woman who destroys her infant not likely to live, for example, soon after conception, is assuredly less criminal than one who destroys the foetus at a more advanced period, which, if left undisturbed, may become fully developed, and arrive at maturity. The first commits an act upon an imper-

fect being, which has not acquired the perfection necessary to durable existence, she acts almost on a dead body, *non homo est, qui non futurus est*; the other acts upon an imperfect being, which nature destines to occupy a place in the class of her family and of society. If the death of a non-viable infant is less criminal than abortion, the punishment of infanticide ought not to be inflicted, for this is inflicting the greatest punishment for the lesser crime. But as the law stands at present, the researches which the medical practitioner has to make in cases of infanticide are as follow:

1. After having ascertained the external appearance of the infant, its volume, length, and respective proportions of its different parts, it is necessary to determine whether there exist any original defect of conformation, or any pathological condition which could induce the death of the infant at the moment of birth, or whether it has not been destroyed by pressure during a laborious parturition.

2. After this examination we should inspect the internal organs, and decide whether respiration has been complete, and consequently whether the infant has been born alive.

3. To determine how long a period has elapsed since the infant was living, and what was the cause of death, whether natural or violent.

4. To determine whether the woman to whom the infant is attributed be really the mother.

The most important of these inquiries are the following: Has the infant died before delivery? Has it died during delivery? Has it died at the moment of birth, in consequence of the deformity of the mother, or congenital disease? In the first place, we are duly to consider the various causes of abortion, and the signs which indicate the death of the fœtus in the utero. The former have been already enumerated: the latter are the cessation of the motion of the fœtus; the perception of it in different positions by the motions of the woman; the tumefaction or diminution of the breasts, signs which are extremely equivocal. But if during delivery the fœtus is not felt to move, the waters are black and fetid, the scalp soft, flaccid, wrinkled, and easily excoriated, if the cranial bones are more mobile than ordinarily, there is much reason to suppose that the fœtus has been deprived of life for some time. The proofs of the death of the fœtus having taken place after delivery are the flaccidity of its limbs, desquamation of the cuticle,

the skin purple or brown in certain parts, a serous or sanguineous infiltration of the subcutaneous cellular tissue, especially of the scalp; the umbilical cord soft, flaccid, livid, easily lacerable; the thorax flattened, and its viscera in a state which shews that respiration could not have happened.

If the infant has been destroyed by pressure, by a premature rupture of the membranes, there will be tumefaction of the superior part of the head from uterine pressure, the head will be deformed, and the brain will be found apoplectic; or the last sign may depend on compression of the umbilical cord, either by being round the neck or body of the fœtus, or by compression of the parts of the parent. On the other hand, if the fœtus has died from hæmorrhage during labor, in consequence of detachment of the placenta, or rupture of the umbilical cord, the body will be of a pale, livid colour, the sanguineous system will be empty and collapsed; and if there is rupture of the cord, its extremity will be jagged or irregular.

It would far exceed my limits, were I even to enumerate the various defects of conformation of the woman, or mal-presentation of the fœtus, which may destroy the life of the latter. Most of them are described in this work. I can only advise the practitioner to exert his knowledge of anatomy, physiology, and pathology, in any case on which he may be called upon to give his opinion. He should most cautiously consider the defects of conformation and pathological conditions of the pelvis and fœtus, and those which may impede the functions of respiration. Though it will be seen hereafter, that the proofs afforded by respiration are inconclusive, and that too much importance has been ascribed to them.

Let us examine the degree of certainty of an infant's being born alive, which is presented by signs afforded by the anatomical examination of the fœtus. Daniel considered that the thorax was amplified by respiration, and this he determined by measuring the cavity before and after respiration. (*Comment. de infantum nuper natorum umbilico et pulmonibus.*)—But the conformation of the chest is subject to too much irregularity, to enable us to arrive at a satisfactory conclusion. Ploucquet laid great stress upon the position of the diaphragm, whether depressed towards the abdomen, or elevated towards the thorax; but artificial respiration will affect these positions as well as natural. The size of the lungs

affords no positive evidence. Schmitt has seen them fill the chest before respiration, and so much compressed after that process had continued thirty-six hours, as to render it difficult to decide whether respiration had been established. Besides, there may be uterine, vaginal, and extra-uterine respiration before the complete expulsion of the fœtus, and death occur after the birth. The roseaceous colour of the lungs may or may not exist, and is subject to great variety, so that no dependence can be placed on this sign. It may exist in the fœtus long before maturity. The obliteration of the umbilical arteries and vein, of the foramen ovale, and of the ductus arteriosus, evidently prove that the infant has been born alive. But these changes do not happen at the moment of birth, nor sooner than two or three days, often, not before the first or second week; and consequently this evidence, in most cases, is of little value.

Ploucquet instituted experiments to ascertain the weight of the lungs before and after respiration, in comparison with that of the whole body, and concluded that the weight was 1 : 70 before, and 2 : 70 or 1 : 35 after respiration. The accuracy of these conclusions is denied by Chaussier, Orfila, and Schmitt, of Vienna. Daniel proposed to immerse the lungs, before and after respiration, in a vessel of water, to the side of which a graduated scale was attached to mark the elevation of the fluid. He said that the condensed lungs would occupy less space than after respiration; this is true, but more delicate instruments are required for the execution of this experiment, before we are justified in adopting it in the practice of legal medicine.

Schreger proposed the immersion of the lungs and heart, the large vessels being tied, in water, so far back as 1682; and concluded, that when they sunk no respiration had taken place, and if they floated the respiratory function had been established. This is what is called the *hydrostatic test*, or *pulmonary docimacy*, upon which little reliance is placed in any part of Europe at the present period. Numerous objections may be made to this test : 1. the infant may respire before birth ; 2. it may respire and be destroyed before birth ; 3. an infant may be alive, and may not have respired ; 4. the lungs may float before respiration ; 5. the lungs may not float after respiration. The infant may respire before birth, and be born dead. (Hunter, Marc, Siebold, Capuron, Oslander, Sabatier, Mahon, Hutchinson, Hossack.)—There may be

intra-uterine respiration. (Trans. Royal Soc. of London, vol. xxvi ; Edin. Med. and Surg. Journ. No. 73 ; Hufeland's Journ. 1823 ; Lond. Med. and Surg. Journ. 1829.)—The fœtus may be asphyxiated, or remain enveloped in its membranes and be alive, without respiration. (Buffon, Schurig, Le Gallois.)—A delicate immature infant may respire, and yet the lungs will sink in water ; and the infant may be born with pneumonia, pulmonary engorgement, or hepatization. (Billard.)—In the two first cases, the air cannot arrive in the bronchial vesicles, and consequently respiration will be incomplete. In the last, we often find the subcutaneous cellular tissue of the mouth and limbs gorged with sanguineous effusion, which induces some persons to suppose violence has been employed. Billard has pointed out this error. The lungs may float before respiration, from putrefaction (Orfila), emphysema (Chaussier), or insufflation (Morgagni). Dr. Bernt, of Vienna, has put an end to the ancient hydrostatic test, and proposed a new one in its place which is equally objectionable, in consequence of the complication of his instruments. (*Programma quo nova pulmonum doscimasia hydrostatica, proponitur. Vienna, 1821.*)

It is a matter of great importance to determine how long it is since the infant was living ; or how long it has been dead. If the skin be soft and covered with the white unctuous matter, which is seen at birth, if the stomach contains but a small quantity of mucus, the large intestines are filled with meconium, and the bladder with urine, it is probable that life had ceased at or immediately after birth. If, on the contrary, the stomach contains any alimentary substance, and the intestines any matter except meconium, it is certain that the infant has lived for some time. I have already described the change in the vessels peculiar to the circulation of the fœtus. I may mention, however, that the umbilical cord remains soft and humid for fifteen or sixteen hours, and begins to desiccate about the fortieth.

To determine how long the infant is dead, we must consider the state of putrefaction, and all circumstances which hasten or impede it. Warmth and humidity promote decomposition, and a body putrefies more rapidly in running than in stagnant water, or in humid earth, than in an argillaceous, sandy or chalky soil.

The next question is, what has been the cause of death. This is often involved in impenetrable obscurity, as lesions, purely acci-

dental, frequently present the appearances of crime. We should endeavour to determine those that are accidental or involuntary, and those that are criminal.

Death of the fœtus from involuntary causes.—I have already enumerated the most of the causes of the death of the fœtus in utero, and may now caution the young practitioner to bear them in recollection, for otherwise he may commit the most serious errors in giving evidence on the question under notice. Let him remember that diminution or deformity of the pelvis, or preternatural presentations of the fœtus, may cause elongation of the head, tumefaction of the scalp, fractures of the cranial bones, blackness of the face, congestion of the brain, ecchymoses of different parts of the surface of the body, fractures of the limbs and various other lesions, which may be readily mistaken for the result of external violence. Again, the twining of the umbilical cord round the neck, or the compression of the os externum, may induce cerebral congestion, as well as marks of strangulation. If the appearances on the head are caused by external injury, they will often exist in situations on which no pressure could have been made. We must always bear in mind the presentation of the fœtus during labour; and by so doing we can often distinguish natural lesions from injuries.

In those cases in which the neck is compressed by the cord, there will be no excoriation, or desquamation of the cuticle. When there is a rupture of the cord during labour, there will be fatal hæmorrhage; but if this accident happens after birth, that is, after respiration, fatal hæmorrhage will not always result. If the cord be lacerated by violence, its extremities will be irregular, but the flow of blood will cease. *The infant will not be destroyed by hæmorrhage, unless the cord is divided with a sharp instrument.* Should the infant have been destroyed by detachment of the placenta, the pale waxy colour of the fœtus, the discolouration of the viscera, the vacuity of the heart and large vessels, explain the cause of death. The infant may be expelled suddenly, and falling on the floor or on any other hard substance, the skull may be fractured, and the cord torn. Such cases are related by many obstetric writers. I have narrated three examples, and others are attested by Hamilton, Chaussier, Henke, Klein, Pasquier, Meirieu. (Journ. Univ. des se Med. 1820 and 1823.)—M. Klein collected a hundred and forty-three observations on this point, and

asserts there was not one infant in the kingdom of Wurtemberg whose skull was fractured, all recovered. Many fell upon the pavement, two of which were affected with momentary asphyxia. Though the cord was lacerated, there was no fatal hæmorrhage. When sudden expulsion of the infant is alleged as the cause of death, it is necessary to examine all circumstances anteriorly and subsequently, to compare the dimensions of the pelvis, and the volume of the infant's head, to consider the duration of labour, the position of the woman when the infant had escaped, the height of the fall, the substance with which the head came in contact, and finally, the state of the umbilical cord, which ought to be ruptured at the placenta or at the umbilicus, but not in the middle, the extremity of which ought to present the sign of laceration.

When an infant perishes at the moment of birth, by choking of the air passages, and is afterwards thrown into water or into the water-closet, it may be supposed it has been destroyed by submersion or drowning. Every practitioner is aware that infants have been precipitated into the latter situation, and that it is extremely difficult to distinguish whether the fluid in the air passages be mucosity, liquor amnii, or an extraneous fluid introduced. When the fluid contained in the trachea is frothy, we cannot positively affirm that the infant has respired, as insufflation or inflation would produce the same effect ; or a morbid secretion of gas, or the evolution of air by decomposition. If, on the other side, the fluid is limpid and free from air bubbles, we can affirm that the infant has not respired ; but this is no proof that it was dead at birth, or at the moment of submersion. The rigid examination of the physical and chemical properties of the fluid, will alone enable us to determine its real nature,

Death of the Fœtus from voluntary Causes.—The new-born infant may be the victim of external violence wilfully inflicted upon it, and it may also perish by the voluntary omission of that succour which is necessary to it in the first moments of its existence ; hence we distinguish infanticide by commission, and infanticide by omission.

Infanticide by omission may occur from exposure of the new-born infant to a temperature too cold or too warm, if it be deprived of nourishment or respirable air, and from umbilical hæmorrhage, caused by disruption of the cord. It is difficult to determine what thermometrical degree of heat or cold would destroy

life in these cases ; but if we find the body of an infant naked, or nearly so, stretched on the ground, discoloured, the great internal vessels congested, and the external or superficial contracted, and almost empty, and with evidence that respiration has taken place, and at the same time there exists no trace of external injury, there is every probability that death has been caused by cold.

The defect of nutriment is generally combined with abandonment of the infant ; and to this cause we should attribute death, when atmospheric temperature is not sufficiently cold to be destructive, and when we find the alimentary canal dry and contracted.

The neglect of tying the umbilical cord will expose the infant to fatal hæmorrhage ; but this is not always the case, and does not afford sufficient evidence of mortal hæmorrhage, as the large vessels should be empty, there should be paleness of the body, viscera and muscles, to prove that death has been caused by loss of blood from the cord. Again, death may take place from this cause, where it was impossible for the mother to afford the necessary aid to the new born infant.

Thus, in cases of placental presentation, the infant may be destroyed by hæmorrhage, but there will be manifest signs in the woman under such circumstances ; she may be in a state of syncope from this occurrence, and be unable to save the infant from perishing. The fœtus is often destroyed from separation of the placenta during protracted labours ; in both of these cases the placenta will be attached to the umbilical cord. It has been said that the mother, during convulsions, may possibly rupture the cord, or that this may happen from the motion of the infant, or when the woman is delivered in the erect position, the fœtus having fallen on the floor. In the last case, disruption may happen ; but it appears very doubtful in either of the former.

It will be recollected that M. Klein has recorded one hundred and eighty-three cases of sudden labours, in many of which the cord was ruptured near the abdomen, and in twenty-one cases within the abdomen, yet there was no fatal hæmorrhage.

It is also to be remembered that the infant's head, in its passage through the external genitals, is so situated, that its face may be in contact with the liquor amnii or blood, and in this way may be deprived of air, or asphyxiated by impute air ; or the head may be expelled, respiration established, the labour cease, and stran-

gulation be effected before delivery. This case is by no means unfrequent, every practical obstetrician has met with it, and should it happen in the first labour, it is evident, that from the ignorance, pain, or syncope of the woman, the infant may be destroyed. It therefore appears evident that we must duly consider all these circumstances before we can safely conclude there was criminal intention on the part of the mother.

Infanticide by commission, is indicated by contusions, wounds, luxations of the cervical vertebræ, fractures of the extremities, torrefaction or burning, and asphyxia.

Contusions and wounds.—The ordinary effect of contusions is ecchymosis, which will be more extensive, according to the situation in which it may be placed; but great care must be taken not to confound this appearance with the cadaverous lividity.

Ecchymosis, is an extravasation of blood by rupture of capillary vessels; and hence it follows contusion; but it may exist, as in cases of purpura hæmorrhagica, scurvy and other morbid conditions, without the latter; and we often see persons arise from sleep with numerous ecchymoses, which are sugillations, and called by the vulgar, “dead men’s pinches.”

When ecchymosis is caused by injury, it generally appears in a short time, or in a few hours, but sometimes not for days. The part appears red and bluish, then black or lead colour, violet and yellow, and is marked most in the centre. Its progress and duration will be modified by age and constitution.

It too often happens that ecchymoses are confounded with cadaverous lividities, which are more or less extensive, of a brown, black, red or violet colour, forming rapidly after death, particularly on the back, thighs, sides, anterior surface of the body, upon those parts upon which the body has lain while it has been becoming cold. These also appear where pressure is made by the clothes; and from their resemblance to the injuries caused by flagellation with rods, are called by the French *vergetures*. A more appropriate term is, *cadaveric lividity* or *sugillation*. These are frequently observed in the most dependent parts of the lungs and abdominal viscera. Professor Andral’s remarks upon this subject are deeply interesting, and may be seen in the second volume of his *Pathological Anatomy*, translated by Drs. Townsend and West, 1831. These sugillations will be modified by age, constitution, state of the weather, progress to putrefaction, &c. They cannot

be confounded with ecchymoses, as there is no effusion or infiltration of blood in the cellular tissue. (See my work on Forensic Medicine.) We should also be cautious to distinguish ecchymoses of the scalp, produced by parturition, from those that result from violence. The former are generally superficial, and situated most commonly upon the vertex, occiput, or parietal bones; while those produced by violence are deep and brown, and in various situations, often on the temples. When caused by labour, the infant cannot have respired, and this will be discerned in the manner formerly mentioned. If considerable ecchymoses, contusions, or tumours exist upon an infant that has respired, there is just ground for the suspicion of criminal violence.

In some cases ecchymosis of the neck may be ascribed to pressure of the orifice of the womb, or of the vulva, or by the twining of the umbilical cord round the neck, and present the appearance of strangulation; under such circumstances, the respiration may be impeded or prevented, the infant destroyed, the lungs evince the signs of respiration, and the case will be involved in great obscurity and difficulty. Other facts must exist to warrant a correct conclusion.

Luxations of the cervical vertebræ.—When death is produced by luxation of the cervical vertebræ, the ligaments of the vertebræ will be torn, the spinal marrow will be bruised or torn; ecchymosis, and sanguineous infiltrations, will indicate that the injury has been inflicted during life, as these phenomena cannot exist after death. It is to be recollected, however, that such luxation may be the effect of injudicious attempts to extract the infant during labour; and it is therefore necessary to ascertain if the parturition has been difficult, and whether any action has been applied to the infant.

Fractures of the bones or wounds often depend upon parturition or upon the violence offered by ignorant and bad practitioners; it is therefore necessary to keep these facts in mind, in determining questions of infanticide from such injuries.

Torrefaction or burning, is a horrible method resorted to for the destruction of infants; a case of which, I grieve to indite, has occurred in this city within a few days. Here it will be necessary to examine all injured parts, and to apply the ordinary proofs to ascertain if respiration had existed. In the case to which I have alluded the coroner (an attorney) was of opinion that a ver-

dict of manslaughter could not be received. The prisoner, a nursery-maid, was acquitted !

Asphyxia.—A new born infant may be asphyxiated by privation of respirable air, by mechanical obliteration of the air passages, by strangulation, by submersion, or by the action of the deleterious gasses. The infant will be deprived of air by being placed in a chest, or under a pallet, &c., but as some minutes must elapse between its birth and death, the usual tests will decide that it has respired. Infants have been destroyed, whose nostrils and mouth were filled with linen, hay, earth, &c., to the prevention of respiration : the presence of these substances will enable us to form a proper opinion. Infants have also been destroyed by pressure upon the mouth and nostrils, trachea, and thorax, and by forcing the tongue into the fauces ; in all of which cases a few inspirations take place, and the pulmonary proof will be decisive.

In all these cases the rupture of the frænum linguæ, the ecchymoses of the neck, the marks of injuries upon the chest, and in the interior of the mouth, with the signs of cerebral congestion, afford very strong evidence against the accused.

The introduction of fluids into the trachea or lungs, is another cause of suffocation ; the discovery of the nature of the fluid by chemical analysis, enables us to arrive at a positive decision against the accused. Submersion or drowning is a frequent mode of infanticide. The pulmonary evidence of respiration, and the similarity of the fluid found to that which surrounds the dead body, enable us to decide that death was caused by submersion. In such cases there is usually more or less fluid in the stomach. When death is produced by strangulation, there will be ecchymoses on the neck and face, with cerebral congestion. The most frequent mode of infanticide is the precipitation of the infant into the water closet or privy, which may be the effect of accident ; but the pulmonary docimacy will decide if the infant has respired. In the cases recorded by Klein, the majority of the women were primiparous. I have known a woman of low stature delivered of her first child by a single pain.

In all cases of infanticide, we must be certain that the woman has been recently delivered, and that this event coincides with the age of the infant. The signs of recent delivery have been already enumerated. It is right to mention that infanticide has

been effected by the introduction of needles into the brain (Gui-Patin, Brendel, Belloc) and into the temples, internal canthus of the eye (Brendel), the neck, region of the heart (Fodere), and the abdomen. Infants have been destroyed by poisons, which have been applied by inhalation into the lungs, by commixture, with food, absorption through the skin, and by enema. These are to be discovered by the usual tests.

Before concluding this subject, it is necessary to prove the validity of the statement, that the hydrostatic test is no longer considered conclusive. Some of our best jurists cling to it with a degree of tenacity, which, to speak in the mildest terms, is exceedingly remarkable. Drs. Beck and Gordon Smith think it decisive with due precautions; and a reviewer in the *Edinburgh Medical and Surgical Journal*, in 1826, perhaps Dr. Duncan, thinks it affords presumptive evidence. The opinions of these talented and distinguished professors are of course entitled to respect and much confidence; but it is to be recollected, that the Judges of the land will not receive the evidence afforded by this test. This is not the place to discuss the propriety of this conclusion. Whether the recent modification of the law on the subject is a sufficient reason, lawyers only can determine. As the law now stands in this country, the questions to be decided in cases of infanticide are, has death been caused by violence, neglect, or ill-treatment? The same evidence is required as in cases of homicide. The question of child-murder is still, however interesting; for if the infant has been born alive, there is presumptive evidence against the accused; and secondly, the decision of the question will affect the disposition of property in cases of tenant by courtesy, as already mentioned. The law in this United Kingdom, Scotland excepted, and in almost all nations in Europe, is, that a child is born alive, when it evinces the slightest voluntary motion. A curious decision, made on this point by the Court of Exchequer at Westminster, has been already recorded. According to the law of Scotland, the infant must cry to prove its vitality. This is manifestly absurd, as asphyxiated infants have been resuscitated after an hour and a half, as I have often witnessed; and infants have been declared dead, the undertaker sent for, and every preparation in progress for burial, though resuscitation was finally established after some hours.

In cases of still-born infants, I have more than once succeeded in establishing the action of the heart, and one or more inspirations

though complete respiration could not be established ; and in such cases no physiologist can doubt the vitality of the infant.

Dr. Blundell and others have succeeded in resuscitating infants, extracted by gastro-hysterotomy, a quarter of an hour after the death of the mother ; and a case was recorded in the *Lancet*, where the infant was pronounced by the medical attendant to be dead, it was placed as if dead, and on his visit next day it was alive.

The unanswerable objection to the hydrostatic and other tests, is this, that when the infant breathes before delivery, which every practical obstetrician can attest, no test can prove it out-lived birth. Again, if we credit the records of medicine, we can have no doubt but that there may be intra-uterine, vaginal, and extra-uterine respiration before complete delivery. Dr. Beck and other jurists seem to doubt the reality of respiration in the first and second case ; but it is fair and reasonable to inquire what object could influence those who have narrated such cases ? Europeans and Americans are among the number.

Dr. Beck, who is an ornament to his profession, and an honour to his country, employed all his argumentative powers against the probability of an infant, whose head was expelled, and who had respired, losing its life during delivery. His countryman, Dr. Hossack, has recorded a case in point. But suppose the accused do not allege uterine, vaginal, or extra-uterine respiration, before complete birth, are not the judges warranted to temper justice with mercy, and to give the prisoner the benefit of the reasonable doubt in such a case ? Most decidedly.

To return to the hydrostatic test, from which I have so far digressed ; I have to state in conclusion, that Drs. Duncan, Beck, and Gordon Smith, maintain it may afford presumptive evidence in infanticide.

But the following facts must be kept in recollection : 1. the lungs of a still-born infant will sink in water, but float on the sixth, seventh, or eighth day, when putrefaction has commenced (Muyer in Schlegel,) and so early as the third day, in warm weather, (Beck.)

It is universally known, that the body of a drowned person sinks at first, floats when putrefaction has generated air, and rendered it lighter than water ; and sinks again, after the extrication of the air so generated. When the lungs of an infant are putrid,

the air is near the surface (W. Hunter, Jæger,) and can be readily squeezed out by pressure, when the lung will sink; whereas, when respiration has taken place, no pressure will cause the lung to sink. (Marc. Beclard.) The lungs are the last organs in the body which undergo putrefaction. (Camper, Mahon, Beck.) Marc is of opinion that the lungs which have respired, and are afterwards in a state of putrefaction, will always crepitate on incision, which never happens unless respiration has occurred; secondly, on squeezing the putrid lungs of a still-born infant they will sink, whereas those of a child born alive will float.

2. Squeezing the lungs after artificial respiration will not cause them to sink; in such cases, the lungs swam even with the heart attached, and also when cut in pieces, and carefully compressed. (Mendel, in *Hufeland's Journal der Practischen Heilkunde*, Aug. 1812; Bernt, *Experimentorum Docemation Pulmonum Hydrostaticam illustrantium centuria*, Vienna, 1823; Merzdorff in *Horn's Archiv. fur Medezinische, Erfahrung*, 1823.)

All authors are now agreed, that there is not any difference between natural and artificial respiration in the cases under notice, (*Edinb. Med. and Surg. Journ.* 1826, vol. xxvi.) "and the hydrostatic test can never prove positively that the child was still-born, but only that it had not breathed." *Op. Cit.* p. 389, "at the same time, it will yield strong presumptive evidence." "On the whole, then, it follows, from the preceding statements, that when due precautions are observed, and when certain exceptions and corrections are made, the floating of the lungs affords at least strong presumptive evidence that the child out-lived delivery." p. 374.

Dr. Beck arrives at the following conclusions on this point:

1. That when the lungs float in water, it must be from one of these causes; natural respiration, putrefaction, or the artificial introduction of air.

2. As the lungs may float from other causes besides respiration, there mere floating is no proof that the child was born alive.

3. As whenever it is possible to discriminate between the floating of natural respiration and of that which is the result of other causes, it follows,

4. That with due precautions, the floating of the lungs may be depended upon as a safe and certain test that the child has been

born alive. The same distinguished jurist arrives at the following conclusions, on sinking of the lungs in water :

1. That when the lungs sink in water it must be from one or other of the following causes : the total want of respiration, feeble and imperfect respiration, some disease of the lungs, rendering them specifically heavier than water.

2. As the lungs may sink from other causes than the absence of respiration, their mere sinking is no decisive proof of the child's having been born dead.

3. As, however, the sinking from the want of respiration may easily be distinguished from that which is the result of other causes, it follows,

4. That with due precautions, the sinking of the lungs is a safe test that the child was not born alive.

It is very evident from the preceding statements, that a great degree of caution is necessary in every case, before a decision can be given with confidence ; and from the difficulties of the subject, a few practical rules may be laid down for the guidance of physicians and surgeons, when called on to give evidence in cases of infanticide.

The general appearance and condition of the body should be carefully noted, and also the situation in which it had been found, all instruments which might be used criminally, the size, weight and length of the infant, the proportion of different parts, the degree of development, the signs of putrefaction, desquamation of the cuticle, the appearance of the navel, and of every part of the body. We should examine whether there be contusions, ecchymoses, excoriations, and be careful not to confound them with cadaverous lividity ; if any lesion is found, its precise situation and extent must be described. If wounds exist, their form, length, breadth, depth, must be accurately noted. The appearances of the head must be observed, and care taken not to confound those which are produced by parturition with those produced by external injury. We should ascertain whether or not there be foreign bodies in the ears, nose, eyes, and mouth, or marks of injury upon the neck, dislocation of the cervical vertebræ, whether the chest be arched or flattened, and when compressed, if a fluid escapes from the mouth or nose ; whether the abdomen be soft or tense, if the umbilical cord be flaccid, dry, moist, detached, cut, or lacerated, and its exact length, or if the navel be red, in a state of sup-

puration or cicatrization ; if the testicles have descended ; and finally, whether there are dislocations or fractures of the superior or inferior extremities.

Such are the principal points to be attended to in the inspection of the external condition of the body ; all appearances should be taken down in writing, and the document carefully preserved, as the witness may produce it at a trial, or refresh his memory from it ; whereas he cannot use a copy in either case, especially in this country. The next part of our duty is to examine the external parts of the body, and here also the appearances are to be recorded.

Autopsy-Dissection.—Medical jurists are not agreed upon the method of dissection, in cases of infanticide, Drs. Beck and Smith think it most convenient to commence the dissection with the mouth and cavities leading to the chest. M. M. Chaussier, Renard, Briand, and others, commence with the spinal canal, then proceed to open the head, thorax, mouth, pharynx, and passages to the chest and abdomen, and the abdomen. The former mode is more convenient, and I think the best. It is briefly as follows :

The neck is to be placed on a block of wood, so as to render its anterior surface prominent. We must first observe whether the mouth be open or closed, if the tongue is protruded, or turned back into the fauces. An incision is then to be made from the lower lip to the upper extremity of the sternum, and another along the lower edge of the inferior maxillary bone ; the integuments are to be dissected back, and all marks of violence, ecchymoses, &c. noted. The lower jaw is now to be divided at its symphysis, the parts attached to its internal surface divided ; the tongue should be depressed, when there will be a complete view of the mouth and pharynx. We should carefully observe whether there be any foreign body or sanguinolent appearance, and if the glottis and epiglottis be natural, and if there be fluid in the larynx or trachea. The abdomen is next to be examined, an incision is to be made from the sternum to the spine of the ilium on each side, the flaps turned back, and the umbilical vessels observed and tied. We are next to observe the appearances of the abdominal viscera, and to note every thing unusual. We should ascertain if the umbilical vessels be empty, or contain coagulated blood, if cut or lacerated, if the ductus venosus be permeable or obliterated. The

size of the liver should be noticed, its large vessels tied, and the organ removed and weighed ; but previous to its removal the gall bladder is to be inspected, the colour of its bile noted, or whether it be entirely empty. The stomach should be removed, its apertures having been tied, and its contents, if any, carefully examined. We should further observe whether the intestinal canal contains meconium, fæces, or other matter, or presents any sign of disease ; and lastly, if the bladder be empty, or full of urine.

The cavity of the thorax may be opened in the ordinary manner ; but on dissecting the integuments, every appearance of lesion is to be noted, and a minute examination instituted, in order to discover if the chest has been punctured. The cartilages of the ribs are to be divided with a scissars, in preference to a scalpel. We should next examine the size and colour of the lungs ; if of a dull red, or rosaceous ; if these organs fill the thoracic cavities ; and if the tendinous centre of the diaphragm be depressed. We are to take into account the size of the heart, the dimensions of its cavities, if they contain blood, the colour of its tissue, the degree of opening or closure of the foramen ovale and ductus arteriosus, the presence of fluid or coagulated blood, always recollecting that the most dependent portion of the lungs is engorged with blood and brownish, and that the site of this engorgement will vary according to the position in which the body had lain while becoming cold, and that this appearance will be greatest in proportion as the patient has not lost blood. After having examined the œsophagus and trachea, and noted their appearances, the large vessels are to be tied, the lungs and heart removed, and the former subjected to the hydrostatic and other tests, in the manner hereafter mentioned. In examining the vertebral column or spine, an incision is to be made from the occiput to the sacrum, the integuments and muscles carefully removed, and the annular portion of the vertebræ divided with a strong scissars, which may be introduced under the fifth lumbar vertebra. During this examination, we must observe all lesions, ecchymoses, dislocations, fractures, wounds and punctures ; but we must not consider the congestions of the spinal veins, or the presence of limpid, yellow or viscous serosity, the effect of violence, as these are ordinary occurrences, and will be found in such situations as the posture of the body favours.

The best mode of opening the head is to make an incision from

the root of the nose to the third or fourth cervical vertebra, and another from ear to ear; the integuments are to be dissected back, and all legions carefully examined and noted, wounds, punctures, fractures, &c. A small opening is to be made with a scalpel, through the anterior fontanelle, and the sutures divided by a scissors, great care being taken not to wound the sinuses or larger vessels; the bones of the cranium can be easily separated in this manner. We are now to ascertain if there be blood in the ventricles, or on the base of the brain, to remove the cerebrum and cerebellum, and carefully dissect both.

The examination of all the organs having been completed, the inferences to be drawn will be evident. But to render the information as complete as possible, it is necessary to describe the method of instituting the hydrostatic test.

The water in which the lungs are to be placed must not be too hot nor too cold, but of the temperature of the atmosphere; it should contain no salt. If these precautions are observed, the lungs, with the heart, will float or sink in water; if they float it is proper to notice, whether upon or under the water; if they sink, whether gradually or rapidly.

The lungs are to be taken out of the water, the large vessels tied, the heart separated, and the organs then weighed, to ascertain the proportion they bear to the weight of the body. They are to be immersed again, then the lobes separately, and lastly, each to be cut in small pieces; on incising it, we should note if there be crepitus, the tissue compact, or in a morbid condition. Should the fragments float, they are to be firmly squeezed in the hand, and again placed in the water. The inferences to be drawn from these experiments are the following, according to Dr. Beck.—When there is nothing on the body of the infant to account for its death during delivery, the lungs untouched by putrefaction, or artificial respiration, affording a crepitus on incision, floating entire or in segments on the surface of the water; and if the segments float, after firm pressure, then the evidence is irresistible that the infant was born alive, and enjoyed perfect respiration. If only the right lung or its pieces float, the respiration has been less perfect. If some pieces only float while the greater number sink, respiration has been still less complete. If neither the entire lungs nor any section of them float in water, the evidence is decisive that the child never respired.

It is right to mention that Professor Bernt is of opinion that Ploucquet's test affords decisive evidence in a few cases, and no more than presumptive evidence in the rest. It is scarcely necessary to remind the medical jurist that he should ascertain if the woman has been recently delivered, and learn the whole history of her case. The signs of recent delivery have been already enumerated. He should inquire whether the labour was *sudden* ; in what position it took place ; if the infant was born immediately after the rupture of the membranes, or how soon after ; if delivery took place without assistance, or what assistance was afforded ; if there was hæmorrhage before, during, or after delivery ; on what day and hour did labour commence, and did the birth take place : if the woman was insensible before, during, or after delivery ; if the infant respired, if not what attempts were made to resuscitate it. All these questions should be put in a mild manner, the solemn duty of the medical jurist being to ascertain the facts, and to take no interest in the prosecution or acquittal of the accused ; he should confine himself solely to the duties of his profession, and strenuously avoid putting, what lawyers call "leading questions," or intimidating the accused, or violating one of the best principles of our humane laws, by extorting a confession, or inducing a suspected female to criminate herself. His sole duty is to give the received opinion of his profession, regardless of consequences, but, on all doubtful cases, leaning to the side of mercy.

In the foregoing dissertation I have only discussed the principal points which claim attention in cases of infanticide. Many more particulars will be found in my work on Forensic Medicine, more especially in the article on homicide, where the danger and mortality of wounds, contusions and fractures, are duly considered. Enough, however, has been said to warn the young practitioner against committing errors, which have but too often led to the execution of innocent women. I might illustrate this assertion from the authority of Dr. W. Hunter, but his opinions are too well known to require expression in this place. The most scrupulous caution must be observed in estimating all the morbid appearances, and distinguishing those which result from accident and crime.

CHAPTER III.

GYNÆCO-PATHOLOGY.

DISEASES OF WOMEN.

UNDER this head we have to consider every morbid condition of woman, relating to her genital functions. The subject may be divided like the last into four parts : 1. Parthenosology, or Diseases of Nubility ; 2. Encyonosology, or Diseases of Pregnancy ; 3. Dystocia, or Difficult Labour, or Morbid Parturition : 4. Lochianosology, or Diseases of the the Puerperal State.

ARTICLE I.—PARTHENOSOLOGY—DISEASES OF NUBILITY.

Section 1.—Diseases of the External Genital Organs.

Besides irritation and inflammation, the external organs peculiar to the female sex are subject to *warty and fungous excrescences, scirrhus, polypous, fungoid, œdematous, and hernial tumours*. The external labia are often attacked with *excoriation and ulceration*, especially in young infants, sickly girls (see p. 76), and adult females, particularly in warm climates, in consequence of want of cleanliness. The surfaces of the labia very frequently cohere, so as to close up the genital fissure, leaving only a small aperture for the passage of the urine. I have met with some cases of this kind, where there was no appearance of the outer fissure, except a small opening at the superior part. This cohesion is induced by want of proper attention to cleanliness, and especially in irritable subjects, who seldom wash, unless after indisposition. (Riolan, Moinichen, Boivin.)—When this adhesion of the surfaces occurs to children, it may be often relieved by pressing on the labia in opposite directions ; and should this not cause separation, an incision must be made, simple dressings applied, the surfaces healed, and reunion prevented, by the introduction of pieces of lint during the healing process. I know two young ladies who have perfect cohesion of the labia, a small ori-

fice remaining superiorly, while the remaining three of the same family are naturally formed.

Sometimes an *epidemic ulceration of the labia*, extending to the groin, has been observed. This is ushered in by small greyish pustules, which become inflamed. The ulceration takes on the appearance of hospital gangrene, is accompanied by fever, great prostration of the vital powers, and often by death. This disease was described in the article *Violation of Women*. It mostly attacks weakly and delicate children, and seldom proves fatal to the robust. It is a fatal disease, though Duges asserts it is readily cured by nutritious diet, change of air, and the antiphlogistic regimen.

In the first stage of this disease we have to treat phlegmonous, and often erysipelatous inflammation, by leeches, fomentations, hip-baths, and the antiphlogistic regimen. When sloughing sets in, accompanied by typhoid symptoms, we must employ quinine, wine, porter, and nutritious aliment; and locally, chlorate of soda or lime, port-wine poultice, with laudanum, and if the pain is violent, lint moistened with a solution of the extr. opii, over which a warm linseed meal poultice should be placed. The bowels should be regulated with castor oil, and if the pain continues very urgent, a draught composed of camphor julep, ether, and tinct. opii. must be given every three or four hours. When the slough remains undetached, the application of strong nitric acid, every third day, will often afford great relief. (Travers.)—The London treacle poultice is often highly useful. When the colour of the surrounding skin is pale, a lotion composed of ten drops of diluted nitric acid in an ounce of water, is the best remedy. Mild nutritious diet, as eggs, milk, jellies, both animal and vegetable, mutton chops, and a free use of port wine, with quinine, and broth, are indispensable. This fatal disease sometimes attacks infants, and also adults, who are infected with syphilis, and generally proves fatal to the latter when mercury is employed. (See Sir A. Cooper's Lectures on Surgery, and Travers on the Pathology of Venereal Affections, 1830.)

Inflammation of the labia is generally of the phlegmonous kind, and comes on rapidly, and usually terminates in abscess within thirty-six hours. If we be called early, resolution may be affected by leeches, fomentations, hip-bath, or purgatives. The abscess generally points on the inner surface of the labia, and is to be

promoted, when inevitable, by warm fomentations and poultices. The pain is so great in this disease, that we must resort to large doses of opiates, and much relief will be also experienced by keeping the limbs separated by means of a pillow. This was well illustrated in a case which I saw with Mr. Hughes, of High Holborn, in Burton Crescent. When severe throbbing, pain, and tension have continued for thirty or forty hours, we are often called on to open the abscess, in order to afford relief. Such an operation ought to be avoided, if possible, as considerable bleeding may occur from the smallest puncture, owing to the vascularity of the part. This is not always the case. I opened an abscess of the left labium, in the presence of Mr. Woodhouse, of Ilford; there was no hæmorrhage. (See Gynæcotomy.)—It is also worthy of mention, that if the abscess be opened, the opening will appear indisposed to heal, and frequently becomes fistulous; while if it bursts of itself, it will heal kindly. The opening, whether natural or artificial, should be dressed with the mildest ointment and the irritation of the urine obviated by the application of a cloth dipped in cold water during the discharge of the fluid.—Sometimes the inflammation will be arrested in its progress, and an enlargement of the labia be produced. This may be removed by the use of cold applications, as the solution of the acetate of lead, or even plain cold water.

The labia may burst during labour, or become filled with blood; but of this I shall treat hereafter.

Various kinds of tumours and morbid excrescences may appear on the labia, and are to be treated on the usual principles of surgery, by ligature, pressure, or excision.

The labia may be attacked with *dropsy*, when that disease attacks the limbs or abdomen, but will generally disappear by the usual treatment. Simple purgation will in general remove it. We occasionally observe *hernia*, or rupture, presenting at the labia. The best treatment is the application of pressure, and the T bandage.

The most troublesome disease of the labia is a violent itching or stinging, called *pruritus*. There is a slight redness and an increased mucous discharge in some cases. This disease is often so urgent as to put decency at defiance, the desire to scratch the affected part being so indomitable, that it must be indulged. The worst species of this troublesome disease occurs during pregnancy,

and according to Dr. Denman, when the child is dead. It may appear at any period of life, and may be induced by diseases of the bladder, vagina, or womb.

The treatment consists in attending to the general health, administering purgatives, and applying various lotions and ointments to the affected parts. Solutions of alum, zinc, and acetate of lead, or ointments of these, are sometimes used with advantage. Dr. Denman found simple ablution with cold water, or vinegar and water, the most useful remedies. Dr. Clarke, of Dublin, recommends the application of warm water, which afforded great relief to a patient about whose case I was also consulted. Sulphur is employed in some cases with success. The disease will often withstand all treatment, especially if it occurs during pregnancy; and yet it will disappear immediately after delivery. Dr. Hamilton, of Edinburgh, had once a lady under his care, who was so distressed with this disease, that she threatened to commit suicide. Dr. Dewees recommends a solution of borate of soda, or common borax, as he discovered an aphthous eruption on the inner surface of the labia, which he thinks is the cause of this complaint. I have tried this remedy without the desired effect. A lotion composed of hydrocyanic acid is also beneficial in many cases. Sometimes a milder form of itching arises from insects. The application of strong mercurial ointment, solutions of oxymuriate of mercury, of sulphate of zinc, spirits of wine or brandy, will give immediate relief. When the disease arises from irritation in the vicinal organs, as the vagina, womb, or bladder, our attention must be directed to them.

Ulcers of the labia are sometimes mistaken for venereal chancres, but the history of the case, and the appearance of the sores, will always determine their real character. There is a great variety of these ulcers; they appear from the size of a split pea to the size of a sixpence. I have seen an ulcer of this kind on the internal surface of the labium cause the intolerable itching just described, and withstand both constitutional and local treatment. It yielded to nitrate of silver. Sometimes ulcers of this description will be followed by sore throat, and may disappear without the use of mercury. Mr. Abernethy has described ulcers on the male organs which produced the same effect, though not venereal. The labia are liable to soft, fungous, or warty excrescences, which may arise without any venereal or syphilitic cause. They gene-

rally yield to escharotics, savine cerate, or nitrate of silver; they may require the use of mercury or ligatures; but, in general, a saturated solution of alum, with compresses, will stay such hæmorrhage. The solution is prepared from an ounce of powdered alum and a pint of water.

The *mons veneris* or *pubes*, may be attacked with a herpetic eruption, which produces great itching. The greatest relief will often be obtained from washing the part with warm water. Evidence has been afforded of this disease producing miscarriage. The various lotions enumerated, when treating of pruritus, or itching, may be also employed, or ointments prepared from the various antipsoric remedies. The compound sulphur ointment will sometimes afford relief. Cleanliness is of the first importance in the treatment of all cutaneous diseases.

The *clitoris* is subject to nearly all the diseases incidental to the labia; but elongation and enlargement are the most common. The removal of the part by excision is the only remedy in these latter diseases. Cases are on record, where it had increased to the size of a cauliflower. If over stimulated by masturbation, it may cause general debility and epilepsy; and when such propensities are unrestrainable, excision becomes necessary. Idiocy and fatuity are said to have been induced by this practice. Malformation of this and the other external genitals has given rise to what is called hermaphroditism, and of this I shall speak in the article Sterility. The clitoris may be attacked with scirrhus and cancer, when it becomes thickened and enlarged. It has formed a tumour nine inches in length, and fourteen in circumference at the larger end; the circumference of the small end was five inches, and the tumour has been cut off by Mr. Simmons, as related in the London Medical and Physical Journal, vol. v. (De Graafe, Bartholin, Richerand, Riolin.)—The clitoris has been the seat of cauliflower excrescence, and then must be removed by excision, an operation common on the Continent, but rare in the British dominions.

The *nymphæ* are subject to all the diseases incidental to the outer labia, which are to be treated on the same principles. This part is most liable to elongation. So long as the elongation is not productive of inconvenience, it is not to be considered a disease. It is a rare occurrence in this country, and may continue for a long time before it produces any inconvenience. If the growth be considerable, it becomes irritated, inflamed, and ulcerated, so

as to impede the ordinary motions of the female, and also sexual congress. It then must be removed by a simple incision ; and the operation may be in general performed without exposing the female. Dr. Burns observes, that the part is so vascular as to require a ligature, or pressure, to restrain the bleeding after excision ; for by neglect the patient may lose blood to fainting ; while Mauriceau and Denman, names that cannot be mentioned without the highest respect, assure us that there is no danger of hæmorrhage after excision, or no necessity of applying a single ligature. In some countries this elongation of the nymphæ is natural and common to the other sex. The nymphæ may be ulcerated and irritated by cohesion of their surfaces. These parts may be distended with blood during labour, producing a black and painful tumour. This tumour has been mistaken for the membranes, and pierced by the midwife, causing a considerable discharge of blood. This disease mostly occurs after labour, and is so painful as to induce fainting. It has caused sloughing, and destroyed the perineum, the vagina and anus forming a common opening. The tumour may burst, and allow the discharge of clotted and fluid blood. This event may be promoted by warm fomentations and poultices, and the pain abated by opiates ; but when the pain was almost intolerable, Baudelocque opened the part, evacuated the contents, and then applied pieces of lint, dipped in a solution of alum, to prevent hæmorrhage. Plenck relates a case, in which five pints of blood were lost by the sloughing process. Perfect describes a case nearly similar. Burns and Dewees have given very interesting accounts of this disease. If the tumour be opened, burst, or slough, a proper compress is to be applied, to prevent the loss of blood ; and when inflammation or gangrene supervenes, they are to be treated in the usual manner. The external orifice formed by the labia, named os externum, may be lacerated, contracted, cicatrized, or ulcerated ; and these states are to be treated as already described.

The *hymen* may close up the orifice of the vagina, and prevent the escape of the menses ; the womb becomes distended, the vagina protruded, so as to resemble polypus, or inversion of the womb ; even the perineum may be put on the stretch, as if the child's head were in the pelvis. National and foreign authors confirm the truth of these assertions. Smellie and Denman describe such cases ; and Benevoli relates a case, in which he per-

forated the hymen, when thirty-two pints of dark-coloured fluid escaped. Cases are related by F. Hilden, *Fab. Abaq. Wier*, Benevenius, Chamberlain; Frye, in *Medical Facts and Observations*, vol. viii. p. 135; Sherwin, *Medical Records, &c.*, p. 279; Kœyner, in *Medical Annals*, vol. vi. p. 347; by Eason, in *Medical Commentaries*, vol. ii. p. 187; and numerous other authorities might be quoted. Smellie mistook the protruded hymen for the membranes; he ruptured it, and two quarts of blood escaped. Denman ordered an incision through the hymen of a female, aged twenty-two, when the menses escaped in a fluid state. Bardy relates the case of a girl, aged fifteen, whose hymen was imperforate, and covered with scab. The external parts were greatly protruded, and pain, like that of labour, was urgent. He made an incision through the hymen, and allowed six pints of gelatinous fluid to escape. *Medical and Chirurgical Review*, 1807.)—These cases prove the necessity of caution, in exhibiting medicines to promote menstruation, in those cases in which the discharge has not yet appeared, lest there be imperforate hymen, or cohesion of the labia or vagina. Brown, the African traveller, states that in certain parts of that country there was an operation performed on girls between the eleventh and twelfth year, to render the vagina imperforate (infibulation,) in order to preserve virginity until the time of marriage. When the menstrual secretion is retained behind the hymen, it always remains fluid; and when allowed to escape, after the incision of that membrane, it resembles tar or liquid pitch. Sometimes this membrane is so rigid as to prevent the completion of marriage, so that it must be divided by incision.

The perineum, or remaining part of the external organs of generation of females, may be lacerated more or less, by the passage of the infant during labour. This laceration is induced by attempts to dilate the vulva. In order to prevent its occurrence, pressure as always made with the palm of the hand against the protruded part of the head, while distending on this part. When the perineum is torn, it is to be united by the first intention, the limbs of the patient are to be kept closely together. Sometimes sutures must be employed; one or two are sufficient. Again it may become necessary to irritate the surfaces of the lacerated parts, to induce their union. This is rarely requisite. The bowels ought to be kept relaxed, and the urine should be prevented from irrita-

ting the parts. A cloth dipped in cold water, or pieces of lint smeared with simple cerate, should be applied, when the bladder is about to be emptied. This disease has been induced by violence as in cases of defloration. The bladder in some cases is to be evacuated by the catheter.

The rectum also suffers during labour, and may be torn inside the perineum, when the fæces will escape into the vagina, and cause much irritation. Pledgets of lint are to be applied, so as to obviate that offensive and troublesome disease. The principal operations to be performed on the external organs peculiar to females are, separating the labia; opening abscesses in these parts; extirpating the clitoris, or nymphæ; perforating the hymen; making sutures in the perineum; and introducing the catheter.

Section 2. Diseases of the Internal Organs of Generation.

The internal organs of generation are the vagina, uterus, Fallopian tubes, ovaria, broad and round ligaments of the womb; and to those may be added urethra and bladder.

The *vagina* may be wanting, unusually small, impervious from adhesion, tumours, or a frænum passing across, above the hymen, or its middle may be filled with a fleshy growth. If too narrow, it may be dilated with a bougie, or tent of sponge; and when unattended to, must be divided by incision, to admit the passage of the infant. It has closed up after impregnation. There is sometimes a great congenital confusion of parts: indeed, it would be tedious, if not impossible, to describe the varieties of conformation. It may open into the bladder, urethra, or rectum; and these deviations do not prevent impregnation. It may be attacked with phlegmonous, and erysipelatous inflammation, abscess, gangrene, adhesion of its surfaces, ulceration, scrofulous, cancerous, scirrhus, polypous, fungous, sarcomatous, and various other tumours, with leucorrhœa, gonorrhœa, morbid dilation, from tumours, or inversion of the uterus, calculous, concretions; and it may be implicated in the morbid diseases of the vicinal organs. It may be inverted partially, or completely; it may be the seat of hernial or dropsical protusions, or of prolapsion of portions of the bladder; it may be implicated in perineal hernia, or in indolent abscesses and encysted tumours, of the contiguous organs. When labour is too long continued, the pressure of the infant's head on the vagina and neck of the bladder causes sloughing of these parts, forming the disease

called vesico-vaginal fistula. The urine escapes through this opening into the vagina, and produces inflammation and abscess. It is of rare occurrence, as Dr. Clarke, of Dublin, had seen but four cases of it out of ten thousand. Yet I have now been called, after the accident had happened, to ten cases out of one hundred. It is a most painful disease, as the urine soon irritates the vagina; and from its constant discharge into that part, renders the female a most pitiable object.

This disease will be relieved, and ultimately cured, by keeping a catheter constantly in the bladder, and plugging the vagina with soft pieces of old linen or calico, smeared with simple ointment. The woman should lie on either side or on her face, so that the urine may be retained by the sound part of the bladder. If this caution were attended to, we should have heard less of incurable cases of this sort. This plan succeeded in a case deemed incurable by the surgeons in the Middlesex Hospital, which I saw under the care of Mr. Cooper, and which was finally cured by the measures here recommended. The plug prevents irritation produced by the urine. The general health should be attended to, and an opiate given at bed-time. I have had a case at the Royal Western Hospital during the last summer, which was of fifteen years' duration. The woman had been under the care of Dr. Colles of Dublin, Dr. D. Davis, and Dr. Ramsbotham. She stated, that each of these gentlemen had assured her the opening was so large as to admit the whole of the fingers. On examination, I found the opening not larger than the disc of a shilling, and scarcely capable of admitting the point of the index finger. This case shews how far these fistulæ may contract in the course of time. It was six years since any of the former examinations had been made. I have never seen the recommendation of attending to the position of the patient, which is of primary importance in the treatment of these cases. Dupuytren has used the actual cautery, as burns usually contract, and in one case he repeated it three times in the course of a month with success. Mr. Earl has tried it without success in some cases during the last year in St. Bartholomew's Hospital. Dr. M'Dowel, of the Richmond Hospital in Dublin, has tried it successfully, as appears by a case published by Mr. Swift in the *London Medical and Surgical Journal*, 1831, vol. vi. Mr. Earl has constructed a needle for the purpose of applying sutures in such cases, but has not as yet described it.

By the catheter, the urine will pass through the natural canal, the sides of the bladder will be in apposition, and healing and union of the opening will in time be effected. When the disease becomes chronic, and the sides of the fistula indurated, it has been necessary to stimulate them by savine cerate, or blistering plaster, in order to facilitate the healing process; and even the sides have been kept in apposition by the suture. Mr. Hobart of Cork, has invented an ingenious instrument for this purpose. His Essay is to be found in the London Medical and Physical Journal, 1825, vol. liv. I have known the disease become chronic, and produce no inconvenience; and in one instance, a portion of the bladder, as large as a crown piece, had come away, and the woman recovered without any treatment whatever. The proper treatment of this disease so far as the plug is concerned, was unknown ten years ago. In some cases, the bladder unites with the vagina, and the os externum becomes closed up, so that the urine and menses can scarcely escape; and pain in the part, and even convulsions, have been the consequence. Calculous concretions may happen in the vagina, as recorded by Puzos and Purton, in the Medical and Physical Journal, vol vi.

If after labour a tender state of the external genitals sets in, these are to be fomented with tepid water, or some of that fluid may be injected into the vagina, to promote cleanliness. Solutions of acetate of lead have been injected, warm and cold; but care must be taken not to force them into the womb. If the external orifice, or cavity of the vagina, become contracted, and appear disposed to close up, the use of bougies, or a round pessary, may be applied, to prevent obliteration. The vagina may be filled with various tumours, all of which are to be removed by ligature. This canal may be closed up, by pressure of enlarged or scirrhous glands, which tumour require the ordinary treatment. (Colles.) This part has been attacked with ulcerations, and various excrescences, which are to be treated in the usual manner. I have been consulted, concerning a girl, aged twelve years, whose vagina was closed at birth, and though excised, both in Bristol and in this city, is now impervious. There is a fleshy mass, apparently the hymen, that closes the entire orifice, and formerly impeded the passage of the urine. The sister of this girl aged ten years, has also the vagina impervious, from the same cause; and the mother thinks her children have been thus afflicted by a Di-

vine Judgment, as she had always wished for boys. It is a strange coincidence, to find two of the same family thus affected; the other sisters labour under no such deformity.

The vagina may be partially or totally inverted. In such cases, a small tumour appears at the external orifice, aptly compared to a ripe cherry. This part will be irritated, inflamed or ulcerated. The presenting part is to be replaced in its natural situation, and the vagina plugged with cloths, moistened with a solution of alum; and thus the canal will be contracted, and prolapsion prevented. If the canal be very much dilated, a saturated solution of alum is to be injected, and afterwards a globe pessary applied. This disease has been cured by pregnancy, though it may recur after delivery. In all these cases, the bowels are to be kept relaxed, as an accumulation of fæces in the rectum would aggravate the diseases. When the vagina is completely inverted, the rectum will be carried forward, and will be much relaxed.

In ascites, or dropsy of the abdomen, the fluid may pass down between the vagina and rectum, impeding the discharge of urine and fæces. When the patient stands, the tumour presses down; and it disappears when she lies in a horizontal posture. The fluid has been discharged by tapping, through the vagina; but it is best removed by the cure of the dropsy. Much relief will be obtained by a judicious application of the plug.

A portion of the bowels may pass down between the vagina and rectum, and form perineal hernia. This has been described by Sir Astley Cooper, in his work on hernia, and also by Denman. It has been mistaken for the last described disease; and also for retroversion of the uterus. If fæces be allowed to accumulate in it, strangulation may take place. Care is to be taken that it be replaced before the passage of the head in labour, lest the pressure might induce inflammation or gangrene. In abdominal, or intestinal tympanites, an elastic tumour may present in the same situation. The history of the case will enable us to discriminate the real nature of recto-vaginal tumours. Retroversion of the womb will occupy the same space; but of this hereafter.

The vagina may be implicated in the various abscesses and tumours of the vicinal parts. These tumours are indurated, elastic, and incompressible; and thus differ from those above described. In one of the vesico-vaginal fistula that fell under my care, the urine caused inflammation, and an abscess occurred between the

vagina and lower surface of the rectum, and pointed at the tuberosity of the ischium. On opening the tumour, nearly a pint of bloody purulent matter escaped ; the hectic became more aggravated, and the patient sunk in about a month afterwards.

Sometimes tumours in the vagina prevent the evacuation of the bladder and rectum, and impede delivery. Many such cases are on obstetric record. Dr. Drew, of Cork, relates a most interesting case of this kind, in the *Edinburgh Medical and Surgical Journal*, 1805, vol. i., where it was necessary to divide the perineum, to extract the tumour, in order to allow the passage of the infant. Dr. Beatty, of Dublin, records a case nearly similar, in the *Transactions of the Dublin college of Physicians*, 1824, vol. iv. I have met with one case of this kind in private practice. The female was frequently attacked with bearing-down pains, similar to those of parturition, and attended with a copious discharge of blood. Plugging the vagina with opiates always afforded her relief. The neck of the tumour was high up in the womb, and no ligature could be applied. The patient continues in good health, unless when she takes much exertion, but then the womb endeavours to expel the tumour. It is now six years since I first saw her ; she resides at present in Ireland. This subject will again come under consideration, when I shall have to describe the causes of tedious labours. The vagina may be the seat of varicose and aneurismal tumours ; but these are of extremely rare occurrence. The best mode of treating them is by pressure, either by plugging the vagina, or applying a pessary. This canal may be attacked with sloughing, scirrhus, cancer, and fungus hæmatodes ; and these deplorable diseases are to be treated with palliatives or excision.

The vagina, labia, nymphæ, hymen and clitoris, may be attacked with erysipelatous inflammation. This disease may happen at any period of life, to infants, girls, and women. It has extended even to the womb, and it generally proves fatal, as it usually terminates in gangrene. The parts are tumid, painful, and of a dark colour. It is almost invariably fatal to infants and children. It may first attack the womb, and extend outwards to all the above parts. The constitution becomes speedily affected, and hence we must administer sulphate of quinine, small doses of calomel and opium with nourishing diet ; while anodyne fomentations, as decoctions of poppies, camomile, with a large portion of tincture

of opium, are to be applied locally. Solutions of sulphate of zinc, acetate of lead, and diluted camphorated spirits, have been advantageously employed ; but in some cases tepid milk and water fomentations can only be borne. (See p. 243.) We are informed by continental writers, that in nymphomania, or furor uterinus, a disease unknown in this country, the organs of generation are highly sensible and inflamed, and that the parts are found black after death. Astruc gives a most minute description of this disease ; but to the British obstetricians it is unimportant. The vagina may end in a cul de sac, or be so contracted, as scarcely to admit the point of a probe, or it may be entirely wanting. The most common disease of the vagina is an increased secretion of mucus from its surface ; and when the discharge is so copious as to escape at the external orifice or genital fissure, it has been called *fluor albus*, *leucorrhœa*, or *whites*.

This disease is one of the most common to which women are subject. It proceeds from an increased secretion of the natural mucus of the vagina, and may vary in colour and consistence, from a thin watery fluid to a thick yellow purulent matter. It was said to be produced by the lining membrane of the neck and cavity of the womb. (Gardien and Capuron.)—But this is now denied, as the disease is common during pregnancy, when the orifice of the womb is completely closed. Blatin examined twenty-four bodies ; the fluid proceeded from the uterus in nine cases, from the cervix uteri and vagina in thirteen, and the uterine tubes in two cases.—Dr. Dewees asserts, that during thirty years' practice, he only found the discharge proceed from the womb in three cases ; and in these the women were barren. Dr. C. M. Clarke, in his excellent work on the discharges of females, 1821, describes five different species of discharges from the vagina ; 1st, the transparent mucous ; 2d, the white mucous ; 3d, the watery ; 4th, the purulent ; and, 5th, the sanguineous. The 1st species arises from increased secretion in the vaginal surface ; the 2d, from inflamed cervix uteri or vagina ; the 3d, from cauliflower excrescence, hydatids or oozing excrescence of the labium ; the 4th, from inflammation of the mucous membrane of the womb or vagina ; and the 5th, from ulceration, scirrhus, cancer, or abscess. Dr. Hamilton describes many other species of the disease ; while Dr. Dewees limits them to three in number. The purulent form of the disease has often been mistaken for gonorrhœa, especially where the

male becomes affected with a discharge from the penis ; but the symptoms of such discharge are quite different from those arising from impure sexual connexion. When the ordinary secretion becomes excessive, it produces depression of mind, and great enervation of body. The countenance becomes pale, languid, and yellow ; the digestive organs become affected ; there will be loss of appetite, nausea, flatulence, heart-burn, acidity of the stomach, and all the multitudinous symptoms of dyspepsia or indigestion ; or the newly discovered and universal disease, styled bilious affection.

Another class of diseases is generally connected with, or supervenes on that just described ; namely, that denominated nervous disease, and both I have described succinctly and plainly in my work on all the known Mineral Waters.

Besides nervous and bilious diseases, the patient is often attacked with palpitations, oppressed respiration, irregular bowels, pains in the back, loins, or uterine region : and, at length, with œdematous swellings of the feet. All these symptoms arise from the sympathy that exists between the womb and various other organs.

Dr. Hamilton described five species of fluor albus. First, when the fluid resembled white of egg, is not profuse, and arises from an increased secretion in the mucous glands of the vagina. He recommends cleanliness, frequent ablutions, balsam copaiba, injections of sulphate of zinc, and acetate of lead, or a saturated solution of alum, as the best means of cure. To these may be added, the tinctures of buchu, cubebs, and rhatany. Second species, when the discharge comes off by jerks, and is said to proceed from the glands of the womb ; and here we should endeavour to establish menstruation. Third species bears the strongest similitude to gonorrhœa, has all its symptoms, and requires the same treatment. This species often appears after marriage, and therefore young practitioners must be very cautious in giving opinions as all domestic happiness may be destroyed by their decisions. I have met with several cases of this kind, but never were the symptoms so violent as in gonorrhœa, though the husband had been affected with discharge ; nor were his symptoms so severe, as if they arose from impure connexion. It is well known, that the husband is generally the offending party ; and, if labouring under a gleet, though it may be six months before he had had gonorrhœa, yet he will infect his bride. Sir A. Cooper confirms the truth of this

assertion in his invaluable Lectures; he had a patient who infected his wife, though his disease was of fourteen months' duration; and every man in active obstetric practice can testify the same. I have known a case in point; the gentleman assured me he had no appearance of gonorrhœa for six months before his marriage; and at that time, only a very slight gleet; yet he infected his wife, and incurred the highest displeasure of her and her relations. The fourth species of fluor albus, described by Dr. Hamilton, in his excellent Lectures, is compared to calves' feet jelly; and the able professor asserts, that change of climate is the only cure for this disease, and that the female labouring under it is generally barren. The fifth species he described, is where the discharge resembles milk and water, and is said to proceed from the menstrual vessels; as pregnancy never occurs while this form of the disease continues. Dr. Burns, in his valuable work on midwifery, gives a most clear and scientific account of the origin and causes of fluor albus; a work that should be in the hands of every medical practitioner. He observes, that in the natural state, the secretion of mucus in the vagina and absorption is so balanced, that unless on particular occasions, no fluid is discharged from the vagina. When the discharge arises from the womb, the function of the organ is so much injured, that menstruation becomes irregular, and conception seldom happens. In some cases, menstruation appears regularly, but is preceded or succeeded by fluor albus. If conception occur, the mucous discharge ceases, though it may soon recur even copiously, and cause abortion.

Leucorrhœa occurs in full plethoric or in weak and delicate habits. It may be produced by increased vascular action, acute or chronic inflammation, congestion, or local irritation, or by debility. It is sympathetic with the diseased conditions of the womb, and contiguous organs. It will be induced by polypus, prolapsion, or other diseases of the womb or internal or external genitals; by menorrhagia, miscarriage, frequent parturition, excessive venery, cold, or fatigue after marriage, or delivery, protracted lactation, and by various other diseases of the pelvic viscera. Delicate, nervous females are most subject to the derangements of the stomach, liver, and bowels, already alluded to under the terms bilious and nervous affections. Females of full habit are rarely affected with the latter diseases. It accompanies chlorosis, or often precedes it, it follows menstruation, it is often caused by too much nuptial com-

merce, and it occurs after the critical age. It is most common to lymphatic women, who are subject to chronic catarrh or mucous fluxes.

Leucorrhœa is a disease which is extremely difficult of cure, whether it occurs before or after marriage, or in the pregnant state.

Treatment.—When idiopathic, or where it is unaccompanied with organic affection, the first indication in treating it, is attention to the general health; removing the bilious and nervous symptoms in all their Protean forms; and then applying topical remedies, in the form of injections; and at the same time exhibiting those medicines that are said to have a specific action on the secreting parts, as balsam copaiba, oil of turpentine, tinctures of cantharides, cubeb, buchu, rhatany, resins, diuretic, salts, conium, arnica, &c. &c. If the patient be robust, the diet should be sparing, consisting chiefly of vegetables; and in order more efficiently to lower the fullness of habit, laxatives should be freely employed.

Exercise in the open air, but not taken to fatigue, is of great utility. We next recommend injections of a solution of alum, or decoction of oak bark, which are to be thrown into the vagina, by a syringe with a long pipe, or by the tubes attached to the patent syringes, which answer the latter purpose very well.

When the stomach and bowels are affected, as in weak, delicate women, mild purgatives, with the various tonics, are to be employed. The various bitter infusions, as those of gentian, calumba, quassia, camomile, with magnesia; rhubarb, carbonate of soda, or liquor of potass, may be used with advantage. Dr. Dewees is of opinion, that there are three stages in this disease and each requiring a slight difference in management. The *first* is, when the discharge is like thin starch, and accumulates in the vagina, by its tenacity, but escapes on the slightest exertion. This never becomes acrid, except by the most reprehensible inattention to cleanliness. The parts to be washed three or four times daily, with warm water, the bowels regulated, and then thirty drops of tincture of cantharides are to be exhibited in some sugar and water, three times a day, increasing the dose every third day, in the proportion of five drops at a time; and continue the remedy until strangury shall be produced. The disease is generally cured before strangury is produced; but where a cure does not happen, the medicine is to be resumed, and continued as before. If strangury

or pain in passing water, sets in, he directs the free use of linseed-tea, barley-water, or mucilage of gum arabic, and thirty-five drops of tincture of opium, in order to afford relief. Should these fail, he recommends a clyster, composed of a gill or quartern of starch, a tea-spoonful of tincture of opium, and thirty grains of camphor, which he asserts never fails. The tincture he used is double as strong as the common laudanum. I have experienced the greatest success, by administering a drachm of carbonate of soda, in linseed-tea, or barley-water, four or five times a day. This affords great relief in the ardor urinæ caused by gonorrhœa; and I have never observed it produce a deposit of the phosphates in the urine, as stated in works on pharmacy. This is the best remedy for strangury. Much benefit will also be derived from pills composed of three grains of camphor, and two of extract of hyosciamus, to be given every third, fourth, or sixth hour; or twenty drops of liquor of potass, one ounce of camphor mixture, and from three to five grains of extract of conium, will often procure relief. Dr. Dewees has used the tincture of cantharides to two hundred drops, three times a day, without producing strangury; and he persevered with this immense quantity for several days consecutively. This plan is recommended by Robertson, in his work on cantharides. Dr. Dewees also prefers the use of soap and water, as a wash for the vagina; and he also praises a lotion of five grains of acetate of lead, in an ounce of water, or half a drachm of sulphate of copper to eight ounces of water. The vagina is to be washed out with soap and water, by means of a common or patent syringe, before the use of either of these injections. Plasters and liniments are sometimes applied to the back with advantage. In the *second stage*, the matter discharged is of a white or yellowish purulent appearance, and is attended with much pain in the back and loins and here the orifice or neck of the womb is often found tender to the touch. There is no disease of structure, in the opinion of Dr. Burns, but merely an affection of the glands; while Dr. C. Clarke asserts, that there is more or less inflammation. The former recommends warm sea-water hip-bath, mild mercurial preparations, laxatives, and avoiding all irritation; and when the tenderness is subdued, and the discharge becomes chronic, the cold bath, tonics and mild vegetable astringents, are proper. The latter gentleman recommends leeching, or cupping, the back and loins; and the hip bath twice daily; fomentations of poppy, and the in-

jection of tepid water into the vagina, which is a direct fomentation to the affected parts. He advises saline purgatives in full habits, and castor-oil for weak and relaxed persons. Strangury is to be relieved by sitting over the steam of warm water, and in some cases the urine must be drawn off by the catheter, an operation, if properly performed, attended with neither pain, difficulty, nor exposure of the person. Dewees coincides with Burns, but further recommends the use of cantharides, as already pointed out; he also insists on frequent ablutions with soap and water. This form of the disease differs very little from gonorrhœa, and its treatment is precisely the same. The patient will derive great relief from heat and scalding in passing urine, by applying a cloth wetted in cold water to the vulva. I have found much benefit derived from the free application of cold lotions to the pubes and genital organs, on the principle of diminishing vascular action, as in the other inflammations. I have employed this practice in the case of a lady under the care of Mr. Mathews, with great success, and in another case with Mr. Hughes, of Holborn. The injection of cold water into the vagina might also be probably tried with advantage. No obstetric writer, with whose works I am acquainted, recommends this plan, although there is good reason to suppose that injections of alum and acetate of lead are often employed when inflammatory action is proceeding, both in the vagina and womb.

The proper time for employing injections is said to be when the discharge becomes thin, greenish, or transparent. Dr. Dewees has succeeded with copaiba, when cantharides had failed; and he has found five grains of alum and ten of nitre, given three times a day, prove successful, when every other remedy had been tried in vain. There is no objection to this combination, although a very unchemical one, provided the bowels be kept regular; and we know that many unchemical formulæ have the best effects. If the discharge be decidedly purulent, it must proceed from an inflamed or ulcerated state of the parts, from abscess or cancer. In the latter disease excision is the only certain remedy. Mr. Jewel recommends an injection composed of nit. argenti, gr. xij Aq. ʒvj, which he says is effectual in obstinate cases of leucorrhœa; but he has not stated the exact form of the disease in which the application is to be tried. He has adopted the remedy from observing its good effects upon morbid secretion of the mucous mem-

brane of the fauces and larynx ; and he affirms that it is equally efficacious in arresting vaginal discharge not dependent on disorganized structure. It produces a new action in the part. It is difficult to explain the existence of leucorrhœa, independently of morbid action and more or less disorganization, and hence the French describe the disease before us under the words metritis and vaginitis.

Again, if the discharge be watery, it may arise from the cauliflower tumour, from hydatids, or from an oozing excrescence of the labium. When fluor albus arises from the cauliflower excrescence, there is first a copious watery discharge, and soon an alarming hæmorrhage ; and this tumour baffles all remedies, and has hitherto proved fatal. It is covered with a flesh-coloured membrane, which pours out a copious aqueous secretion, and, if handled, will be ruptured by the slightest touch, when copious hæmorrhage will take place. The tumour is not sensible, as no pain will be experienced by its rupture. It grows rapidly in married, and slowly in unmarried women. It may occur in all persons, about the age of twenty, married, single, healthy, or not, and arises without any evident cause. The tumour cannot be injected after death, as the injection escapes very rapidly through it ; and it becomes so collapsed that it only appears an elongation of the lining membrane of the vagina. Dr. Clarke, therefore, thinks it a congeries of small arteries, and that it resembles the placenta in structure, causes death by copious aqueous secretion, or hæmorrhage. No treatment can arrest it. Local bleeding from the hips, groins and sacrum has been used ; also tepid astringents injected into the vagina, without any force, and all in vain. The mucous membrane of the vagina is subject to melanosis, in different parts. The operations to be performed on the vagina are excising morbid cohesions, removing various tumours, puncturing the bladder, perforating the hymen, applying pessaries, injections, and plugging (the tampon). The intimate connexion of the urethra and bladder with the vagina, and the great influence that diseases of those parts have on the functions of the latter, induce me to make a few practical remarks on these organs.

The *urethra* and *bladder* are liable to all these diseases of soft parts, as irritation, inflammation, abscess, gangrene, sloughing, scirrhus, cancer, fungus, fungus hæmatodes, various tumours, ulceration, warty and other excrescences, spasm, retention, and in-

continence of urine, strangury, or pain in voiding that fluid, and stone ; and these diseases are to be treated on the principles inculcated by medical and surgical writers. I shall therefore confine my remarks to the most common derangements of these organs.

Irritation and great pain are often experienced in the urethra and bladder, by irritable females, and by girls previous to the appearance of menstruation ; and these symptoms are so violent as to induce a belief that inflammation or some disorganization is going on ; but such morbid conditions seldom happen to the latter, who invariably get well on the eruption of the menstruous secretion. The *treatment* already described for strangury, in my remarks on leucorrhœa, will, in general, procure relief, although sometimes it may be ineffectual. The warm bath, with anodyne fomentations, or even the cold bath, or cold applications, will often assist in the cure. Buchu, soda, liquor of potass, camphor, hyosciamus, or conium, should be employed. The soda and potass decompose the urine, and prevent it irritating the affected parts ; and the greatest advantage will be derived from the constant use of the catheter, the instrument being left in the bladder, and the urine allowed to escape, according as it arrives from the kidneys. This practice gives the most certain relief, in cases of irritable bladder in the male, according to Sir Astley Cooper. The instrument should be withdrawn daily, and cleaned, to prevent calculous deposit on its surface.

Catheterism.—The introduction of the female catheter is an operation often requisite in obstetric practice, and is one that can be always performed with ease, and without any exposure of the person. The orifice of the urethra, or urinary passage, can be always found by drawing the finger along the bladder, in a line with the symphysis pubis, when a short thick cord will be felt, about two inches in length ; and at the extremity of this, on the pubis, below the clitoris, is a small protuberance, about the size of a split pea, or it sometimes resembles a dimple, which is the orifice of the urethra. The best position in which we can place the patient is on the back, with the knees drawn up and separated, and her face turned to one side. The greatest delicacy should be observed in the performance of this operation. The operator may stand on either side of the patient. Should he prefer standing on the right side, he is to take the catheter, previously oiled,

in his right hand ; with the index finger of the left he is to separate the labia, find the clitoris, and pass the finger an inch lower than the pubes, when he shall readily discover the orifice of the urethra. He is next to place the finger on it, and then introduce the point of the catheter with the other hand. If the orifice be not easily detected in this manner, the finger of the right hand may be passed into the vagina, and drawn along the bladder towards the pubes, when the orifice of the urethra will be readily discovered. The stilet may or may not be left in the catheter, and as soon as the instrument shall be introduced, a small basin, or other vessel, is to be applied under its handle, to receive the fluid. The adjustment of the vessel is vastly inconvenient, as the patient may be exposed, and is liable to cold, while the bed is invariably wetted on removing it. To obviate these defects, Dr. Conquest recommends a bladder to be tied to the catheter, to receive the urine ; but if there be a large quantity of fluid in the urinary bladder, this proposal is objectionable, as the catheter should be withdrawn as soon as the attached receiver became full, and this would at least be rather embarrassing to young practitioners, who might have experienced difficulty in introducing the instrument. The best proposal made to remedy this defect is that of Dr. Montgomery, Professor of Obstetric Medicine, in the School of Physic, Dublin. His essay appeared in the *Edinburgh Medical and Surgical Journal*, 1828, and is well worthy of attentive perusal. He proposes to place a stop-cock near the handle of the common catheter, in order to prevent the escape of the urine, which invariably occurs as soon as the common instrument is passed into the bladder ; by the proposed improvement not a drop could escape until a vessel should have been applied to receive the fluid. His next suggestion is, that a small tube is to be fitted to the catheter, and to the end of this a calf's or sheep's bladder is to be tied, so that as soon as this latter is filled, it can be separated and reapplied, without withdrawing the catheter. I have seen male catheters of this construction with Mr. Costello, for the purpose of injecting the bladder, previous to the use of his lithotritic instruments ; and here I must add my testimony in favour of the safety and efficacy of this valuable operation, which I have often witnessed with much gratification.

When catheterism is performed in the ordinary way, there is considerable inconvenience to the patient. First, the urine es-

capas as soon as the instrument passes into the bladder, before any vessel can be applied ; secondly, the vessels met with in bedchambers are, from height and size, particularly unfit and difficult to apply under the extremity of the catheter, and their application is attended with more or less exposure ; thirdly, in the removal of such vessels, a quantity of urine is spilled on the bed, or the bed-clothes fall into the vessel, in either case causing much discomfort to the patient ; fourthly, the introduction of the vessel under the bed-clothes, both exposes the patient to cold, or to the chilling contact of the vessel itself, and increases that excessive confusion of shame with which the female is overwhelmed at the time of the operation ; fifthly we cannot always prevail or insist on a patient to assume the best position ; she may be totally helpless, and unable to turn, and may be laying sunk in the middle of the bed, a position that impedes the operation very much.

Sometimes the bed may be so placed that the operator must stand at the left side of the patient. It is therefore incumbent on him to be able to use the instrument with his left hand, while he discovers the urethra, in the manner already described, with the fore finger of the right. The instrument may be passed under or over the thigh of the patient ; but the former is more convenient, as the vessel to receive the water can be passed or withdrawn in the same posture. The operation, if properly performed, is unattended with pain, difficulty or exposure of the person. In ordinary cases, the catheter should be passed upwards and forwards ; but if there be retroversion of the womb, its fundus being turned down on the rectum, and its neck pulling down the bladder, or when the womb is partially inverted and outside the genital fissure, the point of the catheter must be passed for a short distance in the usual course, and then its handle raised towards the abdomen, so as to follow the reversed curve of the urethra ; sometimes a male catheter must be employed.

Again, if there be antiversion of the womb, or pendulous abdomen, the bladder will be thrown forward over the pubes, so that the urethra is now curved in the opposite direction, and consequently the handle of the catheter must be depressed, as soon as its point has cleared the symphysis pubis. If these observations be borne in mind, there never need be any exposure of the female, which should be avoided.

The urethra may be attacked with spasm, which will produce

heat and pain in passing water, or complete retention of urine. The best remedies for this affection are anodyne, tepid fomentations, laxatives, muriated tincture of iron, warm bath, and the catheter.

The bladder is liable to acute and chronic inflammation, to ulceration, fungus, scirrhus, cancer, and the various kinds of tumours which appear in the other soft parts of the body. Leeching, cupping, fomentations, laxatives, warm bathing, with large doses of carbonate of soda, or liquor of potass, camphor, hyosciamus and buchu are the best remedies. If *cancer* attacks this organ, it will generally extend to the vagina and other soft parts. The bladder may be so contracted by chronic inflammation, as scarcely to contain a quartern or gill; and it may be sometimes so dilated as to contain two gallons, and cause a resemblance to the last stage of pregnancy. I have seen such cases in the last stage of typhus, and have heard of an instance where the woman was supposed to be pregnant, and the mistake discovered on dissection. Little relief can be afforded in all organic derangements of this organ, especially where ulceration, excrescence, or fungus appear on its internal surface, and exposed to the constant irritation of so saline and acrid a fluid as the urine. In chronic diseases of the bladder there is generally a discharge of mucus, or purulent matter, mixed with blood. When the quantity of mucus is considerable, the disease is called catarrh of the bladder, and is sometimes relieved by uva ursi, lime-water, soda, potass, balsam copaiba, and conium.

The bladder, like all other muscular parts, is liable to spasm. This affection causes great pain and irritation, and has been mistaken for inflammation, gravel, and fungus. The remissions of pain that occur, clearly demonstrate the nature of this disease, and prove it cannot depend on any of the above conditions of the organ. Warm bath and tepid fomentations, and a free use of camphor and hyosciamus generally afford relief, and finally the complete removal of the disease.

Hydatids have been found in the bladder, and may produce great irritation; it is a strange, but certain fact, that those parasitic animals have been found in every cavity and structure of the body.

Ascarides have been seen in the bladder, and have produced very great irritation. The injection of tepid water, olive oil, castor

oil, and weak solutions of soda and potass have been recommended in such cases. Washing out the bladder is now become a frequent operation, since the invention of the double syringe; and there is some reason to suppose it may prove beneficial. I have repeatedly witnessed this operation in the practice of Mr. Costello. The chief operations to be performed on the bladder are lithotomy, puncturing the organ, passing the catheter, and *vesicæ lotura*, or washing out the bladder.

Females, like the other sex, are attacked, although very rarely with calculus. The symptoms of this disease are heat, pain, and great irritation in voiding urine, the fluid being often very suddenly arrested in its evacuation, and a gravelly matter being occasionally deposited. Warm bathing, fomentations, alkalies, buchu, and *uva ursi* are the usual remedies, and large doses of carbonate of soda, with pills of camphor and hyosciamus, will often afford relief. The urethra being very short and dilatable, may allow large calculus to pass through it; while, in some cases, the stone has passed through the vagina, the rectum, and abdominal parietes, by the process ulceration. It has been necessary to perform the operation of lithotomy, even during pregnancy.* Excrescences may form at the orifice, or in any other part of the urethra, occasioning great pain in passing urine, and have been mistaken for urinary calculi. When placed externally, they can be readily discovered, and are to be removed by excision or ligature; when situated in the passage, bougies are quite necessary. In a case in which I was consulted by Mr. Foote, of Tavistock-street, Covent-Garden, the savine cerate was the most effectual remedy. The blood-vessels of the urethra, bladder, and womb may become varicose or aneurismal, and must be treated by pressure and astringents.

The womb has been found wanting,† or double, or divided by a septum, as observed by Dr. Baillie. It may be double, a specimen of which is in the museum of the Royal College of Surgeons.‡

* The great discovery of Civiale obviates the formidable and dangerous operation in future, and is now practised daily on the other sex, by his only English pupil, Mr. Costello.

† Columbus, Schiegel, Fromondusi, Morgagni, Meyer, Ford, Hamilton and many others.—(*Vide* Article on Sterility.)

‡ Haller, Purcell. *Phil. Trans.* 54; *Med. Facts*, vol. iii; *Mem. Med. Society*, vol. iv; *Lond. Med. Journal*, 1782, vol. iii; *Dict. des Sciences Medicales*, vol. vi. &c. &c.

The womb may be undeveloped, a curious case of which is recorded in the *Journal G  n  al de M  decine*, vol. xli. The os uteri has been closed by adhesion, scirrhus, or in consequence of original formation. The substance of the os uteri has been found cartilaginous, ossified, inflamed, and ulcerated, and completely obliterated after impregnation; so that an operation has been performed to allow of delivery. If the os uteri is entirely closed, the menses will be retained, the uterus will become distended, and an operation must be performed to allow the escape of the fluid; the womb has been tapped under such circumstances, but inflammation, of course, supervened. Metritis, or inflammation of the womb, is of very rare occurrence in the unimpregnated state, and such condition is generally caused by external violence. It is often a consequence of marriage, according to the testimony of Drs. Dewees and C. Clarke. The disease is ushered in by pain in the hypogastric region, shooting to the back and loins; the organ is tender to the touch, the bladder is irritable, pain in voiding urine, and febrile symptoms are also present. General and local bleeding, fomentations, warm bathing, blisters, soda, potass, and purgatives, as in peritonitis, are the means of cure. When the neck, or orifice of the womb, is attacked with chronic inflammation, besides the symptoms of irritation and inflammation, there is generally a discharge of mucous, or purulent matter, which is often mixed with blood, or even there will be considerable h  morrhage. The patient becomes weak, from the discharge or irritation. In such cases the woman should live absque marito, and use the warm hip-bath, mild purgatives, sedative injections as opium, poppies, hemlock, hyosciamus, and mild diet. After the disease shall have been subdued, tonics, sea-bathing, and exercise, and mild astringent injections ought to be employed. A course of mercury has cured this disease, when all other remedies had failed.

The *womb is liable to irritation*, which is soon followed by ulceration, purulent discharge, more or less copious, and pain during sexual congress. Nauche, in France, and Gooch, in this country have described irritation of the uterus; the former designates it neuralgia, or spasm; the latter, irritable uterus. We are informed by Nauche, that the fixation of scrofulous, syphilitic, rheumatic, scorbutic, psoric, cancerous, and gouty diseases may induce spasm of the uterus, or even neuritis; while Gooch maintains there is no change of structure, even though the disorder contin-

ues for years. He compares it to the irritable mammæ described by Sir. A. Cooper, and the irritable joints, described by Mr. Brodie. Hysterical women are most liable to it. The pain is constant for months or years, and may finally disappear by the use of appropriate remedies, horizontal posture, narcotics, warm hip-baths, occasional local bleeding, sometimes mercury and counter-irritants. I have found sedative vaginal injections of great use in painful affections of the uterus.

We should remember that gastralgia may continue for ten or twenty years, and indicate the idea of change of structure; but, on dissection, no disorganization exists. Dr. Gooch gives the following semeiology of irritable uterus:

“Pain in the lowest part of the pelvis, along the brim of the pelvis, and often also in the loins. The pain is aggravated by the erect posture and by exercise; it is diminished in the horizontal position, but is not removed. It is always present, and often causes severe paroxysms, although the patient has been recumbent for a long time. The uterus is exquisitely tender on pressure. The severe paroxysms come on a few days before or after the menstruation, and this secretion continues regular, but sometimes diminishes or ceases altogether. On examination, nothing is discovered except exquisite tenderness and slight swelling, or rather tension. The disease does not terminate in change of structure. The causes to which the complaint has been attributed are considerable bodily exertions at times when the uterus is in a susceptible state.”

M. Lauyer Villermay defines hysteralgia, pains in the uterus, which are common to a large number of women, from the age of puberty to the critical epoch, and sometimes long after the latter period. These pains sometimes precede the first eruption of the catamenia accompany their periodical return, and are most acute when the discharge is slight; they are located in the cervix or body of the uterus, are consequent to defloration and marriage, especially with those in whom the uterus is situated low, and in those cases where there is a disproportion between the reproductive organs of the sexes. These pains may supervene during or after sexual congress, or after laborious labours. Irritation of the womb is more or less habitual. This etiology is partly corroborated by Drs. C. Mansfield, Clarke, and Dewees, who deem marriage a frequent cause of metritis. Dr. Addison's history of the symptoms and causes of irritable uterus is nearly similar.

The most frequent symptoms of uterine irritation are *irregular menstruation*, the discharge being preceded or accompanied by pain in the back, loins, or thighs, or in the region of the uterus itself, and attended with forcing or bearing down; *the discharge being in excess*, either in point of mere quantity, or in continuance, or in recurrence; *tenderness of the womb itself upon pressure*, made either externally or *per vaginam*, a tenderness in some instances so great as to interfere with the privileges of matrimony; and, lastly, *leucorrhæal*. The most frequent symptoms however, are unquestionably *painful menstruation and leucorrhæal discharge*, although the former is often the only symptom acknowledged by the patient herself.

The most powerful pre-disposing cause of uterine irritation is *constitutional irritability*, especially in persons naturally of a delicate frame of body, a state rendering its possessor acutely susceptible of impression generally, and which has not unfrequently and certainly not very unaptly, been distinguished by the term nervous temperament. The rest of the predisposing causes are such as tend either to produce or to increase morbid susceptibility; such as *sedentary and luxurious habits, late hours, and passions of the mind*. Natural irritability of uterus itself may undoubtedly prove a pre-disposing cause, but of this it is difficult or impossible to speak with certainty, as the refinements and restraints of society will always furnish, at the same time, other co-operating causes.

“The *exciting causes* again, are *active exertion of any kind, during the flow of the menses; frequent child-bearing, especially if the patient suckles her children herself; excessive venery, and, indeed, venereal excitement of every kind*. Married women, I think, perhaps suffer most from child-bearing, and from imprudence during the menstrual period; unmarried women, on the other hand, from similar imprudence, and peradventure from causes of excitement of the genital organs, concerning which it is unnecessary to be very explicit.”

He next describes the painful affections of the abdominal viscera, which are often experienced, and generally mistaken for inflammation. These are—

“1st. A pain seated under the left mamma, or under the margin of the ribs of the same side. 2dly. A pain under the margin of the ribs of the right side. 3dly. Pain in the course of the de-

scending colon. 4thly. Pain in the course of the ascending colon, especially towards the right hypochondrium. 5thly. Pain affecting the abdomen generally. 6thly. Pain in the region of the stomach. And lastly, Pain in the region of the kidneys, sometimes extending down in the course of the uterus to the bladder."

These pains arise from neuralgia of the spinal nerves (Copland, Whitlock, Nicholl, Shirley, Palmer, Teale, Tate,) are generally mistaken for pleuritis, splenitis, hepatitis, colitis, duodenitis, peritonitis, gastritis, or gastralgia, nephritis and cystitis. One or more of these pains exist at the same time, or alternate with each other and sometimes there is pain over the whole abdomen, which may be called neuralgia of the abdomen, or we would say with Dr. Marshall Hall, intestinal irritation.

Dr. Addison observes that the diagnosis is often difficult—

"Whenever a female complains to you of pain under the left breast, with or without palpitation or pulsation of the heart; of pain in the right hypochondrium; in the situation of the left or right colon; or of acute pain generally over the whole belly, or in the region of the kidneys or bladder, always be upon your guard, and if on inquiry you find a few, or many of the constitutional symptoms I have described, together with indications of uterine irritation, as shown by pain in the pelvis, in the loins, or in the thighs, before or during the catamenial flow; by too frequent or too profuse menstruation, or by leucorrhœal discharge; I say, when you find such an assemblage of symptoms and circumstances your suspicions will amount to a high degree of probability, that the complaint is not of an inflammatory nature.

"It must, nevertheless, be carefully remembered that all or most of the symptoms I have enumerated, as emanating more immediately from the uterus itself, may and often do result from organic changes, either in the uterus or in the parts adjacent. Whenever, therefore, we have the least suspicion of the existence of such causes, an examination of the patient ought on no account whatever to be neglected. The necessity of such precaution may be said to increase with the age of the patient; but when obstinate or repeated flooding prevails, whether slight or profuse, such an examination becomes quite imperative, especially when it occurs in females somewhat advanced in life."

He next describes the treatment, and adds some interesting cases in illustration—

“The indications are, 1st. *To correct the morbid condition of the uterus.* 2dly. *To remove or mitigate the violence of troublesome symptoms* in any individual case; and 3dly. *To restore tone and vigour to the general constitution.*”

Dr. Addison enumerates the remedies recommended by Dr. Gooch, which he has not found successful. These are depletion, cupping the loins, leeching the region of the pubis, purgatives, anodynes, warm baths, and confinement of the patient to the recumbent posture for months at a time. Our author prefers the following plan, which consists of making applications to the uterus itself. He recommends the liquor aluminis compositus of the London Pharmacopœia, to be injected *per vaginam*, two, three, or four times a day, by means of a proper syringe. The injection is to be introduced with a sufficient degree of force as shall secure its application to the upper part of the vagina and to the os uteri. The remedy is not to be employed immediately before or during menstruation. He advises it in dysmenorrhœa without leucorrhœal discharge. He says—

“But when there is a decidedly painful menstruation, or pain felt in the *womb, loins, or thighs*, before the appearance, although there be no leucorrhœal discharge whatever in the interval, I nevertheless apply the cold wash to such subjects, precisely in the same manner as if such leucorrhœal discharge were present, on the principle that this leucorrhœal discharge is itself a mere symptom or effect of the state of the uterus and neighbouring parts, which I am anxious to remove.

“I would only remark further, that, very recently, Mr. Jewell has recommended the nitrate of silver, either in substance or in solution, as an application in leucorrhœa; and I have no doubt from what we observe in its general use, that it will have a powerful effect in destroying morbid sensibility; but I have had no experience with it myself, whereas I have extensively employed the astringent wash before mentioned for the last ten years, and declare to you that I have never known any serious inconvenience to result from it in a single instance; if ever injurious, therefore, it is unknown to me.”

I cannot assent to the pathology and practice laid down in either of these extracts, and simply for this reason, that there are several species of leucorrhœa, arising from very slight or intense inflammation or ulceration of the mucous membrane of the vagina.

(Hamilton, Burns, Mansfield, Clarke, Dewees, &c.)—I should be very sorry to employ the liq. alum. c., much less nit. argenti, in certain kinds of leucorrhœa, and I am not a little surprized to see such recommendations. In the simple form of the disease, the astringent injection does more good in a few days, than tonics in several months. Here we must observe, that the common mode of injecting is inefficient; for the fluid regurgitates almost immediately after its application, unless a napkin be applied to the genital fissure. To obviate that occurrence, I usually recommend the introduction of pieces of soft calico or muslin, moistened with the wash, into the vagina, and these to be renewed twice a-day. Our author has also omitted two other remedies of great value in cases of uterine irritation, opiate clysters and opiate injections, *per vaginam*. In all severe cases of this complaint the patient should live *absque marito*, and great benefit is to be obtained from a seton, issue, or pustulation from antimony, in addition to the means already mentioned. The application of morphine, by the endermic method, over the lumbar vertebræ, might be productive of great benefit.

The next indication is to remove or allay troublesome symptoms. Dr. A. has known pain of the side unrelieved by cupping, leeching, blistering, &c., and he has observed the internal and external use of sedatives, with due attention to the digestive organs, afford signal benefit. He has not alluded to the condition of the spine in such cases. The application of anodyne fomentations is recommended in all the local pains of the sides and abdomen. In speaking of cases connected with menorrhagia, our author uses the latter term and flooding synonymously. This is an oversight for which I cannot account. He is surely aware that the menstrual fluid differs in its physical and chemical principles from venous or arterial blood. If it be a secretion, it cannot be blood; and this I believe is the received opinion. He never gives lead in such cases, as he has known it to produce colic, and as he cures the disorder without it. I have given it with opium in some hundreds of cases, and with invariable success, and I have never known it to induce colic, though pushed to a considerable extent. The last indication is to restore the strength and vigour of the general habit.

Simple ulceration is very rare, and will heal by the use of mild tepid injections. Ulcerations of various sizes have been found

on every part, on the interior of the womb, arising during menstruation, perhaps from repletion of the part, opening into the rectum or bladder. There is a phagedenic ulceration of the womb, that arises from a morbid poison. It commences at the orifice, extends along the neck and fundus, and destroys all those parts. This disease is called malignant ulcer of the womb, and is attended with severe burning pain, copious, fœtid, or purulent discharge, often alternating with hæmorrhage; small frequent pulse, great emaciation, and sometimes swelling of the glands. There is no tumour or enlargement found in the uterus, by examination, but we can easily ascertain the exact destruction of the parts. The disease generally proves fatal, and is different from cancer or fungus. On examination after death, the pelvis is usually found filled with intestines, glued and matted together, by inflammation, in the midst of which will be found an abscess containing healthy purulent matter. In general, no part of the womb remains, except a small portion of the body, or fundus, which resembles soft cartilage. The ulcerated surface has a dark livid appearance, while the substance in its immediate vicinity is dark and livid. I was present at a dissection made by Mr. Hughes, in which such morbid appearances existed, and I exhibited as much disorganization as was removable to the London Medical Society, in 1829.

It is extremely difficult to cure this ulcer. It has, however, been cured by mercury alone, or combined with hemlock, hyosciamus, and other narcotics. Injections of morphine, or sedative fomentations or plasters must be resorted to, and large doses of opium become indispensable. This disease is nearly as severe as cancer uteri. There are various other ulcerations of the womb, all of which are accompanied with irritation and copious purulent or leucorrhœal discharges. Excrescences are often attached to the orifice of the womb, and grow to a large size, having the base larger than the neck; they discharge a great quantity of serous fluid so as to resemble the liquor amnii. These tumours bleed profusely on the slightest touch, and are best removed by ligature so as to intercept the circulation; astringent injections have little effect in this disease. Dr. Clarke denominated a tumour of this kind "the cauliflower excrescence." The discharge of thin, transparent, or leucorrhœal secretion was so great, as to wet ten or twelve napkins a-day, and thus produce great debility. This fluid stiffens linen similar to starch. This tumour is more or less rapid

in its progress, and has been found to fill the pelvis in nine months. The ligature is the only means to be depended upon in this case, but is not effectual.

The womb may be attacked with venereal ulcer, which will extend over the whole surface of the organ, destroying the entire part. The disease is attended with a degree of heat and pain, with purulent discharge, or followed by bleeding after coition. The history of the case is the only certain mode of ascertaining the nature of the complaint. Mercury is the only thing to be depended on in this disease.

The interior of the womb is often attacked with ulceration, which may be superficial or deep seated, sometimes resembling aphthæ, or fissures; at other times, deep excavated ulcers. Such ulcerations are attended with mucous, purulent, or sero-purulent discharges, the colour of which varies in different cases, is white, ash-coloured, yellow, or green. This disease is accompanied with dull pain in the commencement, which soon becomes sharp and acute. These pains extend towards the hips, groins, thighs, or loins, and will be soon followed by discharge. The causes of ulceration of the womb are inflammation, abscess, fluor albus, acrid, corrosive, or strongly astringent injections applied in fluor albus, or inversion of the womb, or vagina. It is said that depraved or venereal semen may produce ulceration; it certainly communicates the venereal to the fœtus in utero; and in such case there will be premature labour, and a putrid child expelled, an event to be expected so long as the venereal poison remains in force, and only to be prevented by the usual means. But I think it doubtful, and indeed very improbable, that the male semen could cause ulceration, as stated by Astruc and others. Ulceration also arises in consequence of injuries done by the midwife or accoucheur, or by the introduction of extraneous substances; all of which causes induce inflammation and its consequences.

Some of these ulcers are quite superficial, others deep seated, excavated, sinuous, or fistulous, and may open into the rectum, vagina, or bladder. In all cases of ulceration of the womb, there is a purulent or muco-purulent discharge, which may be tinged with blood, in proportion to the exposure of the blood-vessels of such ulcer. When ulceration is slight, and advances slowly, although adjacent to the orifice of the womb, menstruation may remain natural; there will be considerable pain during nuptial con-

gress. Sometimes the purulent discharge is mild and inodorous, at other periods it will be found acrid, fetid, and irritative, so as to excoriate or inflame the vagina and vulva. If the ulcer is near the rectum, there will be inflammation or irritation of the part and costiveness; if contiguous to the bladder, micturition, strangury, or great pain in voiding water; and if either symptom be long continued, and the ulceration increasing, there will be emaciation, hectic, and colliquative diarrhœa. This disease can be distinguished from leucorrhœa, as there is no deep-seated pain in the latter disease; from cancer, by the history of the case, the absence of all cachexia in the constitution, the regularity of the menses, and the age of the patient, which diagnostics will also enable us to distinguish the complaint from chancrous ulcer. During the treatment the patient should be confined to the recumbent position; the least motion or pressure on the womb increases determination of blood thereto, and consequently pain and increase of discharge, therefore sexual commerce ought to be avoided. Mild, light, and nutritious diet, laxatives, cleanliness, and sedative astringents and injections, and warm baths, form the mode of cure in this disease.

The womb is often attacked with *steatomatous*, *polypous*, *carcinomatous*, *atheromatous*, *sarcomatous*, *fungous*, and *schirrhous tumours*, all of which produce the usual effects of uterine irritation. Steatomatous tumours are small in the beginning, gradually increase, and acquire an enormous size; happily they are of rare occurrence. They have one cavity, sometimes two or three, full of the same tallow-like substance. They are colourless, but may become hot, painful, red, in a word, inflamed; and such inflammation will terminate in abscess or scirrhus. These tumours are generally attached to the interior of the womb, and also may be found in its substance. This disease is likewise found in the vagina and labia. This form of tumour may grow to a considerable size, before the patient will suspect that she labours under any disease. When it is discovered, it is observed to augment in size daily, and produces more or less uneasiness, and may be mistaken for pregnancy. According as the tumour increases, a dull pain will be experienced, especially if it be so large as to cause a sense of bearing down. In such case, the patient finds most relief by lying on the back. When these tumours are small, menstruation remains uninterrupted, because there is only a small portion of

the womb affected by the disease ; but this secretion ceases when the tumour increases, because then the greater part, if not the whole, of the interior of the womb may be compressed. These tumours are usually attached by broad strong connections to the womb ; now and again the connexions may be narrower, and so that by concussion or violent motion, the tumours have been separated, and expelled with uterine pain, as perfect and severe as in natural parturition. When these tumours are large, and attached to the orifice of the womb or vagina, they prevent sexual intercourse, and are often mistaken for inversion of the womb or vagina.

The prognosis in this disease is mostly unfavorable, as it generally terminates in death. Should a woman become pregnant during this malady, there will be danger of miscarriage, or contusion, or separation of the tumours.

These tumours are common to all parts of the body, as the whole skin, all the cavities, to the nose, œsophagus, intestines, womb and vagina. On dissection this form of tumour is found to be composed of tendinous strings, or membranes ; the interstices of which are filled with a fatty matter, thicker and more fibrous than common fat, and among which are distributed blood-vessels, nerves, and fleshy structure. This disease is not always incurable, but being unattended by heat or pain, may exist for a long time, without producing much inconvenience. The chief annoyances it causes to females, when of long standing, are that of great weight in the hypogastric region, the trouble it causes in walking, and the mild or acrid discharge attendant on it. These tumours may inflame, suppurate, or ulcerate, and terminate in scirrhus or cancer ; but fortunately all these conditions are of rare occurrence.

The chief indications of cure in this disease are, 1st. to diminish the growth ; 2dly, to lessen the inconveniences. Like all other tumours of these organs, palliation is only to be expected, and thus melioration can be afforded in most cases. In the disease under consideration, the chief inconveniences are, sense of weight in the hypogastric region and trouble in walking, together with a continual disagreeable discharge. The first of these inconveniences will be in a great measure relieved by the application of a proper bandage, first having plugged the vagina, or applied a pessary. The discharge will be obviated by frequent ablutions and

injections. Dr. Mackintosh relates a case in which the abdomen was as large as at the fourth month of pregnancy, which was cured by the internal and external use of iodine, leeching, counter-irritation, &c.

When these tumours are attached to the orifice of the womb, vagina, or vulva, they can be often removed by ligature or excision.

Fungus hæmatodes, or cerebriform cancer, occasionally attacks the organs of generation in both sexes, and is often coexistent with cancer. The tumour is said to vary in consistence, may be very hard or soft, is elastic, and bears a strong resemblance to brain, contains cysts of different sizes, filled with red serum, blood, or bloody fungus. There is no certain sign by which this tumour can be distinguished from the others already described; it increases rapidly, and can be felt through the abdomen. There may be two or more tumours, of unequal sizes, which may or may not be connected with each other. After some time, a fungus will be found protruding into the vagina, which will bleed on the slightest touch. There is generally little or no pain until the tumour is about to ulcerate; and there is little inconvenience experienced, except when the tumour presses on the bladder, and causes pain in passing water, or complete suppression of urine; and may also impede the evacuation from the bowels. This disease may or may not be attended with discharge, similar to fluor albus. The complexion is sallow, though the general health is good, till ulceration takes place. When the tumour ulcerates, we will find the bladder or rectum involved in the disease; the uterus has been filled with this morbid growth; it has penetrated its parietes, and got into the abdomen, where the bowels become inflamed and glued together; the tumour has adhered to the parietes of the abdomen, ulceration set in, and a fungus shot out from the abdomen. There is great pain and constitutional irritation, with loss of appetite; strength, emaciation, and hectic soon appears, and destroys the sufferer. The whole treatment consists in palliating such symptoms as appear most urgent.

Polypous tumours may occur in the uterus at any period of life, and produce all the uneasy sensations in the back, joints, and hypogastric region, so usually attendant on all uterine irritation. The tumour may project into the vagina; prevent impregnation, or even intercourse; impede the functions of the bladder and rectum;

and impede delivery, when it has increased after conception. When the polypus passes into the vagina, its base becomes augmented in size, and its neck may be so pressed on by the orifice of the womb, as to interrupt the circulation in it; so that this pressure acts as a ligature, and the tumour will often fall off, or previous to its separation, the veins in its substance will be divided, if there be too much pressure, and copious hæmorrhage may take place. Polypous tumours may be attached to any part of the inner surface of the womb, and seem to arise from a diseased state of the lining membrane of the organ, as the structure of the parieties of the womb is scarcely ever affected by the disease. In most cases, this tumour is of a pyriform shape, with its base dependent, and its smaller end attached to the womb. Its structure is generally semi-cartilaginous; but may be lymphatic, soft, gelatinous; covered with the lining membrane of the womb, and through its veins of a considerable size and number can be detected. If of long standing, the tumour ulcerates; and the ulcer will be superficial, or watery, or deeply excavated with thick rough edges, and often fungous; the latter form is most common. This disease causes great uterine and constitutional derangement, which symptoms are aggravated in the latter stages of ulceration; when copious discharge, hæmorrhage, and pain, induce great debility, hectic, and death. Treatment.—The older obstetricians recommend extraction, by forcibly pulling the tumour away, caustics, and excision; methods which exposed the patient to fatal hæmorrhage, and hence now abandoned.

The plan now generally employed, is the application of a tight ligature to the pedicle, or neck of the tumour, in order to impede the circulation; and of course kill the part, by sloughing. The best ligature is silk, cat-gut, or hempstring covered with wax, or a varnish of elastic gum. This is preferable to silver wire, which is so apt to get into spiral turns, and impede the operation; and often, prematurely, cut the tumour. While the polypus remains in the womb, the ligature cannot be well applied; but as soon as it descends into the vagina, the operation should be performed. The ligature should be passed through each tube, at the same end of a double canula, and be brought through; so that a loop may be formed, which is to be carried over the tumour, either with the fingers or a probe, with a forked end; and then the ligature to be drawn tightly and knotted, so as to make tight pressure on the

neck of the tumour. If the polypus be large and in the vagina, there will be much difficulty in applying the ligature; in truth, there will be often a complete failure, even by the best operators, to the great irritation of the parts, vexation, and disappointment of the patient. The operation is facilitated by using a double canula, with the tubes made separate, but to unite at pleasure, by means of a sheath. The ligature is passed through each tube, and there is no loop left at the middle. One tube is to be carried under the pubes, to the neck of the tumour, so as to meet its fellow; both tubes are then to be united by the sheath, and tightened. The finger and forked probe, or a piece of ratan, forked at the end, must be employed, to assist the adjustment of the ligature round the tumour. Great care is to be taken, while tightening the ligature, lest any of the womb be included; for if that were enclosed, the patient would complain of acute pain, vomiting, convulsions, and might be destroyed; the womb, however, has been included, with fatal results.

If the ligature be properly and carefully applied, there is generally no fever, or irritation produced; it is to be daily drawn tighter, and will soon make its way through; and when applied, if productive of pain, it should be loosened. When the tumour is tied, it will become more turgid and harder; and, if visible, it soon acquires a livid colour, and exhales a putrid odour; signs that are to be deemed most favourable. The diet should be light and nutritious, and all general or local irritation avoided, during cure. Should the bowels or bladder become affected from their contiguity to the part diseased, they are to be carefully attended to; and, if vomiting, or other derangements of the stomach supervene, effervescing draughts, with opium, soda water, and the usual treatment, is to be employed. Dr. Denman has given a most valuable and interesting account of the application of ligature in his work.

Levret described a kind of *fungoid tumour*, which was attached to the womb; was soft, resembled cords of clotted blood; these he called *vivaces*, and on dissection they were found spongy, with cavities of various sizes. They have been mistaken for pieces of retained placenta, and pieces of fetid fungi have been torn away in attempts to extract the supposed placenta or ovum. The tumour, when felt in the vagina, is not very painful at the hypogastric region; and at other times, there is little pain felt in the tumour, unless the womb be pressed. The tumour bleeds, on be-

ing touched, and discharges a sanious matter; it grows into the vagina; and thus differs from the polypus, which getting into the vagina, leaves the swelling of the womb much diminished, often scarcely to be discovered.

Palliatives only can be useful, with opium and cleanliness; as the disease, though removed by extirpation, with immediately sprout forth again.

There is a fleshy unorganized substance found in the womb, even of women who have not had children, after natural delivery, miscarriage, or a diseased state of the womb, which is called a mole.

Moles are polypi, blighted fœtuses, or organized coagula. This substance is accompanied by all the symptoms of pregnancy, as nausea, fastidious appetite, enlargement of the breasts and abdomen; but these enlargements come on more suddenly than in real pregnancy, and appear more prominent at the second month, than in latter cases at the fifth month of gestation. In general the mole will be expelled about the third month, before the period of quickening, and attended with considerable hæmorrhage, in such a degree, that the cases to be managed as a real abortion. The expulsion can be promoted, or rather assisted, by the finger; but great care must be taken not to lacerate the mole, so as to leave any part of it behind. Should it remain after the time of quickening, the abdomen does not increase in magnitude as in pregnancy; nor will there be any motion or quickening perceived. The older writers called moles false gatherings, or conceptions, and have left us most incredulous narrations concerning them. We often meet with the disease in practice. There is no cure for a mole, except to endeavor to cause its expulsion; but this must be left to nature alone, for its retention is not followed by bad consequences. The general health of the female should be attended to. Mauriceau, and others, recommend the hand to be introduced into the vagina, and two fingers to be passed through the orifice of the womb, if possible, in order to reach the mole; it is then to be seized and extracted. If the fingers could not accomplish it, we were desired to pass up an instrument, called a crane's bill, a kind of forceps, to seize on it, and extract it. Now few men can pass the hand into the vagina in the virgin state, or even where the woman has borne a family, in the early months of gestation; and hence, when miscarriage occurs about the fourth or fifth month, the great

difficulty in restraining hæmorrhage, as the os uteri will be found closed, or nearly so; but so much, that two fingers cannot be passed into the womb. I have seen cases, where tedious hæmorrhage continued for six weeks, from this cause, where the fœtus was under three months; but where even one finger could not be passed through the os uteri, which was nearly closed. The ergot of rye is highly useful.

Experience and observation enabled me to speak confidently on the impracticability and impossibility of passing the hand, or two fingers, into the womb, so early as the third or fifth month of gestation; and of course the same objection is good against doing so within the same period in cases of moles, or other tumours, situate in the womb. Dr. Dewees seems to sanction the operation in early miscarriages; but during an extensive practice, as obstetrician, I never met any case in which I could accomplish it, in which the woman could suffer me to proceed. If this were practicable, no man would remain watching a patient, attacked with flooding, after abortion, for weeks; and yet we find the most able practitioners in this and other countries often obliged to do so.

Another kind of tumour which frequently attacks the womb, is the *hydatid*. It is generally observed, in consequence of destruction of the fœtus, in the early months, retention of some part of the placenta after delivery, or abortion. There are no diagnostic symptoms, and consequently the disease often mistaken for pregnancy, or various other morbid affections, already described. The size of the womb does not correspond with the supposed period of pregnancy, and there is no motion, or quickening perceived. In some cases, the health does not suffer. I have known a case of hydatids continue for fourteen years, and during the greater part of the time, there was no derangement of health. This case was mistaken for pregnancy, by several medical men, during the period; indeed, one of them sat up four nights, expecting delivery, the uterine pains were so severe; and yet there was no pregnancy, and of course no delivery took place. This woman, in eight years afterwards, was attacked with uterine pains, fully as severe as those of labour, and expelled a number of hydatids, with a large quantity of water; she discharged some pints, mixed with purulent matter. When the orifice of the organ is enlarged, and the tumour extensive, the hand may be introduced into the womb, to expedite the process of expulsion, and to excite the contractions of

the womb ; but this should only be resorted to in case of hæmorrhage, or when some violent symptoms become urgent.

There is generally pain, fever, and constitutional disturbance during, or after the expulsion of the hydatids ; in the case that I have just described, the most violent symptoms of peritonitis set in, and nearly destroyed the patient. In such disease, the usual remedies are to be employed. The expulsion of hydatids has been mistaken for abortion, even by the justly celebrated Dr. Cullen. Dr. Hamilton stated, in his Lectures, that one of his father's patients being ill, Dr. C. was called in his absence, and declared the lady had miscarried. This opinion was the innocent cause of destroying domestic happiness in that family ever afterwards, as she and her husband had lived separately for two years. On Dr. Alexander Hamilton's return, he declared the bodies expelled were hydatids, and that there was no abortion ; but the parties were never after happy. Dr. Hamilton also mentioned, that a Dumfries practitioner wrote to him concerning a wonderful case, where a female who had aborted, expelled seventeen ova ; of course these were hydatids. Hydatids vary from the size of a pea to that of an ox's bladder ; they are small oval bodies, composed of a membrane, which surrounds a quantity of fluid, and have a strong resemblance to the ovum in the early months of gestation. Sometimes there is but one hydatid ; at other times there will be several, and various sizes ; they may be attached to each other, like bunches of grapes, or included one within the other. There is a living animal, floating in the centre of each hydatid. Though the abdomen may be swelled as large as in the last months of pregnancy, yet there will be no motion felt ; the breasts will be flaccid, and no child can be discovered. There may be some slight pain ; but there will be indistinct fluctuation in most cases. We can distinguish this complaint from ovarian dropsy ; the swelling being in the womb, in the one, and in a side in the other.

The duration of the complaint varies very considerably. I have observed the disease continue for fourteen years ; I have seen it so early as the tenth year. There is often a copious discharge of water from the vagina when an hydatid bursts, and the tumour of the abdomen will become suddenly diminished. Dr. John Clarke knew a lady to whom this happened, while sitting in an eating house, and she literally deluged the floor. The disease usually terminates in this way, after any sudden or violent exertion. It has

been attempted to remove the fluid through the orifice of the womb, but that is a very doubtful operation; because, if there be more than one hydatid, the sac of one may be evacuated, but that of every one else left untouched. Sometimes the bag or sac comes away, and without much pain. Hildanus mentions the case of a woman, who supposed herself pregnant; but, *dum noctu marito rem haberet*, a sudden inundation swept away all her hopes. I have seen a female, aged thirty, who, during menstruation, expelled a number of small white worms, resembling white silk, cut short, and these were from hydatids; the expulsion of them was always accompanied by a discharge of water, and not from the bladder. There is a similar case, recorded by a Mr. Wellson, in one of the early numbers of the *Edinburgh Medical Commentaries*, vol. iii. p. 36. This disease is often combined with pregnancy, or with a mole, and rarely appears alone. Dr. Monro secundus proposed the injection of some bitter infusion into the uterus, as recommended by Cockson; which now can be accomplished by means of the patent syringe. When expulsion is likely to be effected and uterine contraction or pain present, some think the ergot of rye might be used with great advantage, by increasing uterine contraction; and more probably expelling the whole of the hydatids from the womb. I have been told of a case where the obstetrician introduced his hand, and brought away a basin-full of these substances. Very early in my practice, I was requested to tap a girl, ten years old, who had ascites, evident fluctuation, tense abdomen, on the parietes of which numerous veins were evident. To my great astonishment, no more than six ounces of fluid escaped, though the canula was clear, and the fluctuation most evident; this was decidedly a case of ovarian or sacculated dropsy, or perhaps hydatids. When we bear in mind that hydatids are vesicles, formed of a thin membranous coat, filled with serum; sometimes cemented together in the form of a great bunch, and hanging by one or more pedicles; sometimes distributed into separate divisions, fixed by different pedicles, which may be filled with limpid, turbid, or purulent fluid, we can readily conceive how the perforation of one of these, which may vary from the size of a millet seed to that of an inflated ox's bladder, may be followed by a considerable discharge, and yet that the abdominal tumour will not be much diminished, and fluctuation will remain very evident. This disease was described by *Ætius*.

There is another disease of the womb, where a *quantity of watery fluid*, perhaps a pint, may be discharged daily, without any hydatids or other tumours being present. Hoffman and Burns describe this case. The latter recommends improving the general health, and the use of mild astringent injections. Dr. Hamilton denies that there can be any accumulation of water in the uterus, that is dropsy of the womb, *hydrometra*, on account of the openings of the Fallopian tubes and the os uteri; while Astruc and others minutely describe the disease. It is strange that the most eminent obstetric writers have not met with it. Dr. Denman thought he saw one case, in which a sac was expelled, but was an hydatid.

Gas or air may be secreted in the womb, and escape involuntarily. Astringent injections often do good; and as the disease rarely causes sterility, it may be permanently cured by pregnancy. Astruc and Mackintosh describe tympanites of the womb *physometra*, *ructus vaginalis*, and say that the air gets into it after delivery, in the cases where its parieties do not close; that the womb becomes distended, the orifice closed, and sterility produced. Drs. Denman and Hamilton described a case somewhat similar, where air was expelled from the vagina. The true tympanites, says Astruc, agrees as to magnitude with all the other tumefactions of the womb, with steatoma, sarcoma, dropsy, moles, scirrhus, and pregnancy, but can be easily distinguished from them. Although generally engaged in obstetric practice, I never saw a perfect instance of tympanites of the womb. The best plan of treatment consists of invigorating the system, using astringent injections, and ordering the patient to wear a canula in the vagina.

Scirrhus and cancer of the womb were first accurately described by Boerhaave. They may occur at every period of life, after puberty, but generally happen to unmarried or barren women, to those whose conjugal rights have been interrupted, and especially about the cessation of the menses. These diseases are preceded by irregular menstruation; and are ushered in with symptoms of pain, uneasiness, or irritation in the back, loins, and uterine region, and mostly preceded by discharge of the leucorrhœal or purulent kind. There is pain or heat in passing water, and often itching of the vagina, or pudendum, and also tenesmus. The stomach becomes affected, from its sympathy with the womb; and hence we observe nausea, loss of appetite, and indigestion; con-

sequently the general health suffers, the strength declines, the patient will be emaciated, the countenance changed, and the pulse rapid. There is stinging, lancinating pain in the womb often experienced; and aggravated by sexual intercourse, especially when the disease is situated in the neck or orifice of the organ, which is its usual site. When there is disproportion between the sexes, the pain will be worse during coition than even during labour, by the passage of a large infant. Scirrhus uteri is a slow, tedious, insidious disease, and often harasses the patient for months or years, before it ends in ulceration. Dr. Hamilton has seen sixty cases of this description, many of which were palliated by diet and medicine; and he asserts, that it does not prevent impregnation; and also, that the discharge is often so fetid, that the smell of it cannot be washed from the finger for a long time. As soon as the discharge becomes purulent, bloody, and copious, there is evidence of ulceration. The pain is now most severe, burning, lancinating and constant; there are, too often copious hæmorrhage, and profuse purulent discharge; hectic and emaciation daily increasing, and death soon closes the scene. In the commencement of this disease, the orifice of the womb will be found open, irregular and fringed, tender, thickened, or indurated; and therefore the patient will experience pain during coition. Dr. Beatty relates a case in which the restoration of conjugal rights was followed by pregnancy and the re-establishment of perfect health, which yet continues. He says, the disease usually occurs to those who are deprived of nuptial rights. (Dublin Hospital Reports, 1830.)—The orifice will be often found fringed, and studded with a number of indurated bodies, like piles or fungi, or deep excavations; there will be a discharge of blood, after examination, by the vagina.

The neck of the womb is most liable to this disease; the body rarely. The neck or body of the womb will become indurated and enlarged, will in time become attached to the pelvis or bladder, or rectum, and the tumour will impede the natural evacuation of these organs. These parts, the ovaria, Fallopian tubes, and linings of the pelvis, and even bowels, will be implicated in the disease, and may be destroyed by it. When the disease is advanced the vagina becomes contracted in different parts, from the enlargement of glands in its course. This disease has been confounded with many others, as the various kinds of tumours, fluor albus,

menorrhagia and dyspepsia, but its very peculiar symptoms are sufficiently diagnostic by ordinary attention.

On examination after death, the parts are found to consist of cancerous structure; the substance is of a whitish or darkish colour, intersected with firm membranous divisions, containing numbers of small cysts, and composed of a substance, when wiped, of a light olive colour, highly vascular; these cysts are found to contain abscesses or fungi. We should be very guarded as to our prognosis of the disease, as in some cases death will happen at an early period, in others not for many years. Dr. Hamilton saw one case, where a lady died in a fortnight after the commencement of the disease. The prognosis is hopeless, and always unfavourable. The nature of the disease is best ascertained by the speculum uteri, invented by Recamier. When the parts take on an inflammatory action previous to ulceration, which is indicated by throbbing, heat, pain, &c. in the lumbar or uterine regions, cupping, leeching, and warm bathing, with mild laxatives, should be employed. The patient should be kept in the horizontal posture, and avoid sexual intercourse. The patient should wear warm clothing, avoid all motion when pain is present, regulate the bowels, leech and apply counter-irritation. When the pain is urgent, ten drops of the sedative solution of opium, with two ounces of starch, should be injected into the rectum.

Harrowgate water, saline purgatives, and the antiphlogistic regimen should be employed; for the longer inflammation and ulceration are kept off the better. Powerful sedatives must be given to allay pain, and produce rest, as morphine, black drop, sedative liquor of opium, hyosciamus, hemlock, and four or five grains of opium pushed into the rectum, will often give considerable relief; astringent and chalybeate injections are strongly recommended, as a solution of sulphate of iron, which was found extremely useful by Mr. Carmichael and others. Decoctions and sedative substances have also been used with advantage. Iodine has been found useful in scirrhus of the womb, by Drs. Thetford and Montgomery, of Dublin, by Dr. A. T. Thompson, and others.

The state of the bowels and general health should be particularly attended to. The various preparations of mercury, antimony, arsenic, iron, hemlock, &c. have been tried in this species of cancer, and with ordinary want of success. Excessive vomiting is sometimes allayed by solid opium, or by applying a small blister

to the epigastrium, and afterwards dressing the part with extract of opium, or morphine and adeps. When all remedies fail, as they invariably do, it has been proposed to remove the womb by excision; an operation, however formidable, which has been performed with success several times on the Continent, and lately in this country, by Mr. Weatherill, of Liverpool; by Dr. Blundell; and by Recamier and Roux of Paris. In all ages death took place from six to twelve months after the extirpation, the pelvic viscera and linings were found diseased. Dr. Blundell has since written against this operation. The womb is pulled down by ligatures or forceps, as recommended by Baron Dupuytren, of Paris, and when brought through, the genital fissure is removed with a bistoury either entire, or in part, according to the extent of the disease. Caustic was applied with success by Recamier, Delpech, and Delmos. (Duges.)

Extirpation has been performed in Germany six or eight times within the last thirty years. First, in 1808, by Oslander; but it was performed in 1540, by Zacutus Lusitanus. (See the works of Professor Siebold, and Dr. Holscher, on Extirpation of the Uterus, 1824. Also *Edinburgh Medical Journal*, April 1825.) Dr. Weatherill, of Liverpool, extirpated the neck and part of the body of the womb, 1828; and the patient has done well. (See *Lancet* of June 7th, 1828; and also see same work for August, for the account of Dr. Blundell's case. *London Medical and Surgical Journal*, 1829 and 1830, for the French cases.)

There is an interesting paper in the *Edinburgh Medical Journal*, by Professor Oslander, of Gottingen, which contains a valuable account of Cancer of the Uterus. (1816, vol. xii. p. 286.) The professor operated for this species of cancer in 1801; and the patient recovered, after a most inhuman operation, at the end of the fourth week. He operated on nine patients in 1808, and always with similar success. Even one of these patients, after enjoying good health for three years, came to him to be operated on a second time, for the cancer broke out again; and he performed it with the same success as before. He asserts, that cancer and scirrhus of the womb begin almost always on the external orifice of the uterus, and proceed from thence to its body; and often before the disease destroys half of the womb, death puts an end to the agonies of the sufferer. An ulcer is sometimes formed in the bottom of the womb, which degenerates into a cancer, that ad-

mits of no cure. But in the first case a perfect cure may be obtained, by cutting out in time the scirrhus and cancerous portions; when the cancer spreads from the orifice of the womb down into the vagina, which it very often does, no cure is to be expected from excision. The continuation of this paper is well worth the consideration of the reader.

Since the publication of Osiander's essay, Manzoni, Recamier, Dubois, Lisfranc, Roux, and Dupuytren, approve of removing the diseased portion of the uterus. Signor Guiseppe has extirpated scirrhus tumour from the uterus. (*London Medical Journal*, 1820, vol. xliii. p. 460.) M. Dupuytren grasped the os uteri with a forceps, and brought it to the orifice of the vagina, removed it with a curved scissors. The disease returned, and caustic was obliged to be applied. Dr. Canella has given this account; and also a description of an instrument for the excision of the neck of the womb, in cancerous cases. (*Cenni sull' Estirpatione della Bocca e del Collo dell' Utero.*)—Dr. Charles Johnson removed a portion of an inverted uterus, by a ligature, with success; and relates two cases, in which he operated with happy results. (*Dublin Hospital Reports*, vol. iii.)—Recamier and Marjolin performed a similar operation. M. Avisard removed the neck of the uterus by excision. (*Journal Univ. des Sciences Medicales*, 1820.) Dr. Sauter removed the uterus by extirpation, about five years ago, with success. There is a concise but complete history of the excision of the uterus, given by the learned editor of the *Edinburgh Medical and Surgical Journal*, July 1824, vol. xxii; and in the twenty-fourth volume of the same work, there is an account of a large fungus, found in the uterus, by Mr. Lightfoot.

The last cases of extirpation of the uterus are there detailed by Dr. Siebold, professor of Midwifery, in Berlin. The first extirpation of the uterus was performed by Osiander, in 1808, on a woman from whom he had seven years before removed a cancerous tumour of the uterus. In 1813, a tumour was removed from the cervix uteri, by Professor Rust, of Vienna; but unsuccessfully. In 1817, Langenbeck extirpated a prolapsed uterus with success. In 1822, Sauter removed an unprolapsed uterus; and since that it has been attempted in Berlin, Hanover, Vienna, Liverpool, London and Paris. Extirpation of the uterus was performed successfully in 1560, by Andreas a Cruce, physician and professor at Vienna; it was also performed on the prolapsed uterus, 1540, by

Carpus; and in the beginning of the seventeenth century, the same operation was performed by Zacutus Lucitanus. (Sue's *Historie des accouchmens*, 1786.) Dr. Siebold's case was one of prolapsed uterus, the body and fundus of the organ were scirrhus.

The operation was painful, the woman died in sixty-five hours afterwards. It was considered as cruel, bloody, and ill-judged an operation, as any recorded in the annals of surgery. (*Medico-Chirurg. Rev.* 1825, vol. iii. p. 266.)

Dr. Holschar's case was one in which the uterus was encircled with projecting fungi. The carcinoma was separated with a scalpel; he could not pull it away. He next tried to pull down the uterus, by means of a hook, in vain. He extirpated the cancerous mass. The uterus was now more easily got at; a sharp pointed knife was introduced as far back as the fundus. An opening being made, the circular knife was introduced, and the uterus separated from all its lateral connexions; after which it was easily removed. The intestines did not protrude. The operation lasted thirty-five minutes. The woman died in twenty-four hours; the opening in the peritoneum had closed, to the size of a hen's egg, and nothing wrong was seen in any part of the pelvis. For an admirable account of cancer in every organ, the reader should consult the *Dict. de Med. and Chir. Pratiques*, Article Cancer, by M. Begin, 1830, tom. iv., in which extirpation of the uterus is utterly condemned.

Calculus, or *earthly concretion* in the womb, is a very rare disease, and can only be discovered by examination with the finger or probe. The stone produces irritation, inflammation, and ulceration, and may escape through the rectum and vagina, or bladder. The treatment consists in palliating the urgent symptoms. Induration and enlargement of the womb is often mistaken for cancer; but the various symptoms of the latter disease are absent. I have seen a most extraordinary specimen of diseased uterus; the organ weighed ten pounds, and contained various disorganizations, as cancer, scirrhus, calcareous depositions, muscular thickening, fungus, and bone.

Dr. Mackintosh relates a case in which the uterus weighed above fifty pounds, the whole anterior surface of which was attached to the parietes of the abdomen; it was tapped three times at the recommendation of some eminent practitioners but no fluid escaped. The tumour pushed the diaphragm so high that it en-

croached upon the thorax, and lay over the heart and lungs so as to conceal the respiratory sound over the whole anterior part of the chest. The diaphragm was in contact with the first rib on the right side; the lungs were reduced to a third of their natural size; and the heart was flattened by the pressure it sustained. (Practice of Physic, 1831, vol. ii.) The neck of the uterus has been elongated nine inches. (Leroux, Segard, Lallemand, Bichat.)

Worms have escaped from the womb, after having produced much local and constitutional irritation. They are destroyed by the injection of some of the bitter infusions.

Besides the numerous diseases now described, the womb is liable to *partial or complete inversion*, technically denominated *prolapsus uteri*, or prolapsion. This is one of the most troublesome and common diseases of women. It is divided into three species: 1. When slight, it is called relaxation; 2. When greater, styled prolapsus, vaginal prolapsus; 3. When protruded beyond the genital fissure it is called procidentia. Weakness, pain, and uneasiness in the small of the back; sense of weight, and bearing down in the uterine region or vagina, as if something were protruding, which often is so troublesome as to oblige the patient to sit down and cross her limbs, in order to prevent it. There is generally a leucorrhœal, or purulent discharge, excessive or painful menstruation, and great disorder of the stomach and digestive organs, together with strong hysterical symptoms, or the person is extremely dejected and nervous. The disease is very often confounded with what is called a nervous or bilious complaint; and too often not discovered, until great debility and emaciation are obvious. This disease sometimes happens to young females, from using much exercise, as walking, dancing, or experiencing falls, during menstruation; but it is generally produced by sitting up too soon after delivery. The young practitioner should always keep this in view, and he can readily understand how the disease will be produced, by recollecting that the womb is considerably enlarged after delivery, for eight, ten, or twenty days; and hence its weight, if the patient assume the erect posture, which is frequently done by the lower classes, will very readily cause its descent into the vagina. The woman will complain of painful sense of weight and bearing down, as before the birth of the child; these sensations will be more or less removed, by her assuming the recumbent posture. Sometimes,

however, they will not disappear in any position; and are most severe in married women, who feel pain in connubial congress. Hæmorrhage may follow from the first to the sixth week after delivery, as I have repeatedly witnessed, and recently in cases with Mr. Terry, of Southampton Buildings, Chancery Lane, and with Mr. Matthews, of Hunter Street. All the ordinary symptoms may proceed from the thickening of the neck of the bladder. The patient may also feel pain, heat and uneasiness in passing water, or discharging the rectum; and there is often very severe dragging pain in the back and loins. The disease may be caused by sudden exertion before or after pregnancy, or during parturition, carrying heavy burdens, and by all sudden or violent exertion of the body. On examination the womb will be found lower down than usual, and vagina relaxed; it may be in every position, until its orifice protrude through the external parts. In some cases of *proidentia*, the whole womb and vagina protrude, forming a large tumour between the thighs, from the surface of which the menses have been observed to proceed freely. The surface of the womb is either ulcerated or assumes the appearance of skin. In such cases coition is impracticable; but instances are recorded in which the uterus was beyond the external orifice for two, and eighteen years, and in the latter the woman had six children. (Ashwell, London Medical and Surgical Journal, 1830, vol. iv.)—The intestines descend in this latter case low down into the cavity of the pelvis, into the space naturally occupied by the womb; and hence increase the protrusion, and often cause inflammation. The womb may be *retroverted*, its base or fundus towards the rectum, and its orifice towards the anterior part of the tumour. The bladder may be carried down with the protruding parts, as it usually is, unless enlarged by scirrhus, or calculus; and hence the natural course of the urethra is changed, so that if we must use the catheter, it is to be introduced downwards and backwards. If the protusion be great, and extend to the vulva, there will be pain in voiding urine and fæces: and often pain, inflammation, ulceration, and sloughing, in the surface of the tumour. In some cases, however, its surface ceases to secrete, and becomes covered with common integuments. This disease is sometimes complicated with various tumours, which appear in the female organs of generation, or may be complicated with stone. The cause of this painful and distressing disease is relaxation of the ligaments of the womb of the vagi-

na, and their other attachments before or after parturition. Frequent labours, fluor albus, excessive venery, falls, or severe exercise during menstruation, will often produce the disease. It is a curious and certain fact, that the uterus cannot be easily inverted in the dead body after the division, or excision of the broad ligaments; hence, Dr. Dewees contends that the vagina is the chief support of this organ; and, therefore, frequent deliveries, large children, habitual coughs, severe vomitings, and instrumental labours, all tend to destroy the tone of the vagina, and cause it to prolapse. I have known it to be produced by a healthy young woman falling in the street.

The chief indication of cure is to restore the uterus to its proper situation; and to retain, or support it, when replaced. When the complaint is suspected, we should examine how far the uterus has descended, and this after the patient has been standing for some time, and then assuming the recumbent position, or being still erect. Examination is always requisite, in order to ascertain the real nature of the disease. If there be partial descent, we should endeavor to remove the relaxation, by frequent injections of solutions of sulphate of alum, either in water or oak bark; repeated ablutions of cold water, cold bath, gentle aperients; all exertion to be avoided, and the recumbent posture observed. If these remedies fail, we must have recourse to mechanical means, which consist of supporting substances, called pessaries, which are passed into the vagina, rest on the perineum, and keep up the uterus. In recent cases, they generally give relief. Pessaries are made of wood, box, ebony, cork, sponge, or of silver, strongly gilt, with a hole in the centre, to permit the escape of the menses; are of different shapes; some oval, some flat, and circular; some like spindles, or the figure of eight, and others globular; the latter is considered the best. Whatever form is used, it is to be so large, as not to fall out of the vagina, when the woman walks or moves, or evacuates the bladder or bowels, and ought to be frequently removed, in order to be cleaned; its size is to be gradually diminished, and astringents are to be used; so that, after some time, it may be altogether discontinued. A broad bandage should be applied round the abdomen, to relieve the pain in the back and pubis. The instrument should have a piece of strong tape attached to it, to enable us to withdraw it; a proceeding that may be resorted to every night, or at all events twice or thrice a week, for the pur-

pose of cleaning the instrument and preventing irritation. When the instrument is not withdrawn, as here recommended, it may produce irritation, increased mucous discharge, hysteritis, peritonitis, and death. The tape rots in a few days, and then much difficulty will be experienced in removing the instrument. I once saw a case of an old woman at one of the public institutions to which I am attached, in which there was a copious fetid purulent discharge from the vagina. On enquiry, I learned that a pessary had been worn for three years, and never withdrawn during the period; it was of the circular kind, and removed with much difficulty. By proper treatment the purulent discharge was cured. In some months afterwards, I was requested to visit the same person, when I found her dying of enteritis. I enquired if she had had occasion to employ an instrument, and she replied in the affirmative; and stated that to it she owed her present illness, as one had been passed which produced great pain, and all her present suffering. On examination, I found I could not remove the instrument. She sunk in a few hours; and next day it required great force to remove it. It was a gum elastic one, which rested against the perineum and uterus. It was much too large. There were hysteritis, enteritis, and peritonitis. There should be no pain produced after the instrument is placed in the vagina; on the contrary, the patient should experience complete relief from her former sufferings. I have repeatedly had the gratification to hear women who had been several years labouring under the symptoms of prolapsion, declare themselves free from suffering in five minutes after the application of the pessary. I have known the disease mistaken for years, as no vaginal examination had been instituted, and the various tonics and antispasmodics tried in vain to relieve dyspepsia and hysteria. The complaint is of very frequent occurrence, and is generally overlooked. I have known a pessary not more than an inch in diameter afford great relief; and here it is to be recollected, that the size must vary with the dilatation or dilatability of the vagina. In old women, who have had several children, the instrument must vary from the size of an orange to that of the foetal head at the sixth or seventh month. This is only a temporary remedy; it affords great relief, but not a cure. In married persons, the disease is often cured by pregnancy, and after delivery the woman should be confined to her bed for ten days after convalescence.

In some instances, pessaries have been retained for fourteen years; they must be varied according to the circumstances of every case, and must often be tried in succession. The circular form does not prevent connubial intercourse, or even impregnation. If the central openings of the pessaries be too large, the uterus may pass down through them, and be strangulated; hence a tape is generally passed through the opening, and round the circumference of the instrument, in order to pull it away when necessary; if this fail, and the strangulation be urgent, the rim of the instrument must be divided, with a sharp strong forceps, or with one of Mr. Liston's bone forceps. When the instrument is globular, Dr. Merriman proposes a kind of screw for its extraction, which is to be introduced like a common gimblet. (See Medical Gazette, 1831, vol. vi.)—When a woman has procidentia, in a slight degree, it is a great service that she should live with her husband, as pregnancy generally cures the complaint, I have observed this in numerous cases. The treatment of prolapsus will vary, if it occurs soon after delivery, by the woman sitting up too soon to suckle her infant; but when the uterus, or its appendages, are tender, no one would think of applying a pessary. In such cases, fomentations, laxatives, &c. &c. must be used to relieve the sensibility of the part, in the first instance. The long diameter of the oval pessary should vary from two inches and a half to three inches and a half in diameter, according to the degree of relaxation; it sometimes falls out, when the perineum may be supported with a soft pad and T bandage, with a spring, on a similar principle with that used for prolapsus ani; a contrivance of this kind, and a globe pessary, must be used when the perineum is much lacerated. Where the procidentia is extensive, and of long continuance, the bowels fall into the pelvis, and are often connected to its cavity by adhesions. In such cases, great care must be taken in the reduction; for if much pain be produced, it ought not to be persisted in, lest inflammation be produced, by rupturing the adventitious adhesions. We should attend to the bladder, in such cases, preventing an accumulation of urine; fomentations and the horizontal position, and opiates should be employed, if much irritation be experienced; but attention to posture is of primary importance in managing this kind of disease. If the tumour is long protruded, its surface may be irritated and inflamed, or ulcerated; all which states may be removed by fomentations, saturnine applications, laxatives, and

blood-letting, before it can be reduced. In some cases, it cannot be reduced; and then it has been proposed to remove the part by ligature, which has been done with success. The bladder has been included in the ligature (Ruysch, Obs. Anat. 7,) and the intestines have also been divided, (Henry ab Heers. Obs. Med. p. 192, Burns, 99,) having been down in the inverted vagina. If violent exertion is used, or the woman receives a fall, the uterus may prolapse during pregnancy, although the woman has not formerly had this disease. In such cases, we should first attend to the bladder, lest a fatal suppression of urine should take place; our next object is to replace the uterus, and retain it, by rest and a pessary. If it cannot be reduced, as sometimes happens, until after delivery (Haller, Disp. Chir. tom. iii. p. 434. Lond. Med. and Surg. Journ. 1830); it is to be supported by a bandage (Sabatier, in Mem. de l'Acad. de Chir. tom. iii. p. 370) until after delivery, when it is to be reduced. If prolapsus happens soon after delivery, by sitting up too early, the part should be carefully reduced, and the woman confined to the horizontal posture, and the use of mild laxatives employed; the bandage already described will be used with advantage. The cervix uteri may be elongated, and grow down into the vagina, which is not to be confounded with prolapsus; it has, however, been removed by ligature. It may be useful to describe the mode of introducing pessaries.

Introduction of Pessaries.—Before the application of the instrument, the bowels and bladder are to be evacuated, and the woman should be in bed an hour previously to the operation; she is to be placed in the horizontal posture, near the edge of the bed, and the genital fissure, as well as the instrument, are to be lubricated with hog's-lard. The labia are next to be separated, and the circular silver or other instrument applied to the os externum, and carefully and gradually introduced downwards and backwards, having the introduced part looking towards the sacro-iliac synchondrosis. Pressure is to be continued in the direction just named, until the whole is received into the vagina. The breadth of the pessary is to be placed in a transverse position, so that it may correspond with the inferior strait; and the hole in the centre should correspond with the axis of the os externum.

The cervix uteri ought to be placed in the aperture of the pessary, which can be readily effected by the finger. If the instrument be too large, it will give pain; if too small, it will escape

when the woman sits up. Dr. Dewees uses an injection of half an ounce of alum to a pint of water, for two or three weeks; and after the instrument is adjusted, two or three syringes full of soap and water ought to be thrown up daily; the gilt pessary is preferable to all others, as it need not be removed more than once in two or three months. In most cases the instrument will not be required longer than three or four months; but in very obstinate cases it must be used for years.

The French writers assert that the womb may present as hernia in consequence of previous intestinal protrusion. This must be a very dangerous disease, and should be reduced when practicable. Examples are recorded in the *Recueil Periodique Societe de la Sante* vol. v; *Med. de la Societe Med. de l'Emulation*, vol. iii. and by *Nawche des Maladies de l'Uterus*.

There is sometimes a morbid growth imbedded in the substance of the womb, called tuberosc tumour by Dr. Baillie. Its structure is tougher than that of polypus. It varies from the size of a nut to that of a cricket-ball. It may also grow into the organ, and occasionally to an immense size. It differs perhaps very little from the fibrous tumour described by Martinet, which consists of a collection of whitish fibres, closely united, very firm, and extremely tenacious; much more flexible than cartilage, but less so than cellular substance. See Quain's *Translation of Martinet's Manuel of Pathology*, 1827; *Hodgkin Med. Chir. Trans.* 1830, vol. xvi. Part II.

The womb may be partially converted into bone, or into an earthy or calcareous substance. Lieutaud also records a case of ossification of this organ, in his *Hist. Anat. Med.*, vol. i. Obstetric writers describe instances of the fœtus becoming an earthy substance, when retained in the womb for many years.

Some of the late French writers have asserted that the substance of the womb may be softened, and want all the appearance of muscular structure. (*Medico-Chirurgical Review*, July 1828.)

The other diseases of uterus are masses of bone in its cavity, calculi, ascarides, and stricture of its cavity. It is also liable to rupture during pregnancy and parturition, of which hereafter.

Section 3.—Diseases of Menstruation. Uterine Fluxes.

The diseases of menstruation are, 1. Amenorrhœa, 2. Dysmenorrhœa, 3. Menorrhagia, 4. Metrorrhagia, or Uterine Hæmorrhage.

Amenorrhœa.—This disease is divided into two species, 1. *Emansio Mensium*, or retention of the menses when the uterine secretion does not appear at the age of puberty; 2. *Suppressio Mensium*, when the secretion has appeared once or oftener, and is suppressed, independently of utero-gestation, or lactation. I have already described the phenomena and physiology of menstruation in the chapter Gynæco-physiology, in the sections Puberty and Menstruation, to which I must refer the reader for information on the importance of this function; and also the chapter Gynæcotomy, in the sections on the Uterus and Ovaria. The term amenorrhœa may be strictly applied to the retention of the menses at puberty, or to their suppression during the remainder of life, except during pregnancy or lactation. Under this term we comprehend many physiological and pathological conditions. It is obvious that the retention of the catamenia at puberty is very different from that which occurs at the critical age, or depends upon organic disease of the uterus, or upon inertness of that organ, produced by hæmorrhage. All these conditions require very different treatment, and ought not to be confounded under the same denomination. The real amenorrhœa depends upon defect of vital activity in the ovaries or womb; and this is what must engage our attention.

When the ovaries are undeveloped at puberty, they cannot perform their functions, and influence the rest of the economy (see p. 23). Menstruation will not take place; the general health will be impaired; the appetite defective or depraved; the mind depressed; the countenance pale, as also the whole body; and this condition is called *chlorosis*. Persons of a lymphatic temperament and scrofulous habit, who reside in low damp situations, whose food is innutritious, and whose pursuits are sedentary, are most liable to tardy menstruation and chlorosis. Hence we observe these diseases are most common among the poor of crowded cities; and those who are confined in manufactories at sedentary employments.

Persons of a nervous temperament, who indulge in all causes which excite their feelings, as vivid passions, tea, coffee, &c., menstruate freely. It has been long observed, that chlorotic subjects did not possess a sufficient quantity of blood, and hence the practice of administering chalybeates, which were supposed to impart the colouring matter of the blood. This opinion appears to be correct, as there is a general anemia of the system, which will not allow a large supply of blood to a particular organ without incon-

venience to the other parts of the body. This condition of the body is characterized by general pallidity of the skin, the eyes are dull, the hair is weak and lank, the appetite is depraved, the desire for food unnatural, the mind is depressed, there are dyspnœa, palpitations, an insurmountable sadness, constipation, and a complete aversion to motion or exertion.

This species of amenorrhœa is to be treated by nutritious food, by tonics, mild aperients, habitation in a dry, airy situation, chalybeates, sulphate of quinine, and exercise on foot, horseback, &c.

Dewees has judiciously observed that we should not exhibit emmenagogues, unless signs of development exist. The most injurious effects will be produced by the employment of drastic remedies under other circumstances. I have often been struck with the force of this remark, when examining the bodies of chlorotic girls, on observing the uterus and ovaries no more developed than in children of eight or nine years of age. Repeated experience has convinced me that the best mode of treatment consists in regulating the digestive organs, and improving the general health, by the remedies described above. I believe that the practice of exhibiting drastic purgatives and emmenagogues is injudicious and injurious. Iodine may be used with benefit when the digestive organs are restored to a healthy condition. Various aperients have been recommended in this form of the disease. The aloetic pill, with myrrh or assafœtida, to which a few minims of some of the essential oils are added, as those of peppermint, savine rue, &c. are highly efficacious. The compound iron pill, with either of the above, will be found of infinite service. The compound aloetic pill, with sulphate of iron, very frequently produces the best effect. Dr. Hamilton considered there was a want of absorption from the œdema, and therefore recommended digitalis, squill, and nitrous ether. He has ordered ten drops of digitalis every hour, watching the effects, and thought that benefit was derived. He said the patient should be visited four or five times daily. Dr. Dewees has strongly recommended the tincture of guaiacum with subcarb. of soda and potass and pimenta, a formula I have found of essential service. I have tried the tincture prescribed by the London Pharmacopœia with the liq. am. acet., so lauded by Masuyer of Strasbourg, and J. Cloquet and Patin, of Paris, with the greatest success. Dr. Mackintosh speaks in strong terms of tinc. lyttæ, ten drops three times a day, and increased to thirty,

forty, and sixty drops; to be discontinued should strangury appear. In such case, camphor and hyosciamus are of great value. The ammoniacal injection, composed of one drachm of liq. ammoniæ and a pint of milk, a fourth of which may be injected into the vagina four times a-day. This remedy was strongly recommended by Lavagna, in Italy, and I can bear testimony in favour of its value. Electricity has been applied to the region of the womb, ovaries, and back, with advantage. The warm foot or hip bath should be tried every night or every other night. Some recommend cold sea-bathing, but this seems to be injudicious in delicate cases, where the abstraction of heat can be badly borne. The chalybeate waters of this and other countries are of much service in the removal of this form of chlorosis. An ample enumeration of these will be found in Professor Thomson's London Dispensatory, extracted from a paper of mine, and also in my own work on Mineral Waters. External frictions with a flesh-brush are highly beneficial. The clothing should be adapted to the constitution of the patient and season of the year; the application of cold to the feet must be carefully avoided. Blood-letting is injurious, and always increases the œdema, a fact overlooked by Dr. Ayre and others, who advocate the lancet in most cases of dropsy. When pains about the loins, groins, and thighs are urgent, sedative liniments afford relief; but in some cases counter-irritants, as the antimonial ointment, must be employed.

Chlorosis occurs in opposite conditions of the constitution; in pale, sickly, delicate, ill-grown girls, or in those of a florid complexion and full habit. In the latter, a low diet, purgation, depletion, cupping, or leeching the groins, vulva, or verge of the anus, irritating foot baths, warm fomentations over the hypogastrium, and fumigations, or tepid injections by the vagina, are the best remedies.

Determination of blood towards the uterus should be promoted, especially when the pains about the pelvis recur periodically, by drastic purgatives, or clysters, drachm doses of oil of turpentine, dry cupping-glasses to the loins and hypogastrium, galvanism, aromatic fumigations, and warm hip-baths. The most efficacious remedy in this form of amenorrhœa is marriage.

When the uterus is undeveloped it cannot respond to the solicitations of the ovaries, and the changes which characterize puberty, already described, will not take place. This is a rare occurrence, but exemplified in the course of this work. Sometimes

the os and cervix uteri are not developed in proportion to the remainder of the organ; the secretion of the menses occurs but cannot escape. This is the *dysmenorrhœa*, or *amenorrhœa distillans*, of Frank, and lately much dwelt upon by Mackintosh; it is the painful menstruation of other writers. In such cases during the hæmorrhagic effort, there are pains in the hypogastrium, groins, thighs, and uterus, amounting to violent spasm in some instances, which may produce uterine phlogosis. (Friend, Royer-Collard.)

These pains precede the expulsion of a few drops of menstrual fluid, and sometimes some clots covered with a membrane. Again, albumen may be thrown out on the internal surface of the uterus, and form a membrane, which may be detached, in part or entire, or fill up the uterine orifice. (Chaussier.)—This substance may be expelled in shreds, and has been compared to the skins of boiled gooseberries, by some writers. Mackintosh relates a case of a healthy young woman who had not menstruated, whose os uteri was very small, and covered by a membrane similar to that which sometimes covers the urethra of the male at birth. He perforated this membrane with a small silver probe, and gradually dilated the orifice with bougies, and cured the patient. (Practice of Physic, vol. ii. p. 346.)—Such cases are extremely rare, and are only to be suspected when a healthy female does not menstruate at or after puberty. Cohesion of the external genitals is sometimes found in such cases; and the practitioner ought to enquire of the patient's mother, or other near relative, whether any deformity was observed during infancy. I have met with two cases of this kind, where the persons were twenty-one years of age, and refused to submit to a vaginal examination, which was only granted when I threatened to discontinue my attendance. I observed cases of *amenorrhœa* at the same age, without vicious conformation, which yielded to ordinary measures. Further information on this subject will be found in the physiological and pathological parts of this work. I have only to remark in conclusion, that the former species is often confounded with *phthisis*. The diagnosis is easily formed. In *chlorosis*, the cough comes on by fits; there is no fixed pain in the chest; the pulse is not permanently quickened; the appetite is depraved; the patient devours chalk, unripe fruits, vegetables, &c.; the mind is greatly depressed; and the signs of *phthisis*, afforded by auscultation, are absent. In *phthisis*, the cough is continued; the pulse permanently accelerated; the appetite is good; the mind exhilarated; the stethoscopic evidence

conclusive. When the menses are suppressed in consumption, women often mistake the effect for the cause of the disease, and are convinced if the periodical evacuation could be re-established, health would speedily return. I need scarcely observe that this is a delusion. In real amenorrhœa I am convinced that emmenagogues are generally injurious. This must be obvious when there is defective development, or vicious conformation of the internal or external genitals. Such remedies are proper in suppressed menstruation, as will appear by the succeeding remarks.

Suppression of the Menses. Obstruction.—This is the second species of amenorrhœa, and occurs under two circumstances: when the secretion is suppressed during its expulsion, and when it does not recur at the usual period. The first description may be induced by mental emotions, grief, joy, &c., or by exposure to cold and moisture. The second kind may be induced by pregnancy, by exposure to cold, by any serious disease, by debilitating causes, by leucorrhœa, frequent abortion, and all diseases of the pelvic viscera.

When the menstrual secretion is suppressed, its place may be supplied by some vicarious discharge of blood from some other part of the body. (See p. 32.)

The lower classes often expose themselves to cold and damp during menstruation, which is the general cause of obstruction with them. There will often be little inconvenience experienced by obstruction, and no notice is taken of it, until it ceases to appear for several periods, and until symptoms of ill health set in; but in some cases, the suppression, especially when caused by cold, will be followed by very serious illness, as violent pain in the back, womb, bowels, and head, which require very active treatment, as bleeding, purging, warm bath, opium, camphor, assafœtida, &c. &c. When the pain in the womb continues severe, after these remedies, a clyster of a quartern of starch, a tea-spoonful of laudanum, thirty grains of camphor, and two or three tea-spoonsful of tincture of assafœtida; the latter, if hysterical symptoms be urgent, is the best remedy that can be used. This form of remedy was found most beneficial by the experienced Dr. Dewees, of Philadelphia. He also has given half-ounce doses of the compound tincture of aloes and myrrh, when colic was urgent, until the bowels were opened with the best effects. He has laid down an admirable rule in the treatment of obstruction, which is, that no medicine ought to be given in a recent obstruction, or until it causes

some evident disease or disturbance in the system. This rule is well worthy of general adoption. The menstruation will often re-appear after months of suppression, without the use of any medicine. When it is deemed necessary to exhibit any medicine, we ought cautiously to employ those remedies recommended in chlorosis. Bad health is often ascribed to obstruction, when on inquiry it will be found to have existed before the suppression; in fact, the effect is mistaken for the cause. It often happens that a variety of medicines will be tried in such cases, to remove the obstruction, but without avail. I have been often consulted in well-marked cases of consumption, where menstruation had not ceased for months after the disease in the chest had set in; and yet such obstruction was put down as the sole cause of the disease. In a word, women are of opinion, that obstruction is the cause of most diseases to which they may become liable. We should carefully distinguish, however, when obstruction is the cause, and not the effect of the disease; and this we can always do, by carefully attending to the history of the case. When the disease occurs in consequence of consumption, dropsy, enlarged liver, or other chronic maladies, it would be injurious to endeavour to remove it. When it occurs in debilitated habits, as a primary disease, we should then remove it, as soon as it induces any real derangement in the system, and employ the remedies described for the removal of chlorosis.

Before concluding this subject it is worthy of remark, that great caution is requisite in discriminating female obstruction from pregnancy. I was once consulted by a female in consequence of obstruction, who had tumid abdomen, and other signs of pregnancy. When I hinted this, she felt greatly offended, and most solemnly asserted I was mistaken. However I was of the same opinion. Her paramour called on me soon after, on account of his own health, and inquired after her's, "as he was sure she was pregnant, though unconsciously, for he had made her intoxicated in order to effect his purpose." She was delivered in due time. There is no swelling of the womb in obstruction of a short duration, and the appearance of the countenance and bosom will further assist us in our diagnosis; the breasts are never swelled in obstruction, but on the contrary, are flabby and relaxed; they are always tumefied in pregnancy. (See Signs of Utero-gestation, p. 83.) Though cold is the most common cause of obstruction, yet it may

not have that effect. Thus Dr. Denman informs us, that the guides who attend ladies bathing in the sea, will go into the water while menstruating, without any inconvenience. This can be explained by the force of habit; the body being constantly exposed to water, is not affected by it in the ordinary manner. We should be cautious in attempting to remove obstructions after the thirty-fifth year, as the discharge will often finally cease so early as that period. Dr. Dewees knew it cease, in two cases, at the twenty-fifth, and in two others before the thirtieth year. It often happens that women have a very slight menstrual evacuation, and yet retain good health. I knew a young lady, who used scarcely to perceive the fluid, and that only on one day, and for about an hour; yet was in good health, and became pregnant very soon after marriage.

Preparations of iron have long held great repute in female obstructions, and are known to women under the names of "steel drops," "steel pills," &c. I believe these medicines of much value in chlorosis, as tonics, but not as emmenagogues. It is extremely doubtful if we know any medicine that has a direct influence upon the uterus, except *secale cornutum*, which has been already described, (p. 136.) It must be admitted, however, that the ordinary emmenagogues are generally attended with success, perhaps from improving the digestive organs and general health. When amenorrhœa depends on plethora, M. L. C. Roche has found great benefit from opening a vein in the arm or foot, a few days before the expected return. (*Dict. de Med. et Chir. Pratiques*, 1829, tom. ii., art. Amenorrhœa.) When the patient suffers much pain in the pelvic region, opiates afford relief.

Dysmenorrhœa. Painful or difficult Menstruation.—When the evacuation is sparing, irregular, and attended with pain, it is named *dysmenorrhœa*, or painful menstruation. This form of disease is very common, and extremely obstinate. It may occur at any period during menstruation, is generally induced by a natural narrowing of the orifice of the womb, or by the growth of a membrane in the womb; and, according to Dewees and others, by the consummation of marriage. The woman experiences severe pain the first day of menstruation, and suffers as severely as if in labour, or by abortion. She often experiences relief by the expulsion of one or many membranous substances from the womb. These membranes are somewhat like the skin of a gooseberry, and are

smooth on each surface, thus differing from the decidua membrane. The membrane is so like the covering of the infant in the early months of pregnancy, that a lady, who was a patient of Dr. Hamilton's, thought she miscarried ten times a-year, for three years. Denman and Dewees were of opinion that a female, thus affected, could not have children; but Morgagni asserts the contrary, as also Hamilton and Burns. If one healthy period without pain occurs, even at an interval of seven years, conception may take place. Hamilton described cases of pregnancy under these circumstances. If pain occurs for two or three periods after marriage, there will be no conception. I have known pain attend menstruation for months after marriage, and conception took place. I attended a patient with Mr. Bradford, of Fleet-street, aged twenty-three, who laboured under dysmenorrhœa since the occurrence of the evacuation in her fourteenth year, and still she was pregnant. She never passed any membranous shreds. I know another lady, aged twenty-one, who always suffered severe pain during menstruation, which was much increased by marriage. She is pregnant however. She never discharged portions of membrane. I published these cases in the London Med. and Surg. Journal, 1830, vol. v.

Dr. Mackintosh considers smallness of the os uteri the most frequent cause of the disease; but thinks inflammation of the lining membrane of the uterus, or inflammation of the substance of the cervix, or encroachment of tumours, as causes of painful menstruation. Every museum contains specimens, which shew the os uteri so narrow as scarcely to admit the passage of a hog's bristle. In such cases, when the menstrual secretion is formed it cannot escape, and must induce uterine irritation or inflammation. In some cases the pain is as severe as that of labour, and the patient is obliged to confine herself to bed.

Treatment.—Mackintosh informs us that in fifteen cases he succeeded in curing the disease by gradually dilating the os uteri by means bougies, the size of which was slowly increased. Of these four became pregnant. As the disease may depend upon a variety of other causes, this plan of cure cannot always succeed. In fact, dysmenorrhœa is a vague term, expressive of irritation and pain in the pelvic region, depending upon a variety of causes, it is a symptom, and not properly a disease.

Hamilton recommends the patient to go to a warm bed, take a

mild purgative, and a draught composed of tincture of hyosciamus, with or without volatile tincture of valerian, in the proportion of one, two, or three drachms of the latter, to be given at the approach of the discharge; to have four grains of opium, or one drachm of the tincture and some starch, injected into the rectum.

Besides these remedies, the patient will derive benefit from a residence in a warm climate for some time. Other practitioners exhibit large doses of laudanum during the pain, as a tea-spoonful; and repeat it in a short time, if necessary, unless it cause sleep. Dewees advises a scruple of camphor, to be given in a draught, or ten grains every hour, until relief be obtained. If the stomach reject this, thirty or forty grains are to be dissolved in spirits of wine, a drachm of laudanum and a gill of thin starch are to be injected into the rectum. Should this be suddenly discharged, it may be repeated. He also recommends tincture of guaiacum, extract of cicuta, and tincture of cantharides; the two last succeeded in cases where the guaiacum had failed, and he informs that the last-named medicine cured a lady, who was affected for nineteen years. I have tried the guaiacum during the interval, and certainly with great benefit; but large doses of the tincture of opium I found most efficacious during the urgency of the pain; however, I have not yet sufficiently tried the camphor, to enable me to speak of its value from personal experience.

The acetate of ammonia in solution, in the proportion of fifty drops was given twice a-day, in some sugar and water, by Professor Masuyer, of Strasburg, and by M. Cloquet, of Paris, in cases of difficult and painful menstruation, and with decided relief. The medicine is to be repeated in half an hour, unless the pain gradually subsides. I add this medicine to the guaiacum for some days before the period, and give large doses of laudanum with it when the pain is urgent.

Menorrhagia.—This state consists of unnatural frequency of return, or copiousness of quantity of the menstrual fluid. The disease is attended with pains in the back, loins, and abdomen, often resembling parturition. Some obstetricians of considerable experience, assert that this complaint is of very rare occurrence, and that in general what is described as such, is absolutely a discharge of blood, and not of menstrual fluid. The disease, however, is most certainly one of frequent occurrence in this country. It appears under two conditions, in full or delicate habits. It happens

to women who live luxuriously and indolently, and to those who suffer fatigue, abstinence, or profuse discharges, debility of the womb by frequent miscarriages, by tedious severe labours, by excessive sexual intercourse, by irritation in the neighboring organs, as tenesmus, piles, or costiveness. It is most common in the married state, and seldom happens to virgins. The discharge is to be considered excessive and injurious when it weakens the woman; but it may occur every ten days, and be as copious as on ordinary occasions, and the patient be in perfect health. Dewees records an interesting case, where the lady had at first menstruated at the twelfth year, and continued to do so every ten days to her fortieth year, unless during pregnancy or suckling, yet she was in perfect health. Excessive menstruation is to be considered a disease when it induces debility, dyspepsia, hysteria, and the Protean symptoms of a complication of these affections.

The *treatment* consists of lessening febrile action, by blood-letting, when necessary; of keeping the patient in bed, with light covering, allowing a free admission of air; of giving light nourishing diet, and avoiding stimulants. Emetics of ipecacuanha have lately been given with great success, by Dr. Osborne, of Dublin. Saline purgatives, in solution, with nauseating doses of tartar emetic, are often used with great benefit. Pills, composed of acetate of lead and opium, in the proportion of one or two grains of the former, and a third of a grain of the latter, may be given every three or four hours. The muriated tincture of iron is a powerful astringent. Cold cloths, wetted with water and vinegar, are to be applied to the vulva, back, and abdomen. Injections of the saturated solution of alum, in the proportion of half a drachm to an ounce of water, are to be thrown into the vagina and womb; or equal parts of the compound liquor of alum and water, will answer the same purpose. Others employ the decoction of oak bark and alum, or twenty grains of acetate of lead, a drachm of laudanum, and three or four ounces of water or starch, as an injection into the rectum. The use of the tampon, or plugging the vagina, when the womb is unimpregnated and not dilatable, will often arrest the discharge. This plan is said to cause coagulation by many obstetricians, all of whom deny that the menstrual fluid ever coagulates, and therefore here is a manifest contradiction. It is highly beneficial however. In cases attended with debility, soups, jellies, broths, wine, and cordials are to be exhib-

ited, and warm flannels are to be applied to the pubes. The parts affected will be strengthened by the daily use of the bidet, cold water injections into the vagina, and cold bathing. Opium, in the quantity of five grains at first dose, and three grains every four hours has been used in cases of extreme weakness, and with the greatest success. The Italians recommend the application of cupping-glasses to the loins in this disease. Formerly, ligatures were applied above all the joints, in order to arrest the circulation of the blood, and thus prevent the discharge. Drs. Hamilton and Burns condemn the internal use of acetate of lead; but others, of equal authority, recommend the remedy. I have frequently given it freely, from six to twenty grains in two ounces of water, two of vinegar, and two drachms of laudanum, a table-spoonful three or four times daily, and never knew any bad effect result from it.* The astringent injections ought never to be omitted in this disease. Astringent medicines are also exhibited internally.

Metrorrhagia.—Uterine Hæmorrhage. It often happens during menstruation, or in the absence of the periodical evacuation, that blood is discharged from the uterus. This is designated metrorrhagia by the French, while Burns and Mackintosh term it menorrhagia. These writers make a distinction between excessive menstruation and menorrhagia, applying the latter term to hæmorrhage from the uterus, thus confounding to opposite diseases. How men of such talents could have thus blundered, is really astonishing. Both admit the menstrual fluid is not blood, while they apply the word menorrhagia, excessive menstruation, to uterine hæmorrhage. A better and more correct term is metrorrhagia.

When we consider the congested state of the uterus during menstruation, we are able to understand why hæmorrhage may take place, and blood and menses may be commixed. We may have menorrhagia or excessive menstruation, and metrorrhagia or uterine hæmorrhage at the same time, and this complication accounts for the presence of coagula in the menstrual fluid.

Treatment.—The same plan of treatment recommended in menorrhagia is to be employed in this disease, in addition to which, venesection will be used with advantage in plethoric subjects. The case should be treated like hæmoptysis and other hæmorrhages. Some

* See Papers on Acetate of Lead, by Dr. Ryan, of Kilkenny, Lond. Med and Phys. Journ., 1826.7. Also Dr. Burke's Paper, Edin. Med. and Surg. Journal, 1826. Lond. Med. and Surg. Jour., 1831, vol. vi. Paper by Dr. A. T. Thompson.

writers advise the application of leeches to the hypogastrium, to relieve uterine pain, and assure us that the hæmorrhage ceases before a table-spoonful of blood has been abstracted. (Mackintosh.) Of course rest in the horizontal posture, with the head and shoulders low, is to be insisted on. The application of cloths, moistened with vinegar and water, and applied over the pubes, will often be followed with good effects, as I have lately observed with my friend, Mr. Mathews. The free use of the acetate of lead and opium, with injections of a solution of alum, are indispensable; the latter may be used before the plug or tampon, or after it has been removed. The patent syringe is the best instrument for applying the injection, and a napkin should be pressed upon the genital fissure.

Cessation of Menstruation.—In the physiological part of this work, p. 32, I have described the circumstances which require attention at the cessation of menstruation, and have now only to observe, that should continued pain be experienced in the pelvic viscera, we have reason to suspect incipient inflammation, and ought to have recourse to cupping, leeching, hip-baths, purgation, low diet, and the various other remedies which will suggest themselves to every well-educated practitioner. Should any local inflammation of other organs display itself, it is to be treated on ordinary principles. Women at this period of life complain of an immense number of anomalous symptoms, which are generally removed by proper regulation of the bowels. The young practitioner must not mistake obstructions of the catamenia of two or three months' duration for pregnancy; the latter seldom happens at the "climacteric period."

The *ovaries* are often inflamed after delivery, and suppuration or scirrhus, cancer, or considerable enlargement, may take place. These organs are subject to dropsy, scirrhus, vascular, sarcoma, and atrophy, but of all diseases dropsy is most easily distinguished; the others can scarcely be discovered during life. Ovarian disease is generally slow though sometimes rapid and fatal. When inflamed, the ovary adheres to the vicinal parts, the uterus, the rectum, the bladder, or external integuments, and the matter will be discharged from the vagina, by urine, stool, or external abscess. Inflammation of the ovary is a very obscure disease, and can scarcely be distinguished from the many other affections of the pelvic viscera, all accompanied with irritation and pain in the back and

loins. We must therefore be content with palliating symptoms, and the constitution will in general cure the disease. In simple enlargement of the ovary it continues detached, and free from any adhesion; but it will sink down low in the pelvis on one side, or in the hollow of the sacrum, producing inconvenience, according to size and situation, by obstructing the functions of the rectum and bladder, or process of labour. Sir E. Home describes a case where the ovary became the size of a hen's egg, fell down between the vagina and rectum, and impeded the functions of both. The catheter was obliged to be passed daily. The ovaries have been found at Poupart's ligament, in the groin (Verdier, Lasnes, Deneux), and the operation for hernia has been performed, to afford relief. Mr. Pott mentions a case where both ovaries were extirpated; the woman recovered, but never menstruated afterwards. Hairs and teeth were found, by Dr. Baillie, in ovaries before conception. (Morbid Anatomy, 1812.)

Scirrhus of the ovary is a frequent disorganization of this part. The ovaries are sometimes wanting, or may be imperfectly developed. Le Dran asserted that scirrhus always preceded dropsy of that organ, but Dr. Hunter never found a dropsical ovarium in a truly scirrhus state. Dr. Burns asserts that dropsy is the most common disease of the ovarium. The ovary may become enormously distended with solid and fluid growths, so as nearly to fill the abdomen. In one instance it weighed fifty-six pounds (Mem. of the Medical Society, vol. ii.); one hundred pounds (Haller); thirty-five (Mackintosh); the usual weight is twelve or thirteen pounds. Dropsy of the ovarium is a misnomer, as the fluid which it contains is not serous, but gelatinous. This fluid is contained in different cysts or compartments, and its colour varies; for in some it is whitish, in others yellow, like pus, and in others coffee-coloured. It is thick and fetid, and mostly contains portions of fleshy matter, sometimes tufts of hair, teeth, bones, and hydatids. Tumours containing all these substances have been found in the male sex, which prove such contents do not depend on conception. Hence, when the operation of evacuating this tumour is attempted, its contents cannot pass through a small opening, and besides we only open into a single sac. The disease causes scarcely any constitutional disturbance in its incipient stages; the health is good, and menstruation regular. It is only when it has advanced that its weight and bulk, pressing on the rectum and bladder, impede

the regular functions of these parts. It is almost impossible to distinguish it from other diseases in its early stages. The history of the case and the situation of the first uneasiness will enable us to form a correct opinion. It is often combined with dropsy and tympanites. It occurs after the adult age. The women refers pain to either groin, and after weeks, months, and years, discovers a tumour in one side, which gradually distends the abdomen and bears a close resemblance to pregnancy. When the disease has advanced, the constitution suffers severely; the appetite and digestive functions become impaired; severe pain may be experienced in the affected part; the urine and contents of the bowels will be retained.

The urgent symptoms are to be alleviated; the functions of the stomach are to be improved by the usual remedies; the bowels to be regulated, and the urine is to be drawn off by the catheter. If there be local pain, we should apply leeches and fomentations or blisters, but perhaps there is no certain cure for the disease. Iodine has been tried with success in some recent cases. When the abdomen becomes distended, we must tap the tumour, which may be done as often as thirty times, with relief. Care must be taken not to wound the uterus, which may be carried up with the tumour. It has been proposed to throw in a stimulant injection after the operation, and to enlarge the opening, and to extract a part of the sac; but these measures have proved both useless and fatal. The contents of the tumour have been passed through the vagina, rectum, and parietes of the abdomen, and also into the abdominal cavity. Sedatives must be employed, to allay pain, and the urgent symptoms can only be palliated.

The ovarium is subject to scrofulous enlargement; and when it suppurates it contains a whitish, filamentous, grumous, and ill-digested fluid, or a cheesy substance, such as is found in the mesenteric and other glands. Iodine is the best remedy for this disease, but mercury, conium, electricity, laxatives, leeches, and blisters have been also tried, although seldom with benefit. The ovary is remarkably susceptible of morbid changes: viz. of enlargement, induration, conversion into tuberoso sarcoma, into a substance half earthy and half bony, into a fatty substance, and into a pulpy, medullary matter, like brain. (Lizars.)

Dr. Mackintosh informs us, that he has, occasionally, observed in the bodies of children vesicles of the size and shape of small

grapes, others like large currants, full of fluid, and attached by a long pedicle to the broad ligament near the ovary. He has seen these attached to the left ovary in a child two or three months old.

In general, the adult female complains of pain in the region of the ovary, which extends to the groins and front of the thighs, and is only occasionally experienced. The appetite, catamenia, and general health, are good. The fact is, unless we make close inquiries, the symptoms are seldom referred to by the patient. At length a tumour is felt in one side, which soon extends across the abdomen, and gives the feel of the gravid uterus. I have seen several cases of the disease in young unmarried women, which led their relatives to suppose them pregnant. I had lately a case in point, in which this supposition could only be removed by my certifying the name of the disease in writing, and by recommending the patient to place herself in one of the hospitals. I have also seen some cases with Mr. Whitmore, of Cold-bath Fields, in which the patient had been long married, and supposed themselves pregnant, but refused to take medicine, or submit to tapping. In one of these cases, the disease became developed in eight months, the woman had dead children, the catamenia were suppressed, and she supposed herself pregnant. The diagnosis was difficult, the uterus was undeveloped, the legs anasarca, the abdomen larger than at the end of gestation, and the respiration very difficult. The operation of tapping was resorted to, and with the usual temporary benefit. I was consulted in another case by Mr. Kitching, of Aldersgate Street; the patient was twenty-two years of age, and had been delivered of her first child; but a tumour larger than the uterus after delivery was found in the right side. On inquiry, we learned that she received an injury in that situation seven years before, after which a painful tumour appeared and continued ever since. I have known an old lady, whose abdomen was greatly distended, fluctuation evident, general health good, no anasarca, no inconvenience unless on motion, who had remained in this condition for some years. During the vicissitudes of the spring of this year, she died suddenly; and an examination was not allowed. On making a vaginal examination, where the disease is advanced, we find a tumour between the vagina and rectum, offering some characters of retroverted uterus. The os uteri is turned towards the pubis in some cases; but the real nature of the

disease will be discovered by passing the finger into the rectum.

The prognosis is unfavorable, for we know no cure for the disease. It may burst into the abdomen, and cause fatal peritonitis (Delpech); but from the case narrated below, this event may not happen.

Treatment.—Diseases of the ovaries are, perhaps among the most intractable incidental to humanity, and may be set down incurable, when fully developed. In their incipient stage, much benefit may be derived from local bleeding, leeching, cupping, counter-irritation, and attention to the bowels. At one time, those medicines which were employed in scrofula, were much in use; but with the exception of iodine are now abandoned. Liqueur potassæ was urged to the fullest extent, and said to produce suppuration; but this is obviously very doubtful. Dr. Seymour observed, in his Lectures on the Diseases of the Ovaria, delivered before the Royal College of Physicians, 1829, that Dr. Warren thought this remedy caused the dispersion of disease in one instance; but Dr. S. is not convinced by the result of this case. Dr. Hamilton, of Edinburgh, has recorded seven cases, in which the muriate of lime, pressure by a well-applied bandage, and gentle percussion of the tumour twice a day, effected its removal. Others have recorded similar cases, in which iodine alone removed the disease. The general impression of the profession, I believe, is, that there is no cure for the various forms of ovarian disease; hence the bold and desperate operation of extirpating the diseased part has been attempted without success. This operation has been attempted several times by that able anatomist and surgeon Mr. Lizars, of Edinburgh, with the following results;

In one case nothing was discovered in the intestines but flatus, and the woman died in forty-eight hours. In another there was curved spine, with lumbar abscess, "the uterus and ovary were healthy;" the woman is still alive. In the third case there was ascites, a tumour was removed from the left side, another could not be separated from its firm adhesions in the right, the uterus was slightly enlarged; the woman died three years after the operation. In the fourth case, a tumour was removed by separating its adhesions from the viscera; the woman died from mortification. In the fifth, a large tumour was so covered with large blood vessels, the operation was abandoned. In the sixth case, a tumour was removed from the fundus uteri, which was supposed to

be the ovary ; the woman was destroyed by inflammation in a few days ; the ovaries were healthy. Such is the account of these operations given by Dr. Mackintosh in his excellent and graphic *Practice of Physic* ; and he argues most powerfully against the operation, unless the tumour be moveable, which can be ascertained by the motions of the patient. He advises close attention to the state of the bladder, catheterism, camphor, and hyosciamus, laxatives, local bleeding, tepid injections, counter-irritation, and places little confidence in iodine. He also agrees with Denman and others, that tapping should be put off as long as possible, as the fluid is rapidly secreted after the operation. He narrates some valuable and instructive cases, in which he could not consent to extirpation, though strongly advised by others, and after death the ovaries and uterus were healthy. The following case is so instructive, that I must insert it :

Case of Parturition complicated with hydrops Ovarii, by Dr. Mighels, of Minot, Cumberland, County Maine. Mrs. C. æt. 30, of a good constitution, sanguineous temperament, and strong and athletic, and the mother of two children, presented the usual symptoms of ovarian dropsy in February, 1827, and in six weeks afterwards the tumour extended to the epigastrium. The digestive functions were disordered, for which the usual remedies were employed ; the abdomen was as large as at the completion of the term of utero-gestation. She was taken with labour November, 29, when her size was enormous, measuring in circumference five feet four inches, and from the sacrum to the utmost extent in front, two feet three inches ; “ in the sitting posture she literally held her child in her lap.” On vaginal examination the os uteri could not be discovered. Very violent parturient action supervened, the membranes burst while the hand was in the vagina, the breech of the infant presented, but the narrator brought down the feet, during which the sac burst, and its contents escaped into the cavity of the abdomen. The labour was finished in a few minutes, and the child still born. During the four or five subsequent days she discharged enormous quantities of urine ; in one night five quarts. In three weeks she was able to resume her ordinary occupations, and no larger than in health.

The disease re-appeared in January 1828, continued to increase until June, when it burst (I presume into the abdomen,) and was carried off by the kidneys. It very soon re-appeared, progressed

with rapidity, burst in August, and passed off as before. She remained feeble for several weeks, but perfectly recovered.

In January, 1829, she was again in labour, and as large as in 1827; the sac was found to fill the whole of the brim of the pelvis, the membranes burst, and the funis presented. Paracentesis was performed through the linea semilunaris, about four inches superior to the crista ilii, "and eighteen pints of bloody water resembling dirty claret, perfectly limpid and inodorous, were evacuated." This afforded great relief, the uterus resumed its natural position, and had the presentation been favourable, the labour would have been completed in a short time; the left arm had protruded before the operation, and the uterus was strongly contracted "with unyielding firmness about the child." An attempt to turn was now made, and persevered in for two hours, without effect; "so far as I could introduce my hand," says the narrator, "the uterus presented the appearance of being encircled with strong inelastic bands, three fourths of an inch in breadth, and drawn round it with incredible force. The cervix was preternaturally elongated; but so well dilated as to admit the hand readily." Failing to turn under such circumstances, it was decided in consultation to remove the infant (which was dead,) by embryulcia (!!!) The arm with the scapula and clavicle were removed, the chest penetrated, and the operator's hand introduced to grasp the heart and lungs, "when she became impatient and bounded out of our reach, absolutely refusing any further assistance. One object was to remove the thoracic and abdominal viscera, in order to make room to introduce the hand to the feet, or to enable us to fix a blunt hook on the pelvis; but we were defeated, we could not prevail on her to suffer another trial." She was bled to $\frac{1}{2}$ xx, and had a large anodyne. The operation was attempted in the evening; but the patient would not suffer it to proceed. She had a large anodyne and a comfortable night's rest. Next day she appeared "more pliable." The external parts were very little swollen. The right arm presented, and was easily separated with the scapula by the blunt hook, as putrefaction had set in. The woman refused to allow any further attempt; and in the evening "requested the benefit of the Cæsarian operation." She was not much exhausted, but had a fixed idea that she should die undelivered; she was then left to her fate for two days, when her judicious attendant visited her, and received the following account:

“that she was *exercised* with incessant throes till Thursday evening (the preceding day,) although during the time she took half an ounce of laudanum, when it seems complete evolution had taken place, and the child was expelled “head foremost;” the placenta was extracted by the midwife. The patient presented all the symptoms of acute peritonitis, face scarlet, pulse 120, quick, hard, and wiry; tongue dark, coloured, unquenchable thirst, head painful, and abdomen considerably distended, and tender: uterus appeared unaccountably large; mind serene. Bled her to $\frac{3}{4}$ viij. ordered fomentations, and adopted the antiphlogistic regimen to its full extent.” The symptoms increased on the next day, when suppressed lochia and bilious diarrhœa came on; she was ordered calomel and rhubarb, a large epispastic to the abdomen, and an anodyne at bedtime; she lingered for three days, when the placenta was expelled putrid, the lochia returned, and signs of amendment appeared. There is no account of her symptoms from this time, January 25th to February 4th, when the sac was much distended, and caused much uneasiness. It was perforated (I presume through the abdomen, as no part is mentioned,) when five quarts of offensive fluid of a chocolate colour were evacuated. She dragged on a miserable existence to the 24th, when from spontaneous bursting of the sac, she succumbed.” I give the account of the autopsy in the narrator’s own words:

“On examining the body, an hour after death, we were almost suffocated with the most offensive stench. About two quarts of matter had escaped into the right side of the abdominal cavity, which was perfectly separated from the left by the firm attachment of the great sac to the peritoneum, mesentery, and intestines. The dropsical effusion evidently commenced in the peritoneal covering of the ovarium. The ovarium itself was but a very little diseased, being only a little indurated and enlarged, and so completely imbedded in the sac as to appear to make part of its walls. We discovered the spontaneous laceration at the upper part, where it was in contact with the liver. From all we could discover, we were of the opinion that this was the point at which it had burst formerly; being at all other parts perfectly smooth and regular, but here considerably thickened and hardened, excepting at the centre where the rupture appeared. The sac itself contained about ten quarts of very offensive pus. The small intestines were crowded into the epigastrium, being firmly attached to the vertex

of the sac. The liver, spleen, pancreas, and kidneys were sound. The uterus appeared as usual at this period of puerperal state, but removed from its natural situation, and crowded firmly into the right hypogastrium. The peritoneal covering of the bladder and sac had so firmly united as to appear like one membrane. (American Journal of Med. Sciences, Nov. 1829.)

The ovary is also subject to *fungus hæmatodes*, which has burst through the abdominal parietes, and thrown out a large fungus. Cancer of the ovary is very rare. Mr. Abernethy informs us, in his valuable Lectures, that after tapping the ovarium he has prevented the re-accumulation of the fluid by a succession of blisters, confining the patient to bed, and attending to the general health. This treatment has also relieved other chronic affections of the ovary. His observations on diseases of the ovary are highly important, and worthy of the most serious attention. (See Lancet, 1827, vol. xi.)—The *Fallopian tubes* are subject to inflammation, abscess, adhesion of the fimbriated extremity to the ovary of the same side; the uterine extremity of the tube may be also obliterated, and stricture may happen in any part of its course. When both ends of the tube had been found obliterated, its body contained a quantity of fluid, which might amount to several pounds, according to Portal, (Anat. Med. vol. v.,) and cause the dropsy of the tube. The canal has terminated in a cul de sac, tuberos tumours have grown on the tube, and are described by Dr. Baillie, in his Morbid Anatomy. Aneurism may occur in the tube, burst, and destroy the patient by hæmorrhage. In a case of this kind, a gallon of blood was found in the pelvis. The tube may be filled with hydatids, a fœtus, or be entirely obliterated. The uterine ligaments may be implicated in diseases of vicinal parts.

Hysteria.—This is a nervous affection, having its primitive seat in the uterus, causing spasm of that organ and its nerves, which is propagated to the whole ganglionic system, and thence to the cerebral system. The sage of Cos maintained the axiom, that all disorders peculiar to women arose from the uterus:

Τὰ γυναικεία νοσήματα καλεῦμενα αἱ ὑστερᾶι παντῶν νοσημάτων αἰτίαι εἰσιν.

By far the greatest proportion of the profession agree to this etiology of hysteria; while the disciples of Gall, and Dr. Elliotson among the number (Clinical Lects.), maintain that the malady is

seated in the cerebellum. In support of the first opinion it may be stated, that hysteria accompanies amenorrhœa, is often caused by continence, and by abuse of venereal pleasure. It is always present in catamenial suppression, insufficiency, and depravity, in scirrhus of the ovary, uterus, and in the various disorganization of these viscera. Its primitive seat is not in the encephalon, as this organ is often not affected, and is always secondarily so. It is no argument against this doctrine to state, that chagrin and various mental emotions excite the affection, as these are only occasional causes, in those predisposed to the complaint. Almost all the spasmodic phenomena of an unknown nature, to which women are subject, are ascribed to hysteria, as cephalalgia, lethargy, syncope, eclampsy (for which see Puerperal Diseases), the vesaniæ, catalepsy, pain in the left side arising from neuralgia of the intercostal nerves (see p. 197), protean malady, peculiar spasmodic affection, leaping ague, &c. &c. "The hysteric passion," says Galen, "is a name under which various and innumerable diseases are comprehended." The phenomena of hysteria are as follow; spasm is propagated from the uterus to the abdominal and thoracic ganglia of the trisplanchnic nerve (Bonetus, Nauche, Lobstein), and extends universally, producing a violent sensation of cold. There is palpitation of the heart, and pulsation of the arteries in the epigastric region. The pulse becomes small and irregular, the skin is pale and cool, a ball or globe is supposed by the patient to proceed from the hypogastrium through the abdomen and thorax to the throat, where it produces a sense of suffocation, and this is called *globus hystericus* by writers. This sensation is caused by spasm of the uterus and the intestinal canal, and is often induced by development of gas in the stomach and bowels, which causes a loud rumbling called *clangor intestinorum*, and is relieved by frequent eructations. The spasm is propagated to the superior extremities, the forearm is flexed, the fingers are clenched, and the inferior extremities are rigid; in a word, the features, extremities, and the whole body are thrown into involuntary action, and in some cases the hand is firmly pressed against the left side. The patient may have one or many fits in the day. I saw a patient with my friend Mr. Woodhouse, of Ilford, who had fits almost every half hour. After recovery, there is a good deal of pale urine discharged. This is denied by Tate in his work on hysteria. The best illustration of spasmodic and transient neuralgia of the uterus and ovaries that I

have known, was in a lady about whom I was consulted by my friend Mr. Matthews. These pains were removed by nuptial intercourse, which was instinctively proposed by the sufferer. The internal and external use of opium with fomentations afforded but very slight amelioration. The natural remedy was successful. The lady was not hysterical, but of a nervous temperament and delicate habit. Hysteria is generally complicated with dyspepsia, when the symptoms become so numerous as to baffle description. It may be combined with chorea, an obstinate case of which I attended with Dr. Addison and Mr. Bradford, near the Coburg Theatre. When the sufferer complains of pain in the left side, the corresponding dorsal vertebræ will be found painful, which may require leeches and free pustulation by antimony. (Teale, Shirley Palmer, Tate, Brown, Darwall, &c.)

Hysteria is not a dangerous disorder, even when it causes catalepsy; but Mr. Tate has narrated cases in which the spinal neuralgia was present, which proved fatal. (Work on Hysteria, 1830.)

The chief indications of treatment are, the evacuation of the bowels, the regulation and restoration of the menses, and the pustulation of the spine over the tender and painful parts. Antispasmodics are of little use, they may afford a temporary relief. When hysteria precedes amenorrhœa, the establishment of the catamenia is the only certain cure. Mr. Tate affirms, that antimonial inunction along the spine, when there is pain or heat, and this repeated every sixth hour untill eruption appears, is the most successful remedy. He sets out with regulating the bowels. The cases to which I referred in this article were cured by this remedy, after the usual plan of treatment had been tried in vain. Many spinal curvatures have arisen from overlooking the cause of the lateral pain. The best purgative, according to Tate, is calomel and jalap; and the next point of importance is to establish a healthy and vigorous menstruation. The secretion is always unnatural in this disease, it is irregular in its return, is sparing, grumous, black, pale, but invariably unhealthy. Drastic purgatives, *secale cornutum*, hip-baths, fomentations to the pubes, leeches to the vulva, and in delicate habits, bark, iron, bitters, and aromatics are useful. Should hysteria arise from the repression of any eruption or old ulcer, ring-worm, &c., we must endeavor to re-establish the primary affection. During the fit, the patient's dress should be loosened, so

that the circulation and respiration be not embarrassed, cold water is to be sprinkled upon the face, the body to be laid in a recumbent position, the head elevated. Should signs of cerebral congestion appear after a fit, we must deplete generally, and locally from the temples. If all measures fail, which seldom happens, tincture of opium, assafoetida, ether, amber, camphor, castor, valerian, have been used with success. The former plan is much more scientific and successful. Hysteria is said to produce *nymphomania*, or *furor uterinus*; a disease unknown in these countries, and of which farther notice is unnecessary. The best cure for hysteria is marriage.

ARTICLE II.—OF THE CAUSES AND TREATMENT OF IMPOTENCE AND STERILITY.

Section 1.—Disqualifications for Marriage.

There are many bodily imperfections which are not sufficient to deprive married persons of mutual succour. The principal end of conjugal union is the establishment of a contract, by which the parties promise the exchange of mutual succour; and many of the ordinary infirmities are not a sufficient motive to prevent consolation being given by those affected. Marriage is defined a civil and religious contract between male and female, by which they engage to live together in mutual love and friendship for the purpose of procreation. Some diseases are aggravated by marriage, as inveterate scrofula, epilepsy, confirmed phthisis, caries of the vertebræ, aneurism of the heart and large vessels; and as some of these and other diseases may be communicated to the offspring, they are considered by many as impediments to matrimonial union. Again, rachitis is often transmitted to infants; and this rachitic predisposition in the female, predisposes her to spinal and pelvic deformity, and it too often happens in such cases, that the female, the day she hopes to be a mother, is consigned to the tomb. Fodere says, marriage should be interdicted when the sacro-pubic diameter of the brim of the pelvis is less than the four inches; Orfila, when it is less than three inches; but defects of the outlet or perineal strait are as strong objections. (See pp. 9, 10.) Mania, and other forms of mental imbecility, are impediments to the marriage contract. It is necessary for this compact that there should be capacity to contract, and the consent of both parties.

The various requisites for conjugal union are seldom duly considered by society ; in fact, few persons trouble themselves about them. The age, constitution, or health of the parties, is scarcely ever considered, though highly important. All physiologists agree that early or premature procreation is objectionable on many accounts, from the imperfect development of the parties, the smallness of the pelvis, which exposes the woman to protracted suffering during parturition, and too often to loss of life. It is universally known to all practical obstetricians, that females who become mothers at an early age purchase the honour of maternity at a very dear rate. Such persons are liable to numerous disorders during gestation, the pelvis is unable to support the gravid uterus, it is too small for the passage of the infant, consequently parturition will be laborious and protracted, and finally must be completed by artificial means ; while the degree of pressure produced by parturition on the important organs of the pelvis, causes great suffering and danger to the woman, and may be followed by deplorable disease, or death itself. It is also generally admitted by the most eminent writers, that the present mode of female education is highly injurious to health, predisposes to spinal curvature, and consequently to pelvic deformity, thereby rendering procreation highly dangerous to the other sex. Writers on spinal diseases have very fully illustrated this position. Again, great injury is inflicted on the natural development of females, by the custom of tight lacing, the functions of the thoracic and abdominal viscera are impeded, the development of the mammæ and nipples is prevented, these parts are removed by absorption from pressure, the lactiferous ducts are almost obliterated ; the nipple is undeveloped, and therefore lactation is impeded, and the natural food of the offspring greatly diminished. Duges, and other foreign writers, allude to unnatural excitement of the generative organs, and contend that masturbation is the cause of rickets, and of various chronic and incurable diseases. British females are not infected with the vice, and no practitioner could allude to it. In the male sex, it is productive of the worst consequences, and often causes impotence and sterility. The female is unfit for the purpose of procreation until after the twelfth or fourteenth year, or until menstruation is established ; for at an earlier age the sexual organs are undeveloped, there is no venereal desire, and sexual intercourse is painful. Hence the cruelty and barbarity of violating female children of tender age,

which have been described in the section on *Violation of Women*.

The male is also incapable of performing his part in the mysterious process of procreation until after puberty, and according to the law of this country before the fourteenth year. He is not qualified to enter into matrimonial engagement until the completion of the twenty-first year.

There is no subject which distresses married persons so much as want of family, or leads to so much domestic feud and unhappiness, and finally to the nullification of marriage. It is necessary for the medical practitioner to be fully informed of all the causes which disqualify both sexes for the object of procreation. All disqualifications for matrimonial union may be divided into two classes, 1. those caused by defect of mental power; 2. those caused by defect of sexual organization. The disqualifications are therefore moral and physical, and are expressed by the terms *impotence* and *sterility*. These terms are often used synonymously, though widely different. *Impotence* consists in the incapacity for copulation, or in the impossibility of exercising the venereal act; *sterility* consists in the aptitude of the organs for procreation, without the power of reproduction. Thus a person may be impotent, but not sterile; and *vice versa*. Some writers apply the term impotence to the male, and sterility to the female; but such a distinction is arbitrary and unscientific; the female may be impotent from malformation, and the male sterile from excessive venery, self-pollution, and ablation of the testicles. We may observe here, that sterility does not afford a just plea for the nullity of marriage. We have to consider the manifest causes of impotence in both sexes, physical and moral.

Physical, manifest, natural or accidental impotence of the male.—The causes of manifest impotence of the male, are absence of the penis or testicles. There must be total loss of the penis, as the slightest penetration into the vagina is sufficient for procreation. (Blundell, Richerand, Sedellot, Manuel de Med. Legale, 1830, see p. 40.)—The absence of the testicles from the scrotum is no proof of their non-existence in the abdomen; unless the penis be small, the voice puerile, the beard absent, the form delicate, and the whole physical and moral constitution feminine. It is well known that the testicles may not descend into the scrotum, and be fully developed in the abdomen, and perform their func-

tions perfectly, and according to some writers, much better than in the natural situation. The destruction of one testicle by castration or disease, is no impediment to procreation. (Astley Cooper, *Marc. Dict. des Sc. Med.*)—When both testicles are diseased, their secretion is injured or destroyed, and sterility is the consequence. Frequent seminal emissions, or the sudden secretion of semen will be a bar to reproduction. The secreting power may be very much increased or diminished. The more fluid parts of the spermatic secretion must be absorbed, or it must be retained some time to fit it for procreation. Both testicles may be removed by castration; yet procreation be effected, as the vesiculæ seminales may contain a sufficient quantity of semen for one or two prolific emissions, after which the person will be sterile, but not impotent. M. Boyer was consulted by a man whose testicles were removed in consequence of sarcocoele. He saw his wife, and she became pregnant. He feared he was not the father; but M. Boyer assured him he might be, and if so, this should be his last infant. (Sedillot, *Manuel de Med. Leg. ut supra.*) But such persons, and also eunuchs, have erection and emission, which consists of the prostatic fluid, the mucous of the seminal vesicles and urethra. (Sir Astley Cooper on the Testis, 1830.)

The uterus may open above the pubes in monsters (Duncan and others,) and in such cases the individual is sterile. Mahon, and many other jurists, contended that individuals were impotent who were affected with hypospadias; that is, when the urethra opens through any part of that canal from its orifice to the scrotum. If the opening is so placed that it may enter the vagina, impregnation will follow. Frank relates a case in point. He knew a father so affected transmit it to his son, and even to three generations. Another individual had three sons. (Bull. de la Faculté de Medicine, 1810.) Morgagni, Petit-Radel, Sabatier, who was hypospadiac; Gauthier and Richerand have observed analogous facts. (*Dict. de. Sc. Med. art. Hypospadias.*)

Sometimes the urethra opens along the dorsum penis; this constitutes epispadias. It is evident that the reasoning employed in the preceding case is applicable to this. It may end in a cul de sac. (Goupil, Cloquet, &c.)

Dimensions of the penis, extraordinary thickness and length, are considered by some writers as causes of impotence. Fodéré is of opinion that the respective organs may be so disproportion-

ate as never to be adapted to each other ; and the physical inconveniencies are such as to expose the female to great injury and danger to her health. It must be admitted, however, that thickness of the penis, which excites great pain in some women, procures voluptuous sensations in others, and that the vagina is capable of great dilatation, which may be effected by gentle and gradual efforts, and reduced to a state capable of receiving the virile member. Though extreme length of the penis may produce contusion of the os and cervix uteri, it cannot be deemed a just cause of impotence, because, by certain precautions, this danger may be avoided, unless there is great difference between the age of parties. Diminutiveness or shortness of the penis is no proof of impotence, for the reasons already stated. Obliquity, tortuosity, or bifurcation of the penis, bad stricture of the urethra, phymosis, paraphymosis, warts, chordee, chancres, or excessive length of the frænum, cannot be considered absolute causes of impotence, as they can be remedied by surgical operations. Large scrotal herniæ cause recession of the penis, and render coition impracticable ; but in some cases relief may be afforded. The same observations apply to large hydrocele. Sarcocoele or scirrhus of the testicle does not cause absolute impotence, as it may be removed by operation ; and one testicle remaining is sufficient for procreation. The testicles may disappear by disease (R. Hamilton, Lallery, Fodéré), or by the use of iodine. Three conditions are necessary on the part of the male for copulation—*erectio et intromissio penis, cum seminis emissionem*. Impotence in men depends on defect of some one or more of these conditions ; erection, intromission, and ejaculation of the spermatic fluid. The causes of impotence are more commonly observed in man than in the other sex ; and this is easily accounted for, by the greater part of the male has to perform in nuptial congress. This is evident from the phenomena which gave the virile member the form and disposition proper for erection, the introduction of the organ, and the ejaculation of the semen, effected by a violent and complicated action, which requires a concurrence of many indispensable conditions, as the organs not only contract spasmodically to effect the expulsion of the male fluid, but all the body participates in this convulsion at the moment of emission, as if nature at this instant forgot every other function. The causes of impotence in man arises from two sources, from malformation of the genitals, or from

want of action in them ; but in females, impotence can only depend on malformation, natural or acquired, as the organs have little to do in the act of copulation, they being merely auxilliary to it.

The causes of want of erection may be divided into physical and moral. The physical causes depend on defects of the body as paralysis of the penis, curvature of the spine,* frigid and apathetic temperament. The moral causes are such as act powerfully on the imagination, and suddenly produce an atony of the genitals, or induce an inactivity in organs properly developed. The genital organs, says M. Virey, offer two states during life, in the young and old, which are the frozen zones of existence, the intermediate state is the torrid zone of life. The infant has nothing to give, the old has lost all. Immaturity of age and senescence are causes of want of erection. This doctrine, though generally correct, admits of exceptions, as children have been precociously developed even before the fourth year, examples of which I have already cited ; and our author described a boy, aged seven years, a native of the department of Lot, who was as fully developed as an adult, and who made the most furious comic attacks on his female acquaintance, and absolutely deprived one of them of that which she could never regain. On the other hand, a Frenchman, aged ninety-nine, married a tenth wife, and was a father at 102 (Bosquet) ; and Thomas Parr, married at 120, and performed his nuptial duty so well at 140, as to make him forget his old age. He was even compelled to appear in a white sheet at one of our churches, for an amour, in his 150th year. He outlived nine kings of England. (Elliotson.) But in general, the power of procreation continues from puberty to the 65th year. Immaturity of age, or senescence may be put down as the first causes of want of power of erection. Among such causes, we must reckon a frigid or apathetic constitution, a total insensibility to sexual desire, and this is said to be an aggravated or profound lymphatic temperament. Descourtiz describes persons of this temperament in these words : " The hair is white, fair, and thin, no beard, countenance pale, flesh soft and without hair, voice clear, sharp, and piercing : the eyes sorrowful and dull, the form round, the should-

* Dr. Harrison has lately published some cases of this kind, which were cured by the removal of the spinal disease. (Essay on the Powerful Influence of the Spinal Nerves on the Sexual Organs, 1831.)

ers straight, perspiration acid, testicles small, withered, pendulous, and soft, the spermatic cords small, the scrotum flaccid, the gland of the testicles insensible, no capillary growth on the pubes, a moral apathy, pusillanimity and fear, on the least occasion, are symptoms of anaphrodisia or impotence or sterility, and any one having the majority of these signs is incapable of copulation or generation." (Propositions sur l'Anaphrosidie.)

A habitude of chastity is another opponent to erection, such as with the ancient fathers of the desert, and in those who, by fasting and other forms of church discipline, extinguish those feelings implanted by nature, but, in their opinion, contrary to that purity which should distinguish those who have made vows of chastity. The organs of such persons decay, like all corporeal organs whose functions are not exerted. Long continued debauchery, whether with women or by masturbation, will cause impotence. Every practitioner has met with cases of both these kinds. "The impotence," says Pinel, "caused by the latter excess, reduces youth to the nullity of age, and is too often incurable." Long watching, great fatigue, mental or corporeal, want of nutriment, excessive evacuations, sanguineous or otherwise, of blood, bile, fæces, silvia, menses, scorbutus, cachexia, marasmus, peripneumony, hydrothorax, anasarca, malignant fevers, diseases of the brain, and spinal marrow, whether from external injuries or poisons, and numerous other diseases, are temporary causes of impotence. Sexual desire is suppressed by acute diseases, and returns after convalescence. Zacchias and Beck relate numerous cases in proof of this position. We see this further illustrated during the convalescence after fevers, when erection often occurs. Some diseases stimulate the generative organs, as calculus in the kidneys or bladder, gout, rheumatism, consumption, piles, mania, itch, leprosy, and other cutaneous affections. Others may diminish or suppress venereal desire for twenty-four years, when the functions will be restored. (Zacchias.)

Excessive venery is a frequent cause of want of erection and impotence. I have been consulted in cases of this description, especially after marriage. This is a frequent cause of want of family in young married persons.

The abuses of narcotics, saline refrigerants, acids, acid fruits, iodine, camphor, and nitre are causes of impotence. Of all cau-

ses cold is the most powerful. Thus, in the Polar regions, there is neither love nor jealousy.

Moral Causes.—There are no facts which so evidently prove the influence of the moral over the physical state of man as the phenomena of erection. A lascivious idea will arise in the midst of our gravest meditations; the virile organ will answer its appeal, and will become erected, and fit for the functions which nature has confided to it; but another thought arising, will instantaneously extinguish, with the most frigid indifference, all our amorous transports.

This statement is well exemplified by the effects of the passions. Chagrin, inquietude, and debilitating passions, prostrate the whole economy; jealousy and profound meditation impede the faculty of procreation. Thus, at the very moment when enjoyment is about to be commenced, too eager desire, the trouble which seizes on too ardent an imagination, the excess of love, the fear of not being loved, timidity, respect, doubt of capability, the fear of being surprised, the shame of excessive modesty on being in the presence of witnesses, antipathy, the sudden knowledge of some physical defect in the female, aversion from filth, odour, and pre-occupations of the mind, are sufficient to oppose the erection, and to abate it most suddenly. But who can enumerate all the moral causes capable of impeding or destroying erection? A sigh, doubtfully interpreted, a recollection, an equivocal word, are sufficient to destroy the illusion, and congeal the most violent passion. A newly-married man has become suddenly impotent on discovering his bride was without a hymen; and a debauchee has as suddenly become impotent, on finding the membrane perfect. (*Dict. des Sc. Medical.*)—And thus with a literary man, philosopher, or those who have a ruling idea, which excites the brain more than the sexual organs. The fear of being impotent is the most frequent and powerful cause of this condition. Thus the cases related by the illustrious Hunter, and the absurd impressions of former times, as to the influence of his satanic majesty and his worthy colleagues, the witches. Men supposed there was no physical power when the moral state had consumed their desires, and they were impotent as long as they supposed themselves so. Such is the power of the moral over the physical state of man. How many impotent persons of this class were cured with bread pills, by Hunter; and how many are annually cured by mere pla-

cebos? In remote ages men allowed the illusions of the imagination to have a most extraordinary power over their minds and bodies. This was most remarkable in the subject before us.

Thus, we cannot easily comprehend how the power of rue, or St. John's wort, could prevent a man, properly developed, from performing his nuptial duties on his bridal night; nor how the pronunciation of a few obscure and unintelligible words, could have a similar effect. These words were to be written on paper with the blood of a bat, sewed up with a needle which was used in making the shrouds of the dead, and then the charm was to be tied round the neck of the new married man (Venette; also *Les Secrets du Petit Albert*;) or merely pronounced. To cure this enchantment the church prescribed prayers, the doctors physic, and the law severe punishment. Bacon describes it in his *Natural History* as prevalent in Germany and France; in the latter country it was designated *nouer l'eguilette*, or trying the point. Mr. Hunter's plan was best. He ordered timid bridegrooms to refrain from any venereal combats for a week, no matter what might be their desires, and then to try their prowess. This cure was effectual, and many of his patients succeeded sufficiently to remove all unfavorable impressions of impotence ever afterwards. They casually took some mild form of medicine, and a few drops of tincture of opium each night, during the period of preparation.

Impotence, natural, manifest, or accidental, in women.—It has been long held, I think erroneously, that the generative organs of the female are more complicated than those of the male, and therefore that the causes of impotence are more numerous and less apparent than in the other sex. If we examine the genital organs of both sexes anatomically, we shall find them equally complicated, and possessing an equal adaptation or arrangement of parts, as well as an identity of structure. Thus we find the structure of the penis very similar to that of the genital fissure and vagina, the double fold of prepuce, the cavernous structure, its performance of a part of the genito-urinary functions, the openings of the vesiculæ seminales and uterine tubes, the vesiculæ seminales and uterus, the testes and ovaries, the spermatic cords and the uterine tubes. We also find the diseases of one sex as numerous as those of the other; and those who doubt the assertion, need not refer to the works of Chopart, Titley, and others, on diseases of the genito-urinary organs of the male, for ample proof of the posi-

tion. I need scarcely observe, that diseases of the vasa deferentia, vesiculæ seminales, the pressure of tumours, hydatids, &c., on these parts, diseases of the prostrate glands, urinary calculi diseases of the urethra, fistulæ in perineo, diseases of the bladder, penis, and scrotum, will be found as numerous as those of the generative system of the other sex. Besides, it would be inconsistent with the wisdom and beneficence of Providence that one sex should have more to do in the perpetuation of the species than the other.

The causes of impotence in women are malformations or diseases of the organs subservient to procreation. Some of these causes are apparent, others obscure. The apparent causes are, obliteration of the external sexual organs, both soft and hard, absence of the vagina and uterus, and great deformity of the pelvis, with numerous diseases of the external and internal genitals. The vagina and uterus have been found to consist of a dense, fleshy substance (Morgagni, Mott, Fodéré), and the vagina has been partially closed by such substance. (Pare, Ruysch, Fabricus, Physick, Fodéré.)—It may be absent (Haller, Vicq. d'Azyr, Journ. des Savans, Boyer, Caillot, and Willaume), unusually small impervious from adhesion, tumours or a frænum passing across above the hymen, or it may be filled with a fleshy growth. If too narrow, it may be dilated with a bougie or a tent sponge, and when unattended to must be divided by incision, to admit the passage of the infant. It has closed up after conception. There is sometimes a great congenital confusion of parts, so much so, that it would be tedious, if not impossible, to describe it. In cases of extreme narrowness, impregnation may take place, and the canal be gradually dilated during parturition. I have seen four cases of cohesion of the labia externa, at the age of puberty, so complete, that only a small probe could be introduced at the superior commissure. The vaginal canal may be totally or partially obliterated, and in such cases an operation is impracticable, and impotence absolute. The vagina has opened into the bladder (Sue), rectum, anterior parietes of the abdomen, and pregnancy has occurred in the two latter cases. Morgagni attests that of the abdomen, lib. v. epist. 67; and the other is given in the Annales de Med. de Montpellier, which led the celebrated Louis to propose the following question to the casuists; “An uxore sic disposita uti fas vel non, judicent theologi morales?” Barbaut cites two examples of pregnancy of this kind. (Dict. des Sc. Med., art. Impuissance.)—Orfila

contends such malformation is a cause of impotence ; for though coition is not physically impossible, it is contrary to the laws of morals and of nature. The royal court of Treves annulled a marriage in such a case. In cases of vesico-vaginal, recto-vaginal, fistulæ, and amplification of the vagina from laceration of the perineum, inflammation and ulceration may occur and impede sexual intercourse ; but such cases could not warrant a divorce, as they occurred after marriage. Excessive straitness or partial occlusion of the vagina, is no impediment to procreation, as fecundation may occur, if the spermatic fluid be applied inside the labia, as already mentioned. Besides, fecundation has happened, and hymen perfect. (Ruysch, Pare, Smellie, Hildanus, Mauriceau, Baudelocque, Nægele, Nysten, Journ. de Med. de Corvisart, and Leroux.)—Prolapsion and some forms of ulceration of the vagina, are only temporary causes of impotence. Cauliflower tumours of the clitoris or nymphæ may be temporary causes of impotence, as also tumours in the vagina. (Burns, Trans. Dublin College of phys. 1824, vol. iv ; Edinburgh Med. and Surg. Journ., 1805.)—Leucorrhœa is one of the most common causes of sterility.

The uterus may be absent. (Columbus, Schlegel, Morgagni, Meyer, Renaudin, Hamilton, Bousquet, Theden, Engel, Lieutaud, Caillot, Ford, and Breschet.)—I might quote numerous writers who describe the cavity of the uterus divided by a septum, but it is not stated whether or not procreation was impeded. Many authors have also described partial or total obliteration of the uterine cavity, among whom are Bichat, Lallement, Segard, Gardien, &c. The uterus may be double, that is there may be two uteri. (Haller, Purcell, Med. Facts, vol. iii ; Mem. Med. Science, vol. iv ; Lond. Med. Journ., 1782, vol. iii ; Dict. des Sc. Med., Medical Transactions, vol. vi ; Duges, Journal de progress, vol. xxii.)—A vicious direction of the os and cervix uteri, and complete occlusion of the former, are irremedial causes of sterility. The whole of the causes of impotence and sterility in females may be arranged under three classes ; 1. those depending on the organs which receive the male fluid, namely, the genital fissure, the vagina, and uterus ; 2. malformation or disease of the organs that transmit it to the ovaries, and reconvey the embryo to the uterus, and these are the fallopian or uterine tubes ; 3. the malformation or diseases of the ovaries, or organs which supply the germ for fecundation. Inflammation, ulceration, scirrhus, cancer,

ossification, calcareous deposit, or tumours in any of these organs, may be the cause of sterility. In fact, any disease of the female genitals, attended with much constitutional disturbance, may be held a temporary cause of sterility. Tumours of various kinds, callosities, cicatrices, adhesions, from disease or mechanical violence, displacement of the uterus, prolapsus, procidentia, retroversion anteversion, lateral obliquity, and the various disorganizations incident to muscular, serous, and mucous tissues, when present in the female organs, are causes of sterility. In the *London Medical and Surgical Journal*, 1830, vol. iv, is an account of two singular cases of procidentia uteri; in both impregnation was effected through the natural orifice, though permanently fixed without the genital fissure for years. I have also published cases of dysmenorrhœa, in which pregnancy occurred. In the disease called irritable uterus, so well described by Gooch and Dewees, a cure may be effected. In absence of the ovaries and uterine tubes there can be no conception; or in dropsy, or enlargement of the former; or in occlusion or adhesion of the latter to the uterus or adjoining parts. There are some cases of constitutional sterility, which are inexplicable; for example, those in which a woman has had no family for years, and at length becomes a mother.

The principal moral causes of impotence are hatred, disgust, fear, timidity, an excessive ardour of desire, divers ramblings of the imagination; in a word, every passion strongly excited, that is to say, all cerebral action so strong as to diminish that of the genital organs, which require for coition great exaltation. Conception seldom happens under such circumstances. Fodere is of opinion that complaisance, tranquility, silence, and secrecy are necessary for prolific coition; it is arrested, as if by enchantment, by noise, dread, fear, publicity, jealousy, contempt, repugnance, slovenliness, by love too much respected, and by every thing that can illumine the imagination.

Many of the causes of impotence in both sexes may be removed, but many are beyond the reach of art. It has been long maintained that the powers of the mind have great influence in promoting and impeding the process of procreation. (See p. 41.)

From the preceding statements we may, I think, deduce the following general principles:

1. To declare either sex impotent, it is necessary that certain

physical causes be permanent, malformations or accidental lesions, and be evident to our senses, which art cannot remedy, and which prevent the faculty of exercising a fecundating coition.

2. These causes, when rigorously examined, are few in number.

3. The moral causes of impotence ought not to be taken into consideration, as they would serve as an excuse for an individual accused of impotence.

4. That if there is the slightest penetration into the vagina, it is sufficient to excite in the other sex a degree of erethysm necessary for fecundation; or if the spermatic fluid is applied at the entrance of the vagina, virile impotence cannot be admitted.

In this country the medical jurist is seldom required to decide questions of impotence or sterility in our courts of justice; but every medical practitioner may be consulted in private, either before or after matrimonial engagements. He may be the cause of great domestic trouble, and embitter the life of male or female. He should be exceedingly cautious in fixing the stigma of impotence or sterility on either party. The legitimacy of children may be contested on a plea of impotence, and such a plea may be offered by a man accused of rape. It is therefore evident that a proper knowledge of the subject is necessary to the medical practitioner.

Ambiguity of Sex.—Hermaphrodites.—There may be malformation of the genitals in both sexes, but there is no example of one individual possessing the perfect organs of both. Again, the organs may not resemble those of either male or female. There is no truth in the statement, that hermaphrodites have married and propagated; the obstetrician is aware of the physical impossibility of a full-grown infant passing through the male pelvis. It is evident that hermaphrodites must be impotent and sterile. The ancient physicians were of opinion that such persons might propagate. Even a canonist went so far as to maintain one individual could propagate within himself or herself, “*tanquam mas generare ex alio, et tanquam foemina generare in se ipsa.*” There is no case on record of a perfect hermaphrodite, and no truth whatever in the assertion that such class of beings can propagate the species. I can see no difficulty in supposing that persons of both sexes, with malformations of the genital organs, may marry, when I recollect the curious and well-attested case of a female, who

dressed in male attire, and assumed the name of James Allen, married another female, and lived as a husband for several years without detection. This case happened in London, in 1830, and was discovered when Allen died; and on dissection was found to be a well-formed female. Also the case of Marie Marguerite, who was born in 1792, and considered a female till 1813, when her real sex was determined, as mentioned by the French jurists.

Voltaire, that enemy to religion and disgrace to mankind, exerted his depraved mind to prove that hermaphrodites, or androgyni, might beget offspring. He said there were many insects of both sexes, and why not the human race be of the same nature? I answer, because the union of the reproductive organs in the same individual must prevent all possibility of generation. In such a case, and no such is on record, or could happen, there should be two distinct sets of arteries, veins, nerves, and organs, which have never been discovered by anatomists. Would it not be inconsistent in our species and in almost all classes of perfect animals, to be amorous and to be the object loved; to be ever present with the object of desire, and every instant to have the means of gratifying desire? Human life would be a tissue of amorous transports and of luxurious sacrifices, which would render man totally unfitted for the performance of the social duties allotted to his condition.

The idea is absurd, erroneous, unscientific unnatural unscriptural, and could only have been cherished by a miserable man, ignorant of anatomical and physiological science, an enemy to nature, morals, and the divine principles of Christianity.

Rochefort relates in his dictionary a case of a Scotch servant, an hermaphrodite, who was condemned to be buried alive, for having impregnated the master's daughter, and that the French parliament permitted persons of this class to marry, whether they were men or women, but never to deviate from the functions of the sex which they had adopted.

Skenchius asserted he knew a reputed hermaphrodite married to a man, and who had sons and daughters, and yet that this person impregnated servant maids. Here is a medical fact with a vengeance, one of the mendacious stories of the dark ages. If we examine this case critically, we find it unsatisfactory and incredible. It is a hearsay fable, a reputed case, with no description of the genital organs, no proof that the individual possessed

male organs. Admitting that this person had elongation of the clitoris, it was more likely that the servants distributed their favours, after a partial taste of the sweets of Venus, than confined themselves to the embraces of this individual. Such was the gross credulity of physicians in ancient times, and the wisdom and infallibility of canonists, who held the maxim, "that a man could propagate in himself, and a woman in herself."

Blackstone says, "a monster having deformity in any part of its body, yet if it hath human shape, may inherit; and every heir is male or female, or hermaphrodite; that is, both male and female, and shall be heir according to that kind of sex which doth prevail, and accordingly it ought to be baptized. The same is observed in cases concerning tenants by courtesy." As the brain is generally perfect in monsters, and the mind perfect, it is clear that such persons ought to inherit property. When two persons are united at the chest or back, as in the cases of the Siamese youths, lately exhibited in this city, and the Hungarian sisters exhibited in 1723, it would be difficult to determine primogeniture or right to property.

Before I consider the treatment of impotence, a few words may be said on the law relating to divorce, on account of this defect.

Divorce.—Marriage cannot be legally contracted in these countries without the full and free consent of the parties, and hence medical men may be called on to decide whether one of the parties was incompetent to perform the compact from mental imbecility, inebriation, or narcotism. Adultery, of either party, or external violence, is a sufficient cause for divorce in this country. The former can be proved by the temporary impotence of the husband at the time of conception, or by the birth of an infant in the absence of the latter (See Legitimacy and duration of Pregnancy); or by the existence of syphilis in either party. By the law of this empire the parties may marry again; but in all Catholic countries there can be no second marriage during the life of either party. A divorce is granted whenever it is proved that corporeal imbecility existed before marriage. The contract is declared null and void, *ab initio*. Imbecility after marriage is not a sufficient cause, because there was no fraud in the original contract (Blackstone); and to provide for this case, the ritual prescribes in the marriage ceremony, by compelling each party to swear

“ that he or she takes each other for better for worse, in sickness and in health, until death do them part. ”

Treatment of Impotence.—There is no work in the English language which gives a complete account of the causes and treatment of impotence ; and hence I have undertaken the task of supplying this want, with what success the reader must determine. The subject is one of importance to all classes of society, and deserves as much attention as any other malady. How much is one to be pitied who never felt the desires of love, whose icy heart never palpitates at the sight of a lovely woman. His existence resembles the insensible marble ; his soul is as cold as the stones of the grave ; his life resembles death. But how much more is he to be pitied, who has extinguished his desires, and languishes to obtain that pleasure which his organs refuse, and which he cannot obtain at the expense of all his tenderness for a sex which he adores. The first must remain in the sad apathy in which he is plunged ; the second may be ensured hope in the majority of cases. Persons affected with impotence must avoid the alluring promises of empirics, who, one and all, are perfectly ignorant of the innumerable causes of the affection, and whose nostrums do much more harm than good. It will appear by the subsequent remarks, that no single plan of treatment is effectual : that a variety of causes must be removed by a variety of remedies. Many of these causes are removable by medicine or by surgical operation ; many are beyond the power of either. In corroboration of the truth of these remarks I am happy to quote the authority of Sir A. Cooper.

“ There are,” says he, in his last course of lectures, 1823, “ several causes which produce a destruction of the virile power. These may sometimes be traced to a peculiar sluggishness of constitution, to a general torpor of the procreative system, on which the usually attractive animal affinities exert no influence. To such persons a Venus might display her charms, and on such her son might exhaust his quiver in vain. No genial spring is here, no blooming summer or fruitful autumn ; but all is winter, a dreary, desolate and barren winter ; in which the springs of life are frozen up and the animal propensities destroyed. Some men are so constituted that they may be said never to possess a venereal stimulus, and some of the other sex are equally frigid. I knew a person who remained unwarmed by the flame from the hymeneal al-

tar for seven years, and who was incapable of performing the duties which devolved on him.

"Gentlemen, it is likely you may hereafter be consulted on these subjects; but these are some of the arcana of the profession into which you will not readily be admitted. No, it is not until you have contended long with popular prejudices that you will be made acquainted with important secrets. When forty years of practice, or perhaps more, shall have rolled over you, when you shall have the snow on the tops of the mountains (*here the esteemed professor, with great good-humour, passed his hand through the white locks which grace a well-formed front*): then it is, and not till then, that you will be required to give your opinion on such weighty matters! (*A laugh.*) When consulted by persons about to enter the marriage state, you should ask if they have any development of sexual power in the morning? and if they have, depend on it they will not be deficient in energy in the after part of the day; but if otherwise, advise them by no means to marry.

"Another cause which might produce the calamity we are now considering, is an *excessive irritability* of the *vesiculæ seminales*, which produces a premature expulsion of the seminal fluid, and this is almost as bad as the former cause. Sometimes it is the result of debauchery, but most frequently it occurs in irritable and delicate young men. In such cases we have to support the constitution by a generous diet and bark, giving at the same time opium, to allay the irritability. In addition to which, let the person stand over a large pan of cold water, and dash it over the genitals two or three times in the day. Turpentine and rhubarb are sometimes given, but I am not sure that they do any good.

"Another cause of impotence is the frequency of nocturnal emissions, and this is most commonly the case with young people. It is frequently the effect of bad habits at school, and it occasions a great degree of anxiety. We must try to lessen this, by representing to the party that it is an occurrence which frequently happens to persons in a state of health every nine days or a fortnight, although in the patient's case it may happen two or three times during the night. The treatment of this species will be very much as the preceeding.

"Sometimes it arises from a wasting of the testicle, or from an abscess of this gland, producing absorption of its structure. The removal of one testicle does not destroy, neither does it seriously

impair the generative power. The removal of both, emasculates. There is an opinion to the contrary, but it is an erroneous one. This loss of power does not happen at once, the secretion of the semen continues for a short time, and the inclination and the power remain; but gradually the desire, and afterwards the power is extinguished.

“Impotence sometimes arises from the testicles not having descended. Mr. Hunter has said that the testicles, when confined in the abdomen, do not exercise their functions. This is the case when the testicle is pressed upon by a congenital hernia, when in the inguinal canal; but in the case of an apprentice of mine, who shot himself because his testicles had not descended, the secretory ducts were found full of semen. Impotence sometimes arises from the state of mind, generally from too great an impetuosity and eagerness to cohabit. A gentleman, for example, is recently married, and if not able to perform his wishes in two or three days, he is very full of anxiety, and the imbecility is considered by him to be permanent. When consulted by such a person, you must not try to laugh him out of it, but tell him that it is not uncommon, but that it is necessary that he should promise you to abstain from the attempt for three or four days, or until he has taken all the pills which you will give him. These may be made of some harmless material, and that if he will observe what he has promised, he is sure to get quite well. He takes two or three pills; but the very promise he has made, and the impression made on his mind by the promise; induces him to do the very contrary, and it seldom happens that he can return with any complaint.” (Lancet, 1824.)

Such are the very brief observations of the first surgeon in the world, on the causes and treatment of impotence. That there is much room for a further consideration of the subject I shall endeavour to prove in the succeeding remarks.

In the first place, we should endeavour to remove all defects of conformation that are curable by surgical operation, restore diminished function, regulate disordered action, and tranquillize all parts, especially the brain, whose excessive activity affects the generative organs. Every well-informed physician and surgeon must admit that a great variety of medicines and of operations may be resorted to with advantage. It is to be recollected, however, that most of the pretended aphrodisiacs, external and internal, electri-

city, flagellation, and urtication are without effect, or produce a momentary effect, and that a complete change of regimen and of life can produce the necessary effect on the economy.

In the second place, to avoid excess, to appease the imagination, to regulate the digestive functions, that is, to attend to the morbid conditions of the brain and stomach, which so often cause impotence, is the only method upon which we can hope for legitimate success.

In the last place, we must regulate the function of menstruation.

Impotence may arise from excessive venery, natural or otherwise. Thus we find young persons, before the adult age, incapable of procreation; others equally so in the prime of life, and others in this condition about the middle age. These unfortunate persons seldom consult respectable physicians or surgeons, or if they do, are too often derided and unrelieved; and hence the application to ignorant quacks, who fatten upon the fears of their victims.

I have now a gentleman under my care, who was treated in this manner, and driven to a rapacious empiric, who in a time fleeced him of fifty pounds, for much injury received. Such cases are of daily occurrence. Derided by the profession, or exposed to acquaintances, such persons are almost afraid to consult their ordinary medical attendants, too many of whom forget the sacred pledge they have given, on obtaining their diplomas, to keep secret all delicate cases which come before them. Hence, an unreserved disclosure of the symptoms is seldom given, from fear of exposure, or through bashfulness, though the most implicit confidence may be placed in all eminent and honourable members of the profession. I shall not prosecute these remarks, but proceed to consider the subject under notice.

It is universally admitted by all medical writers that excessive venery, either by bad habits acquired at school or by legitimate means, too generally cause impotence and sterility. It would be foreign to my purpose to expatiate upon this subject, but I may observe, that excess of amorous pleasures produces nervousness, hypochondriasis, indigestion, disorder of the digestive functions, melancholy, and great enervation of body and imbecility of mind, the latter often causing a great propensity to suicide. Those to whom these observations apply will find all their multitudinous symptoms under the above heads, in any popular system of medicine.

Dr. Parry speaks thus of immoderate and precocious coition :
 “*Inde apud mares oritur cultus præcox et effrenus, quo nihil mentem magis infirmat, nihil corporis vires frangit, nihil articularum, ventriculi, cordis, cerebri, morbis virium magis obnoxium reddit.*” (Pathology, 1825.)—*Hæc vero nimis culta,*” says Professor Gregory, “*valde nocet præsertim junioribus, quorum animos pariter ac corpora multum degenerat.*” *Conspectus de Med.*)—Every persons feelings must convince him of the languor, lassitude, and inertness which succeed the evacuation of the spermatic fluid. This was noticed by Aristotle, who said, “*Tristiam autem multum seminis emissionem censet, cur ex omnibus animantibus homo maxime omnium, postquam concubuit dissolvatur et languescat.*”

Frequent seminal emissions, whether by coition, masturbation, or pollution, greatly debilitate the mind, and enervate the body generally, and the reproductive organs in particular, which are rendered incapable of performing their natural functions. Physiologists hold that the semen must be retained for sometime in its receptacles, where its thinner parts are absorbed, before it can be prolific. Masturbation, manustrupation, or onanism, is the unnatural effusion of the seminal fluid, and is too commonly induced by young persons by the force of bad example. It is highly injurious to health, is contrary to morals, religion, and nature. It is condemned in the sacred writings, Gen. c. xxxviii. v. 10; Deut. c. xxiii. v. 10, 11; Lev. c. xv. v. 16; John, c. iii. v. 9; Prov. c. xxii. v. 11; Matt. c. vi. v. 1; Cor. c. vi. v. 15; Rom. c. i. v. 8. It is contrary to human nature; because it is beastly, terrestrial, and unworthy of man. It is sometimes commenced before puberty, and at this period becomes inveterate, unless removed by the legitimate pleasures of love; and if continued, excites an invincible estrangement from natural pleasure. When young persons are addicted to this destructive habit, they become inactive, dejected, fond of solitude, the appetite is diminished, there is great depression of spirits, and a total disinclination to activity, playfulness, and vivacity. These symptoms are greatly increased by the constant and frequent repetition of their cause. The forehead is partially covered with crimson-coloured hard pimples, called acne. There is great timidity and disrelish for society by such persons. The memory is impaired, and the power of comprehension considerably diminished; all the mental faculties so much injured, that stupidity, idiocy, and lunacy, sooner or later appears. The

digestion is much injured, and flatulence becomes a troublesome symptom, even before or after puberty. The senses of vision and hearing become imperfect; and blindness from amaurosis, or deafness frequently occurs. I was once consulted by a young man who had amaurosis of both eyes, whose spirits were as depressed as possible, and who finally confessed that excessive masturbation had produced his disease. We can easily understand how this and a variety of other formidable diseases may arise from too frequent coition, when it is recollected that it produces the most vivid and repeated stimulation of the whole nervous system, and excites an acute or chronic irritability, or total loss of sensibility in organs which are naturally the most irritable. Mr. Hunter was of opinion, that masturbation unless excessive, was not more injurious than coition, (*Work on Venereal*, 1st edition); but he recanted in his future editions. He forgot that the solitary masturbator can repeat his crime as often as he pleases; but the compliance of a female is not always to be obtained. Few escape the evil results of onanism, which is much worse than coition, being more frequently repeated, and being more vivid and violent. Hence we find it induces the worst forms of indigestion or morbid sensibility of the stomach, (*Andral, Pathol.*) the worst form of hypochondriasis, or lowness of spirits, (*Martinet. Therapeutics.*) aneurism, and other incurable diseases of the heart and its large vessels, (*Dict. de Med. & Chir. Pratiques*, art. *Arteritis*.) all the diseases of the brain and spinal marrow, (*Dict. Abrégé des Sc. Med.* art. *Onanisme*.) feebleness of the whole muscular system, chronic inflammation of the viscera of the chest, abdomen, and pelvis, and consumption, (*Op. Cit.*) stricture of the urethra, suppression or incontinence of urine, piles, and nocturnal emissions. These are only a few of the evils induced by excessive venery, as will appear by a reference to Tissot's work upon Onanism, to Winchman de *Pollutione diurna*, Beddoes on *Hygeia*, and A. P. Buchan's production, intitled "*Venus sine Concubitu*."

It has been held, from time immemorial, by moralists, physicians, and divines, that the mind, or imagination, by dwelling on obscene subjects, excites the commission and repetition of masturbation; and consequently, that the suppression and prevention of impure ideas is the chief indication for the prevention of this habit. The cure is certainly in the mind rather than in the body. Hence it is, that breaking through the association of such ideas,

controls and prevents even the most inveterate habit. Thus we find constant occupation prevents obscene ideas, and therefore constant attention to business, and exercise in the open air, are to be strictly enjoined in the treatment of this miserable affection. Solitude, indolence, and sedentary pursuits are to be carefully avoided. All causes which excite amorous ideas must be avoided; and the association of such ideas which has been long cherished, and influences the mind even during sleep, by exciting dreams and nocturnal pollutions, is completely destroyed by the use of opium, or other sedatives, at bed-time. Dreaming is often prevented by sleeping with the head considerably raised, which accelerates the return of blood from the brain. The best position upon which the patient can compose himself to sleep is on either side; for sleeping upon the back should be avoided.

The first and great rule to be impressed upon the sufferer is to return to the paths of nature. The next, to remove his morbid sensibility, or irritability, to all internal and external objects, by advising him to avoid all impure ideas or meditations, and by improving his general health. The derangements of the digestive organs claim great attention, and are to be improved by the ordinary remedies for dyspepsia and hypochondriasis. Cold sea bathing, and daily effusion of cold water on the genitals, are beneficial. Should there be an excessive secretion of semen, the food must not be too nutritious, as, of course, it increases all secretions. All drink should be rather cold and all liquors avoided. When the patient is reduced to a state of impotence from excessive seminal emissions, he too often supposes that these can be arrested by medicine. I have been often applied to under such circumstances after marriage; but need scarcely mention there is no astringent capable of arresting the evacuation. Such persons also request some temporary excitant; being ignorant that temporary excitement will be followed by collapse, and perhaps an extinction of the venereal appetite. The tincture of lytta has produced this effect. Of this and other aphrodisiac medicines hereafter.—The health should be restored so as to enable the sufferer to enter into wedlock. This is the natural cure of the malady. As the mind is greatly depressed in those who have indulged in excessive masturbation, they suppose themselves impotent should they fail to accomplish their wishes with a female selected at random; but this is an erroneous idea; for while the venereal desire continues,

and the organs are natural, there may be moral, but not absolute impotence. In such cases, some physicians have recommended concubinage; and if it succeeds, then marriage. This advice is decidedly immoral; but is so often acted on in general without a medical counsellor, that the reader must not be too ready to censure the faculty for occasionally proposing it. In any case, should the person marry, the rule laid down as to diet in a former paragraph is not to be followed, as here the most nutritious aliment, with a moderate use of vinous or ardent liquors, will be requisite to restore the general health and strength which had been impaired.

In some cases, the seminal vesicles discharge their contents, without any venereal desire being experienced, when the bowels are evacuated. This form of seminal effusion was called Diurnal Pollution, by Celsus, (Book iv. c. 21,) and other ancient writers. It is sometimes accompanied by the usual sensation. In other instances the semen is effused on walking, without erection, but with voluptuous sensations. A case of this kind came under my care, in 1825, the subject of which was a gentleman aged twenty-six, of a sanguineous temperament, spare habit, and tall stature. He was married about a year, and was distressed by as many as ten seminal emissions during the day, which were excited by the friction of his dress. He ascribed the original cause of his condition to the habit acquired at school. He did not indulge in natural marital rights more than once a week. He had tinc. opii every night, a blister to the perineum, and a free use of sulph. quiniæ, cold sea-bathing, &c., which removed his complaint. He was also advised to obviate the urgency of his infirmity by natural resources. Dr. Colles, the justly celebrated professor, of Dublin, was consulted in this case, and concurred in this mode of treatment. In a subsequent case, I found, in addition to the plan of treatment advised in these pages, that the daily introduction of a bougie was productive of much benefit. In cases of impotence arising from moral causes in which nuptial duty cannot be accomplished after marriage, the use of opium, with total abstinence from all attempts at procreation for a few days, nutritious diet, excitant drinks, and lytta, after the effect of the sedative had ceased, are generally efficacious.

I need scarcely observe, that the practitioner should endeavour to alleviate or cure all the diseases of the genital organs. Besides

manifest diseases of these organs, impotence may be produced by other causes, as the previous excessive use of the organs. Thus we find young persons, scarcely of the adult age, incapable of procreation; others equally so in the prime of life; and others in this condition when approaching the climacteric period. These unfortunate individuals seldom consult regular physicians; and if they do, they are treated with levity or derision, and therefore they must commit themselves to rash and unprincipled empirics. Dr. Cullen asserted there was no medicine or food capable of increasing the generative functions; and hence all British writers subsequent to his time have implicitly adopted his opinion. Therefore medical practitioners in this country, when applied to in cases of impotence, have no means of acquiring therapeutic information, or of affording relief to their miserable patients: some will observe, there is the *tinctura lyttæ*, so loudly praised as an aphrodisiac in many of our dispensatories; but we must recollect that it is as extensively condemned in others. When this remedy fails, as it generally does, then we must commit our dejected patients to the distressing despondency of their condition. It is therefore right to describe the remedies proposed in other countries; many of which are highly useful, others inert.

That some substances possess a power of exciting sexual desires cannot be doubted, for they manifest their power on animals, which cannot be supposed, like man, to be under the influence of imagination: thus the hemp-seed, buckwheat, will excite birds to copulate; and oysters, if eaten at the spawning time, will excite man, according to Bloch, and even their effects at times are very generally acknowledged.

Among the substances which augment the action of the generative organs, we find some which act by affording an abundance of chyle and general renovation, and these are called *spermatopia*; and others that act on the genital organs as excitants, as aromatics and stimulants, which first act as the former, and then are called *aphrodisiac* remedies.

Spermatopia.—All alimentary and highly nutritious substances are included in the first class, and these are evidently useful in all cases of debility, from whatever cause, from abuse of venereal pleasures, excessive fatigue, long and intense study, copious evacuation, inanition of every kind, as during convalescence after fevers and acute diseases; and in all these cases aphrodisiacs do more

harm than good. Then to all who have lost the power of erection from such causes, we exhibit mild, light, and nutritious food, which does not fatigue the stomach, which is easily converted into chyle, which is slightly tonic and stimulant; for example, strong chicken or fowl broth or jelly, slightly spiced, turtle, and other soups, eggs, oysters, rice-milk, sago, arrow-root, salep, chocolate, roast or broiled meats, a moderate quantity of white wine, air, and exercise of various kinds, walking, riding, &c., flesh brush, &c.

Aphrodisiacs.—We find many vegetable substances produce effects on the reproductive system. Thus the genus of plants called *umbelliferæ*, as the artichoke, celery, seeds and root of parsnip, carrot, and fennel. *Cruciferæ*, as radish, turnip, water-cresses, and rockets, which were strewed at the temple of Priapus.

Et quæ frugifero seritur vicina Priapo
Excitet ut Veneri tardos eruca maritos.

In the class *acotyledones*, the orange, mushrooms, especially the smaller kind, which with sweetbread were so lauded by Ovid. The French also include the *leguminous* plants—beans, especially those called French beans, which from their flatulent properties in distending the intestinal canal in the vicinity of the spermatic cords, excite the circulation in them, and thus ultimately excite the testicles, inducing artificial plethora, or increased circulation of blood in these organs. We must not forget the class *gynandriadiandria* of Linnæus, the *orchis*, *ophiris*, and *satyrion*. The bulbous roots of these plants resemble the testicles, exhale a spermatic odour, which has long fixed the attention of men, and induced them to think these excited love. Linnæus states that the leaves of *orchis bifolia* render bulls more ardent and vigorous for copulation. This class is highly nutritive; and hence the bulbs may be given with sugar, or in any other convenient manner. We find, in Genesis, that Rachel married Jacob; but had no family until she ate a certain plant, when she conceived of Joseph. This plant is called *dudaim* in the Hebrew text, and is called *cucumis dudaim* by Linnæus, a species of *orchides*: of this family is also the salep, which is prepared as article of diet, in the proportion of ʒ ss to Oij of water.

The sweet fruits, as peaches, pine-apples, raspberries, &c. are styled *spermatopia*. Of all the foods, fresh eggs are the most powerful aphrodisiacs. Chaumonton praises a fresh egg and choc-

olate, the yolk especially, as highly nutritious and aphrodisiac; and even we have a proof afforded by analogy from the stallion, whose generative functions are wonderfully increased by the use of eggs and sweet milk. We find it recorded, that Alcimenes, an Athenian, had triumphantly made fifty women mothers in one night!!! But perhaps this demigod had taken a few poached eggs to supper. It is also stated, that crabs, lobsters, pigeons, almonds, and hazel-nuts, have wonderful influence on the genital functions, as also oysters, ray-fish, and all cartilaginous fish. It has been long observed, that the Japanese, and other ichthyophagous nations, are highly prolific. There is no more prolific people than the Irish, the lower orders of whom almost wholly subsist on potatoes and fresh eggs; but we should recollect, that the greater part of our arrow-root is made from the potatoe, according to Dr. Paris (Pharmacologia.) Of all the causes of impotence, excessive venery, and too much chastity, are the most common; and to these we may add a cold and apathetic temperament, which arises from infirm and unhealthy parents. The sexual organs of such persons are badly developed. The excessive use and abuse of narcotics and refrigerants are causes of impotence. Phosphorus is a most powerful aphrodisiac; but cannot be exhibited, being a violent poison. Animals, to which it has been exhibited, died of the most violent and amorous convulsions. Borax has been exhibited to horses, and renders them most ardent; and that produced from sea-salt is best, which perhaps accounts for the salacity of the residents on the coasts.

In the class *aroides*, we have the *arum colocasia* of Linnæus, which is lauded by the Egyptians; the flowers of *pathos*, or *calamus aromaticus*, by the Malays. The saffron of the Juddææ is highly praised in the Ency. Méthodique. The seeds and leaves of the hemp are in great reputation with the Turks and Indians, combined with musk, ambergris, and sugar. The species *amomum* are remarkably aphrodisiac; galanga, ginger, cardamon, zedoary, curcuma, and the *maranta galanga*, of Linnæus, which is extolled by the Egyptians. The *myristicæ* are also included, as pimenta, mace, canella, myrtle. The Jews caused newly-married persons to repose on the flowers of sage and marjoram; and also used embrocations of oil of *spike*. We should not forget the ginseng, celebrated by the Chinese, the betel of the Indian, and the pepper, lauded by Tourtelle and Peyrilhe, or the opium and aromatics used by the Turks. The juniper-berries, *savine*, and

turpentine, have been long considered aphrodisiac, all of which irritate the urethra and vaginal canal, as in leucorrhœa and gonorrhœa. Many animal substances have been praised by the ancients, as the celebrated hypomane, which was nothing but the mucus of the vagina of the mare, which excited the stallion. (Olivier de Serres, *Théâtre d'Agriculture*.)—Castor, ambergris, musk, and civet, are also said to be of undoubted efficacy. Prosper Alpinus informs us, that the women in his time rubbed the genital fissure with ambergris and musk, to reconcile the good graces of their husbands. (Med. Egypt, lib. iii. c. 15.)—There is also a species of lizard, used by the Egyptians, called by the French *scinque Marin*, the yellow amber, the cricket, the ant, the spider, and lytta, which the women of Kamtschatka devour to promote fecundation. The use of cantharides ought to be banished from medicine, as it is a most violent poison, and it only causes priapism without desire, or violent strangury and inflammation of the bladder. Paré relates the case of an Abbé, who intended to be chevalier of Venus, and who had taken a dose of this drug, which produced a mortal hæmaturia. A cautious use of this medicine may produce aphrodisiac effects. The following formulæ are lauded in France as aphrodisiacs :

Essentia Regalis.

R. Ambra Griseæ, 2 scruples,
 Moschi, 1 scruple.
 Zibethi, $\frac{1}{2}$ scruple.
 Olei Canellæ, }
 —e Ligno Rhodii, } 4 drops,
 Carbonatis Potassæ, $\frac{1}{2}$ ounce,
 Tincturæ Rosarum, }
 —Flor: Aurant. } aa 1 $\frac{1}{2}$ ounces,

Solidis prius commixtis, dein immitantur olea, et denique tincturæ, stent in lagena bene obturata per triduum illico coletur liquor, et hujus sumantur minima pauca in syrupo.

R. Panacis quinque folii pulv. 5 ounces,
 Vanillæ aromaticæ, 10 ounces,
 Succini essentiæ, $\frac{1}{2}$ scruple,
 Tincturæ Lyttæ, 5 ounces,
 Olei Canellæ, 50 drops,
 Sacchari purificat. lbx,
 Mucilaginis, q. s.

M. et divide in pastillos granorum xxiv ex his sumantur quatuor singulis horis.

The tincture of Magnanimity of Dr. Virey is loudly extolled ; but I am unable to state its composition.

It is curious that many inert substances have an effect on some individuals, and will excite them to venery, though inert on others; those are the various vinous and ardent liquors. Bousquet never took rice and milk without much amorous propensities.

Independently of the various alimentary and medicinal substances now enumerated, there are others afforded by art and instinct which are originally preferred to all the drugs, as cold baths, erotic lectures, voluptuous music, amorous prints, female society, nudity, &c. "Eh!" says Bousquet, "quel homme resista jamais à la vue d'un jolie sein?" What passion and sensation arises at the sight of a lovely woman, a voluptuous marble or print! When all these means fail, it is necessary to resort to other measures, which are thus described by our Gallic contemporaries: "Il faut en venir aux frictions, aux attouchemens à l'excitations du mamelon, et des testicules, au chatouillement de la peau des lombes, ou de la partie interne des cuisses, aux lavemens âcres, au ligatures, au massage à l'emploi de l'électricité et même de l'urtication, et de la flagellation."

Flagellation causes powerful erection, and this has been long observed when soldiers underwent such punishment. Rousseau was thus affected at his eighth year, which was observed by his governess who never after punish him. (Confessions.) He as well as Swift was impotent from bad habits acquired at school. Strangulation is also an excitant, and men have lost their lives by urging it too far to gratify their desires. Such is the treatment of the physical causes of impotence. We next proceed to consider that of the moral causes.

Treatment of Impotence induced by Moral Causes.

All the depressing passions have great influence on the organs of the body, and their removal often claims the attention of the physician. The most frequent of these causes which impede the generative act are chagrin and inquietude. In such cases we prescribe the consolations of friendship and those occupations which divert the mind, and to these we add the use of tonics. Again, we know that ambition and jealousy have great influence on the

cerebral system, and often produce great activity in these and other organs, and hence we prescribe light, nourishing nutriment, acidulated drinks, a milk and vegetable diet, and recommend less exertion of the imagination, exercise almost to fatigue, and on no account the use of aphrodisiac remedies.

The effects of the strong passions if prolonged, such as ambition, hatred, jealousy, will suddenly prostrate the genital faculty in man; so also will too ardent desires, excited imagination, excess of love, fear of not being loved, excessive modesty, and numerous other sudden emotions of the mind, will suddenly destroy erection. These causes are to be ascribed to irritability, and are best relieved by tonics and antispasmodics. But what can we prescribe, if impotence arise from disgust, or physical imperfection in the female?

Sterility in Man.—It must be admitted by the best informed physicians, that in most cases it is absolutely impossible to determine, during life, what are the causes which render man or woman sterile. The most common causes in the former are immaturity of age, excessive venery, or senescence, together with defect of harmony between the moral and physical states of his constitution, the frigidity or the inordinate ardour of temperament; and perhaps these likewise apply to the other sex.

It is only on dissection we can be able to discover the physical causes of sterility. Then can we discover the absence of spermatic arteries, of the seminal receptacles and their appendages, the vasa deferentia, &c. The spermatic cords are often extensively diseased. The testicles may be atrophied or hypertrophied. If the secretion of the seminal fluid be slow and imperfect, as in weak, delicate habits, there will be more chance of fecundity than in strong and vigorous habits. Similar to the other secretions in the economy, that of the testicles may be increased or diminished; and nothing is so prejudicial to its power as its too frequent expulsion. Thus we seldom find a man who performs the sexual act oftener than once or twice a-week have family; and this fact we can readily understand, if we recollect the doctrines of physiology.

The fluid must be first secreted and next collected in the seminal vesicles for some time, where its thinner parts are absorbed, before it is fit for its functions. Hence the sudden secretion and sudden expulsion of it are injurious to the laws of the economy.

This accounts for the sterility of strong and healthy young married persons, many cases of which have fallen under my own observation. But as soon as such persons become less affectionate, and avail themselves of occasional enjoyment, fecundation will readily happen.

Again, we know that the male fluid is mixed with that of the seminal receptacles and prostate gland during ejaculation, if already too thin, will be so diluted as to render it unprolific.

It is a strange but certain fact, as yet inexplicable by the illumination of science, that those eunuchs who have no testicles have amorous desires, and will perform the generative act. They have power of intromission and ejaculation, but the fluid expelled is merely the prostatic. Even the perversity of humanity profited by this circumstance, and women have frequently indulged their passions with such persons, in ancient Germany and Rome, because there was no fear of impregnation, or as Juvenal has it, "*quod abortivo non est opus.*" Cannot we reproach the women of the present age with something analogous, when we recollect the wholesome precautions proposed by the disciples of Malthus and the French, to frustrate the end of marriage. The brutal proposition of the enemies of population in this country, which was propagated by a wretch upon whom legal vengeance has justly fallen, cannot defeat generation.

Zacchias maintained that marriage ought to be permitted to eunuchs, as its whole end is not for propagation but for mutual attention and comfort. And may we not contend it is as proper for such persons as for those impotent old men who embrace it on the brink of the grave.

Sir A. Cooper removed the testicle from a man on whom he had performed a similar operation sometime previously, and this man had erections and emissions, accompanied by the usual sensation, for some months afterwards. (Work on Diseases of the Testis, 1830.)

The sultans seem good physiologists, for they cause the whole external male appendages to be removed prior to the admission of eunuchs into their harems. This cruel and odious operation is fatal to every fourth person.

With respect to sterility in females, we are told by medical authorities there are thirty women in this condition to one man, and this on account of the complication of the sexual organs of the

former. I have already endeavoured to prove that this is a false theory.

When the physical causes of impotence do not exist in the external organs of the male, we should recollect the many internal causes which may account for this condition. Thus the diseases of the vasa deferentia, the pressure of tumours of other parts on their ducts, on the vesiculæ seminales, the diseases of these receptacles, hydatids, tumours, scirrhus, cancer, &c., the diseases of the prostate gland, enlargement, calculus, fungus, &c., the diseases about the neck of the bladder and seminal ducts, the calculus of the latter, tumours, &c., presence of stricture at the neck of the bladder and in the urethra, diseases that are described in many systematic works on surgery, but much more minutely in monographs on the respective organs. There are some physical and many moral differences between prolific and sterile individuals. We find the latter distinguished by effeminacy, paleness, flaccidity of the flesh, deficiency of beard, the hairs thin and lank on every part of the body, especially about the genitals, and the virile member is remarkable for its exiguity or smallness; the voice is sharp and feminine, and never develops, as in strong and vigorous individuals. It is also said such persons are pusillanimous, deceitful, and perfidious; but this does not apply to persons emasculated after puberty. I mentioned how the testicles may be retained in the abdomen, but not produce impotence. Bayle mentions a strange case of this kind, which occurred in 1600. A female obtained a divorce before the Chamber of Deputies in Paris, but the husband alleged he was capable of discharging his nuptial duties, and as a positive proof he proposed to perform his operations before the Chamber. The lady's modesty was shocked at the proposal, and she fascinatingly replied, "*Messieurs, vous savez tres-bein, que les testicules sont necessaires pour ejaculer.*"—"Gentlemen, you well know that testicles are necessary for ejaculation." She obtained a divorce. Even in 1665 the law of France required both testicles to be in the scrotum for the validity of marriage.

Rolfink relates a case of a man whose testicles had never descended into the scrotum, and who was a great votary to Venus, and a great favourite with the other sex, as they feared no unpleasant consequences from connexion with him. After death the tes-

ticles were found at the abdominal rings. (De Part. Genit., part i, c. 5.)

Sterility in Females.—We should consider the causes which impede impregnation, those which destroy conception the first few days after impregnation, the causes which prevent some women from ever having children, and those which induce abortion, or the premature expulsion of the offspring. The whole of these causes may be referred to three: 1st. those depending on the organs which receive the male fluid, as the vagina and uterus; 2d. the diseases of the organs which further transmit it to the ovaries, as the fallopian tubes; and 3d. the diseases of the ovaries. We have already considered the absence and diseases of these parts, as well as their excess or defect of function. In fact, all the morbid growths of these organs are causes of sterility. Fluor albus is the most frequent cause of the disease under consideration, as the male fluid is too much diluted after its effusion, and also is seldom retained, the retentive faculty of the vagina and uterus being lost. I have known this occur to the finest young lady I have ever beheld. Gonorrhœa acts in the same manner, as also hydatids, in fact, all secretions which inundate the genital organs and render them unfit to receive the principle of life communicated during the generative act. Too frequent coition is the common cause of fluor albus, or rather of an increased mucus vaginal discharge; and hence we seldom observe prostitutes have offspring. All acute diseases of the genital organs render the other sex barren, and most of the chronic maladies produce the same effect. Again, certain changes of the position of the uterus impede conception, as hernia, inversion, antiversion, retroversion, lateral obliquity, and renversement, or turning inside out of the organ. In all such cases the os uteri will not be presented to the penis; but I am strongly disposed to think that this is not the real cause of sterility, but the disorder of function, the pain, and often the disorganization going on in the genital parts, as the prevailing theory of conception now obtains, that absorption of the semen from the vaginal surface is the true cause of fecundation. The slightest penetration or intromission is sufficient for generation.

But there may be an inertness and frigidity in the uterus, and a total disrelish for the procreative act, even by well-formed, interesting, and lovely women. I have been consulted in four remarkable cases of this description, and in all the subjects were exces-

sively vain of their personal appearance, and fond of admiration, and having the strongest passion for dress and shew, but a complete frigidity to venereal enjoyments. They would talk most ardently of dress during the conjugal act, and suffered it without the smallest enjoyment.

Fine women are generally fond of admiration and dress, and seldom possess that desire so natural and common to the sex. Corpulent females have also this inertness of the uterus, and seldom bear children. Impuberty is a cause of sterility; although impregnation has happened prior to the appearance of menstruation. This is an exception, however, to the general rule.

On the other hand, too much activity in the uterus is a preventive to generation. Thus excessive irritability, too ardent for enjoyment, will derange the uterine functions; and hence our Gallican neighbours assure us that spasmodic contraction of the uterus will prevent the reception of the semen. But here I may remark, that in most cases there are no particular sensations experienced by the female at the time of conception; and thus we can readily understand why so many of them mistake their reckoning, that is, the period of pregnancy, which they often do, to the extent of one or two months.

The absence or obliteration of the uterine tubes, or the attachment of their extremities to the uterus, is said to be a complete barrier to conception, examples of which I have observed; but this is a mere assumption, and requires further observation to confirm its stability.

The ovaries secrete a fluid necessary to conception, and therefore the old opinion that females produced semen, is not so absurd as might be imagined. These organs may be affected with enlargement, scirrhus, cancer, and encysted dropsy, atrophied, or hypertrophied, as already described, and become useless.

Again, we are informed by Skenckius, that a Greek, being irritated at the prostitution of his daughter, removed the ovaries by the operation of spaying, by cutting through the abdomen. Women thus treated are said to lose all the moral and physical feelings of the sex, and assume those of the male; the voice becomes hoarse, beard appears, the mammæ become effaced, and even they have desire for their own sex. It is also well known that females of inferior animals assume the character of the male when the ovaries have been removed.

Treatment of Sterility in Women.—If sterility depends on the internal diseases of the genital organs of either sex, it cannot be cured, because during life it is impossible to ascertain the cause or even apply proper remedies. Thus the uterus, tubes, and ovaries may be wanting, or so diseased that no remedy can be of use. Again, if the seminal vesicles or their tubes be diseased, the case is hopeless. When a frigid temperament is the cause, we should have recourse to those means of exciting love which nature and instinct teach the sexes.

The general health must be first attended to, and then that diet and medicine employed which have been already described. If the simple fluor albus is the cause, and it generally is, it is to be treated as already mentioned. When excess of irritability of the uterus is the cause, the exhibition of saline refrigerants and the injection of narcotics, as poppy, opium, and decoction of mallows, will be used with advantage. If it depends on inertness of the uterus, we have many remedies to propose, as the aphrodisiacs already enumerated, opiates and aromatics, or injection of tinctures of assafoetida, castor, and amber into the uterus; irritating pessaries are also of great efficacy, and clysters of gratiola (hedge hyssop) are so powerful as to excite temporary nymphomania. Those means are more useful than the waters of the Nile, so lauded by the Mussulmans, and absolutely imported into Toulon, by a Captain Roustan, who was assailed by numbers of females, who wished to purchase his provisions, and among the rest “the waters of the Nile.” (Dict. des Sc. Med.)

Section 2.—Hygienic and Morbid Effects of Marriage.

At the age of puberty, young persons of both sexes experience a train of new sensations wholly indefinable which induce an imperious and irresistible desire for coition; a desire much more ungovernable in the male, so that if coition does not take place, the excessive activity of the generative organs induces unsolicited emissions of semen, especially during sleep, or the youth is misled by instinct to deliver himself up to solitary manœuvres—to onanism or pollution. This unnatural resource supplies the place of coition, and is even resorted to by some of the inferior animals. Nocturnal pollutions are the result of an excited imagination, and are not injurious to health, unless of too frequent occurrence. Diurnal pollutions are highly injurious to health from the frequency of repetition.

The truth of this position is manifest, if we only reflect upon the phenomena which occur at the instant of coition, when the sensitive action of the brain is carried to the highest degree of intensity. The collapse which instantly supervenes on seminal emission, extinguishes all desire of coition, in the same manner that hunger ceases after a repast. When coition is precocious, or too often repeated, it exalts excitability of the whole nervous system, and consequently of the whole body. In the midst of this excessive activity, the slightest morbid cause acts upon any of the important viscera, develops a morbid irritation, which may be followed by great prostration, convulsions, and even death, from the excited action of the brain. This is the reason why coition excites the nervous system, the organs of respiration, and circulation, expedites the flow of blood, and aggravates chronic diseases. It produces nervous excitement and consequent collapse or debility; and hence induces the diseases of debility, or as they are called the ataxic, and hence the danger of this debilitating cause to delicate persons, invalids, or convalescents. It has been followed by all these accidents when too much abused in old age, nay, it has caused sudden death.

There is no acute or chronic disease which the abuse of coition or frequent pollutions do not provoke, aggravate, or renew: the viscera of the head, chest, and abdomen are powerfully affected; diseases of the lungs and heart are developed, then those of the brain and nervous system; and, finally, those of the digestive organs, and articulations. These pathological remarks accord with the general phenomena which manifest themselves before, during, and after coition; the heart palpitates violently, its impulse is left over the whole side of the chest, and even in the abdomen, and the action of the arteries, or, in other words, the pulse is quickened in every part of the body. We cannot conceive that this tumultuous action of the heart can be frequently repeated, without producing different diseases of its tissue, both acute and chronic, diseases which are in general irremediable. The brain is also highly excited, and reflects its action on the chest and digestive organs, and not unfrequently produces convulsive or tetanic spasms in every muscle of the body. During this time the respiration is quick, difficult, and nearly suspended at the moment of seminal ejaculation. This violent condition in which every organ participates, is followed by a depression or collapse more or less pro-

longed, or by the greatest debility. It must be manifest to every one of common comprehension, that the frequent repetition of this violent commotion must be highly injurious to the faculties of mind and body, while the physician must consider it as the cause of an immense number of formidable and incurable diseases. It has long been observed that the bad effects of copulation are not so great on the other sex. We cannot explain the causes of this difference, perhaps it is that man contributes most to the perpetuation of the species. Irritation, inflammation, and excoriation of the sexual organs may arise from excessive venery, as also leucorrhœa and urethritis, accompanied by simple gonorrhœa.

It is a physiological axiom, that when an organ is irritated or inflamed, it affects all parts which are connected with it by nerves ; and hence we can readily explain how excessive action or disorder of the genital organs must affect all parts of the body, as all parts are intimately connected with each other by the cerebro-spinal system, or by nerves. In further illustration of this point, we may state, that irritation, discharges, or ulcerations of the genital mucous membrane, may be produced by diseases of remote organs, as the brain, chest, and abdomen, as described in the article on *Female Violation*. We observe the throat, the eyes, and the joints most commonly affected by metastasis, or sudden suppression of the genital disease. Here we must recollect the change of voice at puberty, and the momentary abolition of vision during coition. Amaurosis is induced by excessive venery, as exemplified in a case already narrated. Again, the sympathy of mucous membranes is universally admitted. When the mucous membrane of the rectum is irritated by worms, there is itching of the nose ; and when that of the cheeks or gums are affected by dentition, there is irritation in the genital portion of the same tissue. In cases of cynanche parotidea or mumps, when the swelling suddenly subsides, the testicles become inflamed, and hence the application of irritants to these organs for the cure of the disease. It is needless to illustrate the universal sympathy which exist between all organs in the body, there can be no dissent upon the point. From the preceding statements, the inference is manifest that coition must have the most powerful influence over the whole body, and if carried to excess is a fertile cause of an immense number of diseases. On the other hand its moderate use is necessary to the preservation of health. This is not the place to discuss its influ-

ence in a moral, religious, or philosophic point of view, but merely as a medical topic, that is to say, as relates to hygiene and pathology, or as a means of preserving health or inducing disease.

Let us now consider the influence of continence upon health and disease. A moderate use of coition regulates the functions of the brain or nervous system, and consequently of the whole body. Absolute continence or abstinence from venery in a healthy subject much disposed to it, induces many dangerous diseases, and even death. The venereal appetite is seated in the brain, or rather in the cerebellum, and is excited by the reproductive organs, and if not indulged, becomes greater and greater, and finally ungovernable, producing satyriasis, priapism, and nymphomania, which are often instinctively obviated by masturbation. If not so obviated, or by nocturnal pollutions, the morbid condition of the brain deranges the functions of the organs of sense, as vision, hearing, &c., and of thought and volition, and hence hypochondriasis, mania, monomania, apoplexy, epilepsy, convulsions, hysteria, and catalepsy, low fevers, disorder of the chest and abdomen, may be the results. But such effects are seldom seen, inasmuch as absolute incontinence is seldom if ever observed. It is, however, the ornament of virtuous women, and is well exemplified by the train of nervous and hysterical symptoms, which render their lives distressing and uncomfortable. Hysteria, in nine cases out of ten, arises from continence. (Louyer-Villermay. *Traite de Mal. Nerv.*) ; epilepsy arises from the same cause, (Haller, Buffon, Esquirol, Maisonneux,) and is cured by marriage, (Lauzonius,) and it is also the commonest cause of insanity. (Marc. Gall, &c.)—It has been held, that on the continent are the most frequent suicides. Chaste women are most subject to diseases of the womb, (Gardien, Bayle, Marc, *Dict. des Sc. Med.*) and cancer of the breast and womb are most common after the climacteric period, when women become useless to the reproduction of the species (Richerand, Nosog, *Chir. Beatty*, in *Dub. Hosp. Rep.* 1830, vol. v. see *Cancer*, p. 302) ; dropsy and scirrhus of the ovary arise from the same cause. (Gardien, *Sur les Acch.*)

Chaste people seldom live to old age, (Hufeland *Art of prolonging Life* ; Buffon, *Supplement to Nat. Hist.* tom. iv ; Deparcieux on *Duration of Human Life* ; Haygarth, *Phil. Trans.* 58 ; Sinclair's *Code of Health* ; Fodéré, art. *Marriage*, *Dict des Sc. Med.*) The fact may be accounted for by the following causes, by the

weariness and monotony of life, by the hatred of paternity, a right so pleasant to married persons, and by the certainty of leaving property to greedy, thankless relations, or friends. Such persons are subject to scrofulous enlargements when young, "which are cured by the general excitation that coition occasions," (Richerand, Op. Cit.); a fact also attested by Wharton, who says, "*Juvenus cælibes strumosi fiunt : postea vero matrimonio sponte curantur.*"

The old writers considered marriage as the best means of preventing diseases which arise from suppressed perspiration, as different fevers, congestions, erysipelas, gout, rheumatism, and numerous other maladies. It has been stated by Van Swieten and many others, and observed by every attentive physician, that gouty persons are addicted to venereal pleasures, and here it appears that nature points out a remedy ; and Hoffman informs us, that this disease is unknown among the Persians who obey the law of Mahomet, and consequently are not models of continence. "The natural state of man after puberty is marriage," according to Buffon ; for it certainly possesses great influence on morals, on population, on health, and on disease. But granting all this, puberty is not the proper period for conjugal union, the sexual organs are not sufficiently developed, and consequently the productive fluids cannot be properly elaborated, nor possess the character of vitality. The sexes at this age would be unfit to perform the various important duties of parents ; and hence the laws of this and most civilized countries have wisely prescribed a certain age as the most proper for marriage, and the real interests of population, which is the age of twenty-one years for males, and eighteen for females. It must be admitted, that the sooner marriage is contracted after these respective periods the better both for the parties and their offsprings. It removes a vast number of diseases incidental to both sexes. It is the best cure for hysteria, according to Hippocrates, Forestus, Hoffman, Reid, Boerhaave, Louyer-Villemaire, Esquirol, Elliotson, and many others. It removes amenorrhœa and chlorosis, when all other remedies have failed. Another of its good effects is pregnancy, which produces the happiest changes on woman ; because the determination of blood to the uterus suspends, as if by enchantment, a great variety of diseases, by the concentration of vascular and nervous actions, which arrests irritation and morbid action in remote organs. It arrests consumption and hypochondriasis ; it exempts the woman from contagious

diseases ; it cures chronic affections, as hysteria, chorea, epilepsy, mania, melancholy, ague, &c. ; affords the greatest probability of life (Hufeland, Op. Cit.) ; and according to Sir John Sinclair, women, though exposed to the innumerable dangers of delivery, live generally longer than those who are unmarried.

It has been urged on the other side, that pregnancy predisposes to a vast number of diseases, induces a host of moral and physical evils, exposes woman to much danger during, at, and after delivery. These objections can only apply to women in crowded cities, to the affluent, the subjects of luxury and effeminacy, who cannot supply their fictitious wants, controul their passions, their wanderings of imaginations, or excesses of various kinds, which conspire to injure or destroy the best constitution. How much more happy and fortunate are the inhabitants of the country, the poorest peasants, who experience no danger during pregnancy, or no alarm during delivery. It is known to all physicians who are versed in the records of obstetricity, that little solicitude is entertained by women in a state of natural simplicity for parturition, and this has been amply attested in the article on *Tocology or Parturition*. It therefore follows, that pregnancy must be considered as a state highly conducive to the health and happiness of women. Nevertheless, marriage is not a universal panacea ; it cannot be advised indiscriminately in all diseases, as it aggravates nearly all the numerous disorganizations of the uterus and ovaries. It ought to be interdicted when obstacles exist to its consummation in either sex. Both parties should be healthy : “for how can two individuals,” says Mahon, “be united by a contract which exposes one to great danger, and renders the other excusable in violating its condition ?” (Med. Leg.)—Should either labour under any serious disease, or bad constitution, such conditions will, in general, be aggravated ; the union will be unfruitful, or the offspring will be delicate, or of short existence. It has been maintained, that persons afflicted with scrofula, epilepsy, and consumption ought not to enter into marriage ; but the last disease is the only one that can be deemed hereditary, and from the evidence already adduced, the others may be cured by this change of life. Those who labor under mental imbecility or mania, or who may be descended from parents cured of these diseases, ought to be advised against conjugal union. Women who labour under spinal curvature affecting the pelvis, and inducing such deformity as must endanger the lives of themselves

or their offspring, should be cautioned against entering into nuptial engagements. In all unfavourable cases, we should pronounce our opinions with great caution and reserve; we should not only possess a knowledge of our science but also that of the human heart, and recollect that we touch a delicate cord of affection and passions, which obliges us to forget a purely physical medicine, or rather to combine it with moral medicine, this medicine of the heart and brain, so well known to all enlightened and scientific practitioners. We have to bear in mind, the rights of nature, morals, religion, and medicine.

When we consider the influence of morals and vicious habits upon youth after the age of puberty, it is manifest that conjugal union should be effected at the time allowed by the laws, and thus the ruin of fortune and health would be frequently avoided. Debauchery and dissipation affect the offspring, and render it delicate and unhealthy. The ancient nobles of France fell into the opposite extreme, and for the extinction of their families, married their sons when children. Precocious or late marriages are injurious to reproduction.

Every disproportion in the age of the married is incompatible with a good union, old men espousing young women, and young men espousing old women. Such unions are contrary to the moral and physical states of mankind. So also when either party is unhealthy, and labours under any serious chronic disease. It is admitted by physiologists, that the genital faculties will vary according to various circumstances, as age, temperament, habit, diet, occupation, climate and season. A few words may be said in illustration of each of these points.

When the lymphatic system predominates, the individual is pale, of a relaxed, flabby spare habit of body, with white hair, pale round lips, large blue languishing eyes, the sanguineous vessels are not developed, the pulse is slow and feeble, the character gentle, affable bordering on silliness; this is called the lymphatic temperament. With such subjects, there is an inertness of the genital apparatus, and they beget feeble, delicate infants.

The bilious temperament is characterized by a predominance of the vascular over the lymphatic system, a dry spare habit, brown skin tinged with yellow, black curled hair, superficial veins full and large. Such a person is much given to love and jealousy, and ought not to marry an individual of the same temperament, as

their physical and moral happiness would be much endangered ; but if he marries a woman of a sanguineous temperament, he will enjoy with her happiness, and a numerous posterity.

The melancholic temperament is said to depend on the abdominal viscera, and the modification of the bilious temperament. It is characterized by sadness and melancholy. Love is a means of secondary ambition with the subjects of it.

When the vascular system predominates, the individual is of the sanguineous temperament, his health is good, his pulse strong, his body symmetrical, his hair sandy, his mind and body are vigorous, he is much addicted to venereal pleasure.

The nervous temperament is characterized by an increased susceptibility, a great vivacity in sensation, an extreme promptitude in judgment, a precipitate and inconstant determination, a vivid imagination, a fickle disposition.

This predominance of the nervous system is often united to the sanguine temperament, and then the character is impetuous, hasty, violent ; a person so constituted offers the greatest persistence in his resolutions. Such persons are capable of great amorous excesses.

The muscular or athletic temperament may or may not be characterized as that which is just described. These different temperaments may be combined in various degrees, so that it is difficult to trace them in a large majority of cases. M. Halle describes a temperament, which he denominates the **GENITAL**, which is characterized by an excess of susceptibility of the sexual organs, by a violence of venereal appetite which constitutes an innate, imperious, and irresistible desire, associated with an intense colour of the skin, of the eyes and hair, and a peculiar odour. These men are ardent, covered with black hair, and seem only to live for the purpose of communicating their existence ; the genital force is in excess, and may be, in some measure, abated by anaphrodisiac remedies.

From what has been said in the Physiological part of this work, it appears that age, season, and climate have great influence on reproduction (see p. 61.) It is true, that man in a state of health, may propagate his species at all seasons and at all times : but still it has been observed, from time immemorial, that with the majority of individuals, certain seasons of the year, and moments of the day, are more favorable than others for sensual enjoyment. Hip-

pocrates said, *spring* was the season most favorable for conception ; Pliny called it the genital season. The purity of the air, the freshness of aliment, the bracing effects of temperature, all conspire to the improvement of the functions of the body, the maintenance of health, and conservation of the species. At this season animals and vegetables reproduce, all animated nature is excited ; and repeated observation has demonstrated that there are more infants born in December and January than in any of the other months. Though averse to the citation of the Sacred Writings in support of science, we may allude to the conception of the Virgin in March, and the birth of the Saviour in December. Summer is not so favorable for the exercise of the genital functions ; the excessive heat induces perspiration and debility, and enfeebles the whole body. Persons of the lymphatic temperament are more disposed to love in this than in any other season of the year.

Autumn is still more unfavorable to reproduction, as the functions of the body are readily deranged by the sudden vicissitudes of the atmosphere ; cholera, dysentery, and ague, are suddenly produced, and it is held this season is the most inimical to the exercise of conjugal rights. *Winter*, from its coldness, is also unfavorable to reproduction ; we have only to refer to the animal and vegetable kingdoms for attestation of the fact.

"Morning," says M. Virey, "is the spring of the journey ;" it is the matinal sleep, which causes voluptuous illusions ; it is the morning in which all the functions of the body are renovated. "Behold the reasons," says he, "which ought to engage us to chose this time to contribute to the conservation of the species, after having contributed to the health of the individual. All the senses enjoy the plenitude of their functions during the day, and this time offers moments favorable to love." But it must not be after a repast, as nothing deranges the functions of the stomach more than coition. The process of digestion must be finished ; and this is not completed for three or four hours after a meal. However plausible and forcible these observations appear, it must be admitted that night is as favourable as the other times of the day to amorous impulse. Allusion has been made in the course of these remarks to the ill consequences of excess of venereal pleasure ; nothing, I repeat, is more injurious to the well-being of mind and body, nothing so likely to produce impotence and sterility, and want of family. Nothing more effectually preserves the con-

jugal union than the birth of an infant; the happiness of the parents is increased, when they see themselves revived in their infants; their mutual love receives a new impulse; the cords which bind their family connections are strengthened; little else is wanted to complete domestic happiness. Those, on the contrary, who are not blessed with children, experience daily a diminution of affection; a vague inquietude agitates them; they are sad, and anxiously seek the cause of their infecundity; apply to medical men for advice and assistance, or too often violate conjugal fidelity.

The first object of such persons should be to endeavour to discover the cause of infertility, among those of impotence and sterility, many of which are curable by the remedies already described in the course of this article. They are to avoid those obstacles to conception which have been enumerated, such as long abstinence, insufficient nutriment, excessive corporeal or mental exertion, an inactive, voluptuous life, too frequent repetition of the conjugal act, and they must use some of those aphrodisiac remedies, an account of which is to be found in this article.

They must refrain from copulation during the presence of menstruation, and employ it moderately during pregnancy, as nothing is more likely to induce abortion. They must also attend to those circumstances which are favourable to conception, as for example, 1. the use of abundant nourishment, for years of prosperity always augment the number of births; 2. the use of certain aliments, which experience has led them to discover as excitants of love, as certain foods already enumerated; certain fishes, and buckwheat, are said to render the inhabitants of Cologne prodigiously prolific; 3. change of habitation, when practicable, as residence seems to have great effect; for example, the inhabitants of Ireland have twelve or fifteen children, the Germans five or six, the French four or five, the Spaniards two or three; 4. abstinence from the conjugal act for some days; 5. and coition should take place immediately after the cessation of menstruation; this was the advice given by Fernel, the physician to Henry III., whose queen, Catherine de Medicis, had not conceived till it was followed. It is said that the equinoxes are more favorable to conception than the solstices, and that the autumnal months are the most unfavorable for propagation. It is always to be remembered, that coition is only to take place as often as the genital organs manifest their energy, which must depend upon idiosyncrasy or peculiarity of habit,

mode of life, and locality, diet, habits, and various circumstances already detailed. Finally, it cannot be prolific unless employed at the intervals of some days. I cannot conclude this article without inserting the valuable and interesting remarks on this subject by my distinguished correspondent, Professor Dewees, of Philadelphia, which deserve great attention. His chapter on Marriage, in his excellent Treatise on the Physical and Medical Treatment of Children, is so replete with sound sense, and really scientific views, that I cannot refrain from quoting it in full, as it corroborates the opinions I have recorded in the preceding pages. He considers the subject of marriage under the following heads: 1. the most proper period for its consummation; 2. the constitution; 3. the disposition to disease; 4. the immediate state of health.

Period of Life.—It is notorious, that the development of body is successive, and requires a certain period for its completion; consequently that certain functions cannot be performed in their best manner until the body has acquired its full development; this rule applies as well to the female as the male. It is also familiar to observation, that when any function is prematurely urged, it leads to the imperfection of the product dependant upon that function, as well as entails upon the part so exercised, debility and premature decay.

From this it will follow, that too early marriage is never to be advocated, since it will materially influence the health and well-being of offspring. This fact is no less conspicuous in the inferior animals, than it is certain in its consequences in man. We would therefore not only say that marriage should not take place until the body is healthily and completely developed, but also that there should have been, on the part of the male, the most scrupulous continency, that the great object of marriage (the propagation of healthy children) should not be defeated; this cannot be too strongly insisted upon. The female is always supposed to be so.

It would be difficult rigorously to fix the period, by years, at which the body becomes fully expanded, since original stamina, physical and moral education, climate, mode of life, &c. will have their influence; but we may with much certainty fix it in this climate at between the twenty-third and twenty-fifth years, for the male, and from the nineteenth to the twenty-first years, for the female. We are informed by Tacitus, that the ancient Germans

never married until the twenty-fourth or twenty-fifth year of their age, and were as continent before that consummation as the females to whom they were united ; in consequence of which they acquired a size and strength that excited the astonishment of even the Romans.

It has frequently excited the surprise, as well as provoked the reproach of foreigners, that the females in this country lose their beauty so early, especially when compared with the females of Europe, and particularly those of Great Britain. The cause of this hasty decay must be principally sought for in our very early, or rather premature marriages, but we confess that climate has also a limited agency ; and though we are far from discouraging early marriages, yet we are decidedly against premature ones. By early marriage we would wish to be understood such as may take place so soon as the body has received its first expansion ; and that time we have just fixed, as a general rule, at nineteen or a little more, for the female, and twenty-three and a little upwards, for the male. By premature ones we mean those which happen before the system has received its ultimate development.

It will readily be seen that no precise or absolute rule, based upon the lapse of years, can be laid down, since the bodies of both males and females may be precociously expanded, or may be preternaturally retarded. In the first instance, the period we have assigned may be anticipated with safety, but in the second it would be wise to extend it. Thus, in India, females become mothers oftentimes at ten, while in Lapland they rarely give evidence of womanhood until eighteen ; consequently the women of India would be on the wane did they wait for the limit at which it would be proper for a Lapland woman to marry ; and the Lapland woman could not support the contingencies of marriage did she attempt to regulate it by the usage of India.

The examples of the evils resulting from precocious unions in this country are familiar to every body ; they are not limited to the diminished vigour and shortened life of the male, nor to the faded beauty, the blasted health, and the premature old age of the female ; for they are extended to their unhappy offspring, on whom they have perhaps entailed a diminutive stature, debility of body, and imbecility of mind ; or have handed down to them strong predisposition to consumption, rickets, scrofula, &c. It is therefore of the utmost consequence that parents do not consign their chil-

dren to inevitable ill health, by consenting, or sometimes by urging them to too early marriages; and on the part of the children themselves, that they do not yield themselves up to almost inevitable destruction (especially the female), by anticipating the eligible moment for marriage consummation.

We are, however, strong advocates for early marriages (agreeable to our definition of them); we are persuaded of the importance of both their moral and political tendency, and we think they should ever be encouraged wherever there is a rational expectation of both these great ends being answered.

The consequences of ill-assorted marriages were well known to the ancients, and were strictly forbidden by the Greek legislators; and though things have not proceeded to such lengths in this country, as to require the interference of the laws, it is nevertheless sufficiently common, to make a caution upon the point proper. Should no attention be paid to compatibility, the obvious and most desirable objects of marriage will be defeated, and one great source of health and longevity destroyed; for it is a fact, no less important than well established, that a well regulated marriage contributes largely to these two great ends. It is declared by Hufeland, that all those who have attained great age were married even more than once, and generally at a late period of life, and that there is no instance of a bachelor attaining a great age. We may give two remarkable instances of longevity, where marriage was often repeated; one in Thomas Parr, of England, who attained to one hundred and fifty-two years, and was married several years; and the other in De Longville, of France, who lived until he was one hundred and ten years old, and married ten wives; his last he married in his ninety-ninth year, and she bore him a son when he was in his hundred and first.

It would seem to be agreeable to all observation, that better constitutions are perpetuated to offspring by men advanced in life, where the physical powers have been well preserved by moderate and proper use, than by young men who have been prodigal of them; for it is oftentimes better to be old in years than in constitution.

Though we have said that men advanced in life may have healthier offspring than the man who too early attests his prowess, or the one who has been too prodigal of his powers, we are not advocates for the union of old age to blooming youth. On the contrary, we are entirely convinced that none so completely fulfil

their duties to society as those who unite themselves so soon as the proper development of body and well-established health will justify their union. Yet we are equally persuaded of the truth of what we have just observed, namely, that a man advanced in years may have every requisite firmness of constitution to justify a union; while a young man, who may have a natural feebleness of constitution, a strong predisposition to disease, or its actual existence, or a debility from overtaxed powers, may be altogether ineligible to it.

Of Consumption.—It is not alone sufficient for the best purposes of marriage that the body has received its final development, either on the part of the male or the female, since all the functions of the body may be disturbed, by either feeble organization, disease, or accident. When, then, the male or female, or either, has suffered in constitution, it is not to be expected they can impart to offspring that which they themselves do not possess. It should therefore always be a consideration in a marriage contract that both parties be of sound health and constitution.

We are aware it may be said, in many instances, that hale, healthy-looking children belong to people of feeble constitution; but we must be cautious how we admit this, as militating against our position, since such appearances are by no means conclusive of the good health or the soundness of constitution. We have many times seen children of robust appearance from parents of feeble health; but we do not recollect a single instance where such children attained an age much beyond manhood, old age was out of the question. Indeed it would seem, in many instances, that children of such parents most frequently give an early promise of future health; but it is illusory, for it is never, or but very rarely, realized. In the early part of the lives of the children of whom we are now speaking, a rapid, but morbid, development of the body takes place, every function is inordinately performed; and when the constitution is confirmed in appearance by such a display of health, it is but hastening to decay. Let us not, then, be deceived by such appearances; and when we are making a choice for our children, let us choose such as give a rational reliance upon the soundness of their constitution.

Predisposition to Disease.—There are numerous diseases, or rather a disposition to them, which do not show themselves for many years after birth, or until they are called into action by some exciting cause, suddenly or gradually applied, such as gout, mad-

ness, scrofula, consumption, &c. Those who may inherit such predispositions may for many years enjoy good health, and may not be led to suspect any cause to be lurking in their systems, which, when called into action, shall but too soon destroy such flattering expectations. It therefore becomes a point of duty in parents to investigate the tendency to hereditary complaints, before they connect their children with those who can give but a temporary security against the most painful, afflicting, irremediable, or suddenly fatal diseases.

We hold it selfish, at least, if not dishonest, for either sex to marry under such predispositions, when, from the knowledge of the diseases of their forefathers, there was every reason to anticipate a perpetuation of them. Who has not witnessed the most deplorable consequences of such unions ; and who, after witnessing them, would not deprecate their continuance, or further propagation ? This subject is one of much importance, for some of the best interests of society are involved in it ; and every one is concerned in diminishing the evils spoken of, by preventing marriages which can promise nothing but the extension of the most dreadful diseases. We have seen but too many instances of the perpetuation of each of the diseases above enumerated, not to feel interested in arresting them, by recommending the two only means by which they can be either prevented or mitigated, namely, by judicious and well-assorted marriages, and a well-conducted physical education.

By the first means we may stop, in a great measure, the hereditary transmission of predisposition, by selecting such subjects as shall be free from constitutional taint ; or at least we may diminish, by this plan, the risk of such occurrence, if we cannot ensure exemption from it. We may also do much good by preventing the union altogether of such as may have these tendencies ; or diminish the evils in a degree, when no better can be done, of not admitting to this union more than one of the party who may have hereditary taints.

By the second, much may be effected by invigorating the system in general, so as to render it less susceptible to exciting causes ; by attention, while conducting this education, to strengthen the particular parts which may be predisposed to disease. But of this more by and by.

Of the Immediate State of Health.—By the immediate or ac-

tual state of health, we would wish to be understood that condition of the system in which either of the above-named diseases is absolutely developed. It might at first sight appear strange that we should notice this change of the system, as every one would seem to be apprized of it, and consequently the person labouring under it would not be considered eligible by any one for the married state. But this is not exactly so, as we find that every kind of artifice is resorted to, to hide their condition from those the most interested in the knowledge of it, hence the frequency of marriages under such circumstances.

Besides, it but too frequently happens that this foreknowledge is entirely disregarded by the persons most concerned. This may arise from several causes; 1st, to a want of proper feeling for the consequences of such diseases, when extended to offspring; 2d, to a hope of an escape from their consequences, as sometimes happens; 3d, to an ignorance of their nature, and of the risk of their propagation; 4th, to a disgraceful selfishness, where fortune or beauty is concerned.

In Europe they have such dread of the perpetuation of these diseases (with perhaps the exception of gout,) that the inquiry is frequently made in the higher ranks of society whether either of these diseases is actually existing, or whether the parties are liable to them by hereditary descent, before the marriage contract is signed; and we are informed that marriages have been frequently broken off, and even at a late period, when it was discovered, on the side of either party, that scrofula, consumption, or madness had existed, or was actually existing, in any member of the family.

It is not, however, predisposition to disease, or its actual existence, that exclusively disqualifies the parties for marriage, or that may entail feebleness of body or mind upon offspring, for there are others equally certain, though less notorious to common observation; such are the habits of general dissipation and habitual intoxication. The first appears to have most effect upon the body, the latter upon the mind; therefore a woman would not unite herself to a man who labours under either, if it be known; and the laws should protect her by granting a divorce, if it occur after.

In this country the vice of intoxication is more common than the other; but unfortunately for the poor woman it but too often occurs only after marriage, and against this the law makes no provision; she is then doomed, in her own person, to all the horrors

which await the vice, and her children are to be the inheritors of feeble constitutions, or what is perhaps worse, the predisposition to derangement of mind.

On the part of the female, certain physical disabilities may exist, which would render her ineligible for the married state; these should neither be concealed nor passed over slightly, since with a knowledge of them, it would be dishonest towards the man she may marry, as well as fatal to herself. We would therefore recommend to a woman who may be deformed, to abstain from marriage, as she may purchase the title of wife at too high a price; and we would advise such as may be disposed to cancerous affections, or such as may have one in an active state, to refrain from this state, as she can promise herself nothing, as regards her disease, from this ceremony; for with it she must linger through continued ill-health and pain, and inevitably become a source of misery and expense to her husband, whose patience and resources may be but too easily exhausted, and she fall an earlier victim than from disease alone.

We would also recommend the female not to put off this ceremony to too late a period of her life, when she can with propriety do otherwise, unless she be content to endure more than ordinary suffering from child-bearing, as well as become regardless of the pleasure of seeing her children settled in life before she leaves the world, by even the common contingency of age. Women who have passed the thirty-fifth year of life, might perhaps do best by submitting to farther procrastination, that the period of child-bearing might be past.

Upon the same principle, in part, would we caution the very young girl not to enter into this state, as she, like the woman who has waited too long, is liable to severe suffering from labour. In the woman too far advanced, the parts concerned in parturition seem to have forgotten, in a degree, their offices; while in the too young female, they have not entirely or perfectly acquired the capacity. These facts are too well known to be disputed; and nature seems to have contended for prerogative in both instances. Shall we then become voluntarily blind by shutting our eyes against her obvious intentions? Do not these facts emphatically declare, there is a time best fitted for marriage? This time we shall fix at nineteen for the earliest, and five-and-twenty for the latest, best periods.

We do not, however, mean to say the period fixed for the earliest may not without much risk be anticipated a little, or that the second may not safely be exceeded; we mean merely to insist, that the periods just designated are best as general rules, for it is but general rules we can lay down upon this subject.

ARTICLE III.—ENCYONOSLOGY—ON DISEASES OF PREGNANCY.

ALTHOUGH pregnancy is a natural condition, it frequently excites considerable derangement in the functions and organs of the human female. These sensations are considered signs of conception in the first weeks of gestation, but soon become so troublesome, as to be actual disorders. The new action which takes place in the womb, and its appendages, is a cause of irritation, which extends to all the organs that have much sympathy with the affected parts. Thus we know from physiology, that the womb and stomach have a strong sympathy; and that the latter strongly sympathizes with the brain and nervous system; and thus with every organ in the body. The cerebrospinal system of nerves very clearly accounts for this universal sympathy between all parts of the body. The consent or sympathy between the womb and stomach is great; and hence we often find nausea, vomiting, heartburn, loss of appetite, indigestion, arise after conception, and are considered symptomatic of this condition. The breasts are intimately connected by sympathy with the womb, and therefore become irritable and enlarged, after pregnancy—states strongly indicative of it. The irritation of the stomach will speedily affect the brain; hence we find slight pain in the head, dizziness, drowsiness, convulsions, palsy, palpitation of the heart, toothache, dimness of the sight, impaired hearing, and deranged condition of the tongue, and often induced by pregnancy. The uterus will also affect the intestinal canal, cause diarrhœa or costiveness; will affect the rectum and bladder, and often induce strangury, heat in passing water, and tenesmus.—These sympathetic actions occur soon after conception, continue till quickening, and gradually abate and disappear towards the latter months of pregnancy. They sometimes, however, continue to the end of gestation. It is a popular observation, confirmed by experience, that women who are most sick, are the most unlikely to miscarry.

From what has been already stated, it appears that conception is followed by considerable changes in both mind and body. The

pregnant woman is more easily excited, and more susceptible of impressions. The vascular and nervous systems become excited ; and consequently all stimulants should be avoided. The diseases of the pregnant state may be referred to irritability of the nervous and derangement of the vascular systems, or to pressure of the impregnated womb on the contiguous organs. Some women have better health during pregnancy than at any other time ; while others suffer severely to the moment of their delivery. The diseases of pregnancy may be divided into those of the early, and those of the latter months. The first class comprehends affections of the stomach, as nausea, vomiting, indigestion, heartburn, and water-brash. The diseases of the latter months of pregnancy are a febrile state, costiveness, collections of fæces in the bowels, piles, spasm of the stomach and duodenum, jaundice, gripings, dysentery, tenesmus, diarrhœa, or looseness, heat and pain in passing water, incontinence of urine, various affections of the bladder, spasm of the ureter and uterus, cramps and numbness of the lower extremities, varices of the legs, thighs, and abdomen, œdema, or dropsical swelling of the legs, want of sleep, solicitude, anxiety and dispondency, headache, toothache, drowsiness, vertigo or giddiness, cough, difficult breathing, palpitation, spitting of blood, dropsy, either anasarca or ascites, inflamed breast, flatulence, distension of the abdomen, pendulous abdomen, venereal disease, pruritus, or intolerable itching, fluor albus, prolapsion, retroversion, antiversion, and obliquities of the womb, abortion, flooding or uterine hæmorrhage, and false pains ; of the greater number of these diseases, I have treated already in the Chapter Parthenosology, and shall now consider those which belong peculiarly to the pregnant state.

Digestion.—The *appetite and taste* are altered by pregnancy, and the vulgar attach great importance to the gratification of these different tastes ; but they are only to be gratified when nutritious food is desired, and not when resulting from caprice, or a depraved palate. A voracious appetite may be gratified by a proper quantity of food, not given to satiety ; a variable appetite may be satisfied by frequent light repasts ; and a diminished appetite by that food the woman may desire. All strong liquors are to be avoided ; they excite the vascular and nervous systems. The diet should be nutritious, and easy of digestion, and not increased on account of the infant. All powerful mental and bodily exertions are to be

avoided; but regular and moderate exercise on foot may be used with advantage.

Nausea and vomiting are the first diseases of pregnancy, the appetite is vigorous; and the sickness is more troublesome in the morning, when the woman assumes the erect posture, as the enlarged womb presses downwards, causes irritation, and sympathetic action.

The *best treatment* for nausea and vomiting, is the effervescing draught with tincture of opium, in the proportion of six ounces of the first, and one drachm of the second. The various sedative preparations of opium, as morphine, sedative liquor, or solid opium are used with advantage. Opiate frictions to the stomach will succeed, when every other remedy fails. I have also used an opiate plaster with advantage. The tincture of soap and opium, with an additional quantity of the latter, may be rubbed on the stomach frequently during the day. Sometimes cold water alone will procure relief. Dewees found twenty drops of oil of turpentine in a glass of water, two or three times a-day, succeed, when every thing else had failed. The turpentine might be mixed in the form of emulsion, and sweetened with honey. This vomiting seldom causes abortion, and yet artificial vomiting often does. It sometimes continues during the whole period of pregnancy, in despite of all remedies. Sims and Lorenzt used leeches with success; others recommend blisters. "In some bad cases," Conquest states that "premature labour must be effected artificially, as essential to the safety of such women." Vegetable bitters, as infusion of calumba with soda, may be given in a state of effervescence; but if the vomiting be unrelieved, it may be necessary to support the strength, by nutritious clysters. Burns strongly recommends blood-letting in preference to all other remedies in cases of vomiting, and says all other remedies may fail without it.

Depraved appetite, indigestion, waterbrash, or acidity of the stomach, are to be relieved in the usual manner. Bitter infusions, with soda, potass, or liquor of pure ammonia; liquor calcis (six ounces) liquor of potass (two drachms); a table spoonful frequently in the day have been used with advantage. Duges informs us that chronic gastritis may arise during pregnancy, from the state of the stomach under consideration. The bowels are to be regulated by the form of medicine mentioned for costiveness. Lime-water mixed with milk and calcined magnesia, a quartern of each of the two first,

and a tea-spoonful of the last, might be given in acidity, with the greatest benefit. Baillie found the mineral acids of more use in this complaint than the alkalies; while Dewees prefers vegetable acids, as lemon juice. One lady took a dozen of lemons daily, and no other food or drink. He also advises clove tea, as almost infallible: twenty cloves to be infused in half a pint of boiling water. These disorders may be more urgent during the first, than in any subsequent pregnancy, and, vomiting has been more severe when the woman carried a male than a female. Although it may continue the whole time to delivery, the infant is generally healthy.

Cardialgia or heartburn, is often a troublesome affection. The sensation of heat proceeds from the stomach to the throat, and is extremely unpleasant. The alkalies, as soda, potass, effervescing draughts, lime-water, chalk, may or may not afford relief. Dewees had a patient, who lived nearly on chalk during pregnancy. She used three pecks and a half. She became as white as the substance itself, and prematurely sunk from her disease. He recommends aperient pills, each or every other night. Sims and Denman praise the following mixture:

R. Aquæ distillatæ, five ounces.

Liquoris Ammonia. }
Magnesiæ Calcin. } aa one drachm.

Aq. Cinnamomi, one ounce.

Misce, Sumat cochlearia duo ampla sæpe in die.

I have found the following mixture of great service:

R. Liquoris Calcis, six ounces.

Tincturæ Opii, one drachm.

Liquoris Potassæ, two drachms.

Misce. Dosis Cochleare amplum ex poculo jusculi bovini vel lactis ter in die.

In some cases leeches and a blister to the epigastric region will afford relief.

Pyrosis, or waterbrash, will be relieved or removed by the second prescription, when the fluid is acid; but should it be alkaline or insipid, the mineral acids must be employed. These conditions often alternate, and will require a change of remedies. We are indebted to Dr. James Johnson for the discovery of this fact, which clearly explains why alkalies succeed in some cases, and acids in others. (Essay on Morbid Sensibility of the Stomach, 1831.)

Ptyalism, or *salivation*, is often a troublesome disease during pregnancy. The quantity of saliva discharged daily has amounted to three or four pints, without any connexion with disorders of the stomach. I have seen a remarkable instance of this kind with my friend Mr. Woodhouse, of Ilford, and it continued in despite of all remedies for four months. Gargles of the chlorides of soda and lime produced no effect. Dr. Fahnestock, of Pennsylvania, recommends an infusion of the inner bark of the rhus glabrum or sumach, as the best remedy, and also in the ulceration of the tongue, mouth, and fauces. (Lond. Med. & Surg. 1830, vol. iv.)—Dr. Geddings, of Charleston, has found the following remedy generally efficacious.

R. Mucilaginis Acaciæ, ℥ viij.

Olei Terebinthinæ, ℥ij.

Misce. Usurpetur pro gargarismate frequenter in die.

There is sometimes a *febrile state* which deprives the woman of sleep, causes debility, emaciation, and sharpening of the features. It is relieved by the usual treatment, saline aperients, effervescing draughts, and blood-letting. We should procure sleep by the sedative preparations of opium, so often described, although Burns is opposed to the practice. He asserts, that a continued use of opium injures the stomach and bowels, and likewise the infant. Few men would leave their patients without sleep for several nights, without endeavouring to procure it in some measure.

There is a *remittent fever* consequent to pregnancy, which arises from irregularity of the bowels. It is cured by relieving the cause.

Spasm of the stomach or duodenum is often very severe, and if allowed to continue for any time, may kill the infant. The warm carminative tinctures, as those of cardamoms, rhubarb, senna, with free doses of opium and ether, in general procure immediate relief. If the head is affected, convulsions may set in, unless blood-letting be employed. The bowels are to be kept regular, and blood-letting employed in bad cases.

Constipation.—*Costiveness* is one of the most common diseases of pregnancy: it arises from torpor of the bowels, or pressure of the enlarged womb. The bowels ought to be kept regular by mild subacid fruits or proper diet, and if these fail, manna, magnesia, Epsom salts, castor-oil, confection of senna, or the old lenitive

electuary, are the best remedies. Dr. Hamilton's formula for costiveness, is—

R. Extract Colocynth. Comp. 2 Scruples.

Extracti Hyosciami, 1 Scruple.

In pilulas xv divide, ex his capiat ægra unam vel duas pro re natâ.

A few grains of calomel, or pil. hyd. may be added when the liver is disordered.

To this formula I add four minims of oil of peppermint, or some other essential oil, and half a scruple of calomel or mercurial pill should the function of the liver be deranged. The compound rhubarb and aloetic pills are advised by Burns.

The colon and rectum may become distended to an enormous degree with indurated fæces. There will be severe cutting pain or tormina, very urgent desire to evacuate the bowels, or tenesmus, and mucus or pure blood will be discharged. Some mechanical means must be resorted to, to break down the fæces, as recommended by Denman and Scarpa. There is a peculiar instrument for this purpose. Laxatives are to be given, as the bowels are relieved. If there is great pain, blood-letting must be resorted to, lest inflammation of the bowels supervene.

The French obviate costiveness by a daily use of lavements or clysters.

Diarrhæa, or bowel complaint, may arise from relaxation, or accumulation of fæces. Astringents with opium, and flannel rollers, are to be employed in the first form; and mild laxatives in the latter. Tenesmus and dysentery are best relieved by opiates alone, or combined with the acet. plumb. I think purging, as recommended by Dr. G. Gregory, and others, highly injurious.

Hæmorrhoids, or *piles*, arise from the pressure of the gravid womb. The best cure for piles is the regulation of the bowels by mild laxatives, as small doses of neutral salts, castor oil, or the electuary of sulphur, and cream of tartar. When the bowels have been regulated, the astringent lotions, and ointments in common use, may be applied—as solutions of acetate of lead, alum and oak bark, and gall ointment. The gall ointment with opium or belladonna generally affords relief. Should this fail, an anodyne enema composed of three ounces of starch mucilage, and half a drachm of laudanum, will often succeed. The introduction of simple cerate, or combined with a grain or two of the watery ex-

tract of opium, mitigates the present suffering. Fresh butter, lard, or suet may be used in the same manner. When piles are strangulated by the sphincter ani, warm fomentations, hip-baths, and poultices, will facilitate reduction. The daily application of cold water in slight cases of this kind will be used with much benefit. The introduction of a piece of common candle into the rectum is also a very valuable remedy, it lubricates and cools the part. Each pile may be squeezed between the finger and thumb, and returned into the rectum. Dr. Hamilton has seen them excised during pregnancy. Mr. Kirby, the distinguished surgeon of Dublin, advocates the operation; while Sir Astley Cooper thinks it most dangerous. The irritation caused by piles has produced abortion. The French apply leeches to the anus: but in this country females are generally averse to them. I have described the treatment of irritation, and other affections of the bladder, pp. 189.

Colic, is a common disease of pregnancy, yet in our day we scarcely hear of this complaint, although at one time it was most fashionable. Colic is defined—"pain in the abdomen, with sense of twisting round the navel, vomiting, costiveness, spasms of the abdominal muscles, and sometimes retraction of the navel." It arises from spasm, accumulation of fæces in the bowels, cold, flatulence, and biliary calculi. Mild aperients, laxative clysters, opiate frictions to the abdomen, when spasm prevails, are the best remedies. Blood-letting, warm bathing, fomentations, leeches and blisters, must sometimes be employed.

Jaundice sometimes occurs during pregnancy. Small doses of calomel, with saline medicines, next day, generally remove it.* Emetics, or violent purges, ought to be avoided. When the disease occurs in the last months of pregnancy, it proceeds from pressure on the gall ducts, by the enlarged womb, and will not disappear until delivery.

Other discolorations appear on the face and surface of the body and of various colours, dark brown, greenish, or yellow. Aperients remove them, and they are of no consequence.

Palpitation of the heart often occurs during pregnancy. It is very distressing to delicate women, but by no means dangerous, unless in occasionally producing abortion. It sometimes comes on

* Pills prescribed for costiveness, with calomel, are generally effectual. (See p. 301.)

but every third day, and generally at night, the slightest agitation causing it. The best remedies for it are antispasmodics, as opium, ether, and ammonia, or these combined, or proper doses of prussic acid and the sedative liquor of opium. Rest is more requisite to the cure. Tonics have been given with success as the muriated tincture of iron, and also compound tincture of valerian and assafœtida. The bowels are to be carefully regulated. This disease is often induced by disorder of the stomach, and hence we are to inquire concerning that organ.

Syncope.—Another distressing affection of the heart, connected with pregnancy, is *syncope* or *fainting*. This disorder occurs before or at the period of quickening. It occurs daily to those who are weakened by the want of sleep, or by diarrhœa; it may also proceed from slight exertion, speedy motion, or exposure to heat, but it may come on when the body is at perfect rest. Sometimes the paroxysm continues for a long time, at other times it is of short duration, the patient being conscious of what is going on. During the fit, the recumbent posture, the admission of cold air, application of cold water to the face, and ammonia to the nose, with a cautious exhibition of cordials, constitute the treatment. Should the fit continue for a long time, it may end in death. Whenever syncope is long continued, it is a most alarming occurrence; heat is to be applied to the extremities, in order to induce circulation, if possible. There is a species of syncope that proves fatal during the first six months of pregnancy, and depends on an organic disease of the heart. Those who are subject to fainting fits, ought to avoid fatigue, crowded or warm rooms, long fasting, quick motion; and the digestive organs and bowels are always to be attended to. During the last months of pregnancy, the descent of the diaphragm and due expansion of the lungs are prevented, and *dyspnœa* takes place, which is sometimes relieved by antispasmodics. *Most urgent cough* is also excited from the same causes, and may often, by agitation of the abdomen, induce abortion. In fact, it is always a dangerous occurrence during pregnancy. Blood-letting must be frequently employed, and opiates and other sedatives, as hyosciamus, conium, and prussic acid, are used with advantage.

Hæmoptysis and *hæmatemesis*, spitting and vomiting blood, often happen in the last months of pregnancy, and are highly dangerous. Should they come on during labour, or pains come on

prematurely, it will be prudent to accelerate delivery. The treatment consists of venesection, and sedatives to allay irritation. A combination of the acetate of lead and opium is often successful. In describing the diseases of the chest during pregnancy, it is right to mention that *phthisis* will be retarded during utero-gestation, and will rapidly advance after delivery. The determination of blood to the womb accounts for this during pregnancy, and the determination of blood to the bosom and chest after delivery, explains the increase of irritation in the thoracic viscera. The next subjects that claim attention are the consideration of the disorders of the brain and organs of sense, as the eyes, ears, taste, teeth, &c.

Headache, when occurring in a full habit, towards the end of pregnancy, is attended with suffused eyes, ringing of the ears, confused vision, as flashes of fire passing before the sight, which indicate apoplexy, or epilepsy. Copious blood-letting from the arm, leeches, cupping, or arteriotomy in the temple, purgatives and saline clysters, are the only means of relieving this disease. In apoplexy the child is seldom expelled, but it mostly is in epilepsy. Palsy may succeed the apoplexy, and continue to the end of pregnancy, but in general gives way to ordinary treatment after delivery. The most common head aches arise from disorder in the stomach and bowels, and depend on costiveness, nervousness, or dyspepsia. They are attended with acrid eructations, giddiness, slight sickness, and bitter taste in the mouth. Such headaches, which are common, are relieved by mercurial medicines at night, and saline purgatives the next morning, by the application of ether to the temples, or ammonia to the nostrils. The alkaline earths, already described in my observations on affections of the stomach, in the early months of pregnancy, will be often used with advantage in acidity, or water-brash. (See pp. 299, 300.)

Hysterical convulsions are often troublesome in the early months of pregnancy. They mostly occur in irritable habits, in those disposed to syncope, or who have been subject to pain, want of sleep, or whose bowels are confined. During the fit the face is pale, countenance not distorted, no foam issues from the mouth, the patient lies as in a faint, and then has convulsive motions, screams, or sobs, and the fit is usually terminated by shedding tears. The treatment consists in the use of opiates and antispasmodics, as the ammoniated tincture of assafoetida, castor, and valerian ;

a drachm of these three tinctures, with twenty drops of sedative liquor of opium or hyosciamus in an ounce of camphor mixture, forms an excellent draught during the fit. Some sugar or honey ought to be added, as such draught is very disagreeable. The bowels are to be kept regular, the mind soothed, gentle air and exercise taken, and sleep is to be produced by opiates. If there be any determination of blood to the head, blood-letting and topical bleeding should be employed. *Convulsions* occur during pregnancy, and excite labour. Blood-letting, to forty or fifty ounces, is to be employed as soon as possible, and delivery effected when labour has commenced. (See *Dystocia Convulsiva*.)

The functions of sight, taste, and hearing are affected in various degrees by pregnancy, and are generally relieved by attending to the bowels. *Toothache* is also often troublesome ; but the tooth ought not to be extracted, as that operation generally induces abortion. If the tooth is decayed, the application of spirits of wine, oil of turpentine, tincture of opium, and oil of cloves, spirits of nitre and alum, will in general afford relief ; the latter is recommended by my friend, Dr. Blicke, and I can speak from personal experience of its efficacy. The extraction or excision of a tooth is a most painful operation during pregnancy. The most successful, I might almost say infallible remedy for tooth ache, when there is caries of the tooth, is the application of nitric acid, which gives instant relief, and produces no pain whatever. It is to be cautiously introduced on lint, and the mouth washed with tepid water. I have tried it on myself with invariable success, as well as on numerous others. I am indebted to a diligent and assiduous pupil of mine, Mr. Myers, of Newington Causeway, for the knowledge of this valuable fact, and he discovered it by accident, having applied the acid instead of the sulphuric to his own tooth, when almost distracted with pain. (See my Essay on the immediate cure of tooth-ache. Lond. Med. and Surg. Journ. vol. vii.)

The *mammæ*, or breasts, or, to speak in vernacular language, the bosom, is often irritated by pregnancy. A serous discharge may take place, or an abscess forms. Frictions with warm oil, or tepid fomentations, frequently applied, together with leeches and purgatives, will generally remove the disease.*

* Pain and inflammation of the breast will be treated of in the article on *Puerperal Diseases*.

Despondency of mind is common to some women during gestation. They are quite fearful of the consequences ; and this fear is generally aggravated by the prodigious stories, sedulously told by old women and nurses, and especially the influence of the imagination, longings, &c. Well-informed women are less liable to such depression, and laugh at the absurdities of these stories. The obscene works, so largely circulated in these times, keep up the delusion, and terrify the female mind to the most extreme degree. It is a melancholy reflection to consider that such works are in the greatest circulation among women, who have no popular work on midwifery to consult.

With regard to the treatment of despondency peculiar to pregnancy, we can only afford relief by kind and consoling assurances of the safety of both the mother and infant, for here medicine is useless. The only remaining diseases incidental to pregnancy are false pains, abortion, and hæmorrhage from the uterus.

False pains may occur for one, two, or three months before the termination of pregnancy, and may be so severe as to be mistaken for approaching labour. I have known one female who had them several times, and most severely during the last three months of utero-gestation. As in reality they are not connected with labour, they have been named "false or spurious pains," to distinguish them from true ones. They are most common at night, depriving the woman of sleep. They often attack the region of the liver, causing acute pain ; the digestive organs are usually deranged, and the infant also extremely restless, and its motions are very troublesome.

They may attack the back, umbilical or hypogastric regions, and even the thighs and legs. Nervous, delicate, and hysterical women, and those fond of cordials, are most liable to them, although they may occur to the most healthy females. When severe, the abdominal muscles are affected ; the bladder may be protruded, and has been mistaken for the membranes, and punctured by midwives, and the bearing down sensations in the rectum induces a violent tenesmus. False pains are occasioned by a variety of causes, as exercise, or fatigue of any kind, by flatulence, spasms of the bowels, as colic, costiveness, or diarrhœa, nephritic affections, accompanied with strangury, or by frequent or excessive copulation in the last months of pregnancy. If the patient get out of a warm bed, and stand on the cold floor, she will be often attacked with

spurious pains. Agitation of mind has also the same effect. These pains may be attended with a watery discharge from the vagina, although the os uteri is seldom affected by them, yet it may become dilated, and no labour take place. These pains, however severe, are never so regular in their recurrence as those of labour, and the history of any case will enable the practitioner to form a correct opinion. If we examine the os uteri in such cases, we do not find it at all dilated, although such pains may continue even for four, five, or six days, during which time the woman is said to be in labour. The best treatment is opening the bowels, confining the woman to bed, or at least to absolute rest, and exhibiting an anodyne; and if fever prevails, by abstracting blood. Frictions, with strong anodyne liniments, are also very beneficial. If the term of utero-gestation is completed we must be extremely cautious in pronouncing an opinion, as false pains may end in real labour; this is unlikely in the first or middle months of pregnancy. Rigors, or shiverings, often accompany or precede labour; they are best relieved by warm gruel and an opiate. The treatment of all diseases of pregnancy is to be conducted on ordinary principles, making an allowance for that peculiar state, and not exhibiting any violent remedies, as mercury, foxglove, narcotics, in long continued courses, as they might destroy the infant; but this is still doubtful.

Separation of the pubic joint is happily a rare occurrence, before or after delivery; when it does happen it is a most painful and deplorable event, and must be treated on the strict antiphlogistic plan, and the woman is to be confined to bed for weeks or months. She cannot walk without aggravating the pain, by causing the motion of the affected part; the ligaments and cartilages become inflamed, abscess then forms, the ends of the bones become denuded, and the woman cannot assume the erect posture, or use the slightest motion, without the denuded surfaces rubbing against each other, and causing violent pain. A roller is applied round the pelvis in this state of the disease, and the most perfect rest is to be observed.

Another distressing disease, incident to pregnancy, is a tender, *irritable state of the vulva* with itching and heat in making water. The application of a sponge dipped in cold water, or in a weak solution of acetate of lead, generally affords relief. In some cases, bleeding from the arm and leeches must be employed.

Incontinence of urine is a common occurrence towards the last months of gestation, and is caused by pressure of the infant's head on the bladder. The urine comes off involuntarily, whenever the woman coughs or laughs, and must be voided very often during the day. There is no relief to be expected until delivery; the disorder is a favorable sign, as it proves that the head of the child rests on the os uteri. It must not be confounded with *hydrorrhœa*.

The womb may be attacked with *spasm (eclampsy)* before or after delivery, which frequently ceases, or is soon succeeded by inflammation, frequent pulse, thirst, heat of skin, sickness, constipation, tenderness in the hypogastric region, the pain passing to one or both groins, and to the back. Abortion generally happens in this disease, and the patient usually sinks soon afterwards. Sometimes the pulse remains tranquil, which proves the nature of the case. It is daily mistaken for inflammation, a remarkable case of which I lately witnessed. Opening the bowels, and opiates are sedatives, as morphine, sedative liquor of opium, ether, and camphor, are alone to be depended on; but if the spasm be violent, blood letting from the arm must be employed. Anodyne clysters are useful in this disease. Spasm of the stomach, called *gastrodynia*, is best relieved by a large opiate.

Rupture of the Uterus.—This dreadful occurrence may happen at any period of pregnancy. It is ushered in with severe pain, vomiting, and tendency to syncope; the pain resembles labour, but more generally colic, and its duration is variable. The patient always complains of "something having given away within her;" blood may escape from the vagina, but in general it passes into the cavity of the abdomen, causing enteritis. The motion of the child is great during the rupture; and if the opening is large, the infant passes through it into the abdomen, and can be felt through its parietes. The motion of the fœtus soon ceases, the tumour of the abdomen becomes diminished, milk is secreted, indicating the death of the fœtus. The woman is generally destroyed by peritoneal inflammation, or loss of blood; but sometimes she goes to the full time, when pains, like those of labour, are experienced; they frequently go off, and the child is retained for many years, being inclosed in a cyst, as noticed by Dr. Percival, who described a case where the fœtus was retained for twenty-two years, and then discharged by the rectum; it has also been dis-

charged by the vagina and abdominal parietes, numerous instances of which are on record. Lieutaud mentions cases where the fœtus was retained from ten to forty years, and Dr. Burns relates many other similar cases. Women seldom recover after rupture of the uterus; they sink from inflammation of the bowels or from inflammation or suppuration of the uterus, parietes of the abdomen, rectum, and vagina, or perineum, through some of which parts the fœtus escapes piecemeal. Dr. M'Keever, of the Dublin Lying-in-Hospital, published an interesting work, in 1824, on *Lacerations of the Womb and Vagina*, well worthy the attention of medical men. He describes several well-marked cases, yet the patients recovered. His cases occurred before delivery, and not in his own practice. This dreadful disease generally occurs in arm presentations, or in preternatural labours, as I shall point out hereafter, and is mostly fatal. When it happens in the early months of utero-gestation, the ovum may escape through the laceration into the abdomen, even survive there, and increase in size. When the fœtus thus escapes into the abdomen, its motions are felt stronger than before. If the woman survives, the womb decreases, and returns to its former unimpregnated size; the menses will return, the woman may become pregnant, and she may even bear children, before the expulsion of the retained extra-uterine fœtus. (*Journ. de Med. T. V.*, p. 422; Burns, p. 105.)*

When the case is about to end fatally, the pulse becomes quick and small, the belly painful, the strength declines, and sometimes vomiting ushers in dissolution. The fœtus has been expelled through an abscess externally. *Med. Coms.*, vol. ii. p. 317; vol. iv. p. 401; *Med. Journ.*, vol. viii. p. 324. Various other cases could be cited from foreign medical works.

The most common causes of rupture of the uterus are mental emotion (Percival and Underwood, *Med. Coms.*, vol. ii. p. 77), exertion, or violence. It may happen with a noise, and be audible to the bystanders. The great danger of allowing a woman to continue in active labour for more than twenty-four hours, is rupture of the uterus. If we find, on examination, that the os uteri is dilated, the labour has really commenced; and if the process

* Cases of ruptured uterus, in the early months of pregnancy from falls and blows, are recorded in *Phil. Trans.* vol. xlv. p. 121; *Mem. Acad. Scien.* 1709; *Jour. Med.* 1780; Burns' *Mid.*, p. 640-1; *Annals of Med.* 412; *Journ. Med.*, vols. v. and vi.; *Med. Coms.*, vol. ii.; *Dublin Medical Trans.*, 1830, vol. i., New Series.

is not over in twenty-four hours, there is invariably something wrong; but some women have severe, and even continued pains, for one, two, or three days, without being in labour. Pressure on the womb, by the infant's head, may render a part of the organ thin, and liable to rupture. Spasmodic action, or attempts to return a limb of the infant, when presenting, external violence, use of the forceps, and the operation of turning, are often causes of this laceration.

Three modes of treatment have been recommended in ruptured uterus; to deliver by turning, or the forceps, to perform gastrotomy, and to leave the case to nature. Dr. Burns loudly condemns the idea of forcibly dilating the os uteri. "I question," says he, "if the woman could live until the delivery were accomplished." This is the general opinion, though I believe it liable to exception, when gestation has exceeded the seventh month. It must be admitted that parturient action may take place at any period of pregnancy, therefore the cautious dilatation of the uterine orifice, in a case of rupture or of convulsions, would be infinitely less dangerous than cutting through the abdomen, and much more accordant with science than allowing the mother and infant to perish without any aid. I was forcibly struck with this opinion, in a case of convulsions in the eighth month, which defied copious depletion, large doses of camphor, and proved fatal; for, acting on the rule which inculcates the danger of dilating the os uteri, nothing remained but the Cæsarian operation, which would not be sanctioned. Now, in such fatal cases, and they are occasionally met with, the puncturing of the membranes, or the gradual dilatation of the uterus, can scarcely be objected to, when without it the fate of the woman and child is inevitable. Admitting the possibility of laceration, which need not happen in ordinary hands, this, after all, is not so formidable as is generally imagined. We have numerous cases of extensive rupture of the womb recorded by M'Keever, and Collins, of Dublin, which terminated favourably, and we should bear in mind the fact of the dilatability of the womb at any period of pregnancy. Experience will determine whether this proposal is not more feasible and less dangerous than gastro-hysterotomy, or gastrotomy, in the cases under consideration. Other objections obtain against the latter in cases of extra-uterine foetation.

The operation of gastrotomy, I apprehend, can only be resorted to in one species of extra-uterine foetation, namely, in the ab-

dominal or ventral, and after the seventh month of gestation, when the viability of the infant is certain. In tubal and ovarian pregnancies the fœtus generally dies about the second or third month, and the mother may die in consequence of hæmorrhage from the ruptured sac, or from inflammation. All obstetric writers agree that it is impossible to distinguish which form of extra-uterine fœtation exists at this early period. Besides, the woman may recover, in the majority of instances, without any operation. This is generally the case in abdominal fœtation. After the death of the fœtus, the amniotic fluid is absorbed, the infant is indurated, petrified, or transformed into a substance like adipocere, the cyst becomes fibrous, cartilaginous, or osseous, and all form a solid tumour, which may remain to an indefinite period, perhaps half a century, in the abdomen without injury. The sac may be filled with pus, the fœtus become putrid, the cyst adhere to the vicinal parts, and an opening may form in different portions of the intestines, perineum, vaginal, or abdominal parietes, through which the fœtus may be discharged. This process is tedious, and sometimes fatal to the mother; but the records of medicine afford the most ample testimony of the favourable termination of the greater proportion of such cases. Extra-uterine fœtation is of very rare occurrence, and its protraction to the ninth month has been seldom observed. Instances are recorded, however, of its arrival at the full period, by Haller, Baudelocque, Leroux, and Galli. We can readily understand the reason of abdominal fœtation being more protracted than tubal, ovarian, or utero-interstitial (Desormeaux), when we recollect the extent of the abdominal cavity, the mobility of the viscera, and the greater amplitude there is for the development of the fœtus than in the former cases. The diagnosis of extra-uterine fœtations is extremely difficult. Many cases of this description have been supposed to exist, where natural parturition finally took place. M. Capuron states, that about twenty-five years ago, some of the most eminent obstetricians of Paris made this mistake at *La Charité*, and on another occasion extra uterine fœtation was only discovered after death, and again retroversion of the womb was mistaken for it. These facts should have due weight before recourse can be had to gastrotomy. After the most minute consideration of all the circumstances of ventral fœtation, MM. Capuron, Desormeaux, Gardien, Velpau, and various French writers, are advocates for gastrotomy, after the sev-

enth month. They argue that the woman must be lost either by hæmorrhage, from the bursting of the foetal sac, or by inflammation, and that the infant is also sacrificed. They hold the operation as safe as hysterotomy, and Capuron asserts that it has been crowned with success, but he has not recorded any instance in which the operation has been performed. If he means that gastrotomy and hysterotomy are synonymous terms, I must differ from him. The circumstances of cases which require these operations are widely different. In ventral foetation, the presence of the ovum irritates the peritoneum, a membrane is formed, and envelopes the foetus, and also becomes attached to the different viscera, epiploon, mesentery, vertebral column, external surface of the uterus, and other parts. Its inner surface is smooth, and highly vascular near the placenta, and its colour is red, brown, or black. The placenta is broader and thinner than usual, and its vessels are comparatively fine (Turnbull and Desormeaux), and therefore incapable of affording the proper supply of blood, in most cases after the third or fourth month, hence the death of the foetus. Now these circumstances are totally different from the natural condition of the uterine appendages, in cases that require the Cæsarian operation, or gastrotomy. They present strong objections to the latter operation. M. Capuron is of opinion, however, "that the abdomen should be laid open, in the direction of the linea alba, or according to the position of the infant, and the placenta detached, as there is no danger of hæmorrhage, or it might be left behind and allowed to separate and present itself at the abdominal opening." He agrees with M. Gardien, that the operation should be performed several days before the period at which uterine action occurs, as the mother and infant would have a better chance, for when the membranes rupture, both must be lost by hæmorrhage. On the other hand, M. Velpeau is of opinion, that immediately after the rupture of the sac, the operation should be performed—"with the operation death is too probable, without it death is nearly certain." It appears to me that both these writers speak too confidently on the propriety of an operation which, I believe, has never been successfully performed. They ought to have stated, whether the sac which surrounded the foetus is to be extracted or left behind, and also what is to arrest hæmorrhage after the detachment of the placenta. What is to close up the mouths of the vessels from which it has been torn? If the sac and placenta

are left behind, they will induce irritation and inflammation, and how can the former be separated from its adhesions? M. Colomb performed gastrotomy in a case of extra-uterine foetation, but it ended fatally. (*Recueil des Actes de la Société de Lyons.*)—He regretted, as also did Baudelocque and Guerin, that they had not made an incision through the vagina, as the head was clearly felt pressing upon that part. Sabatier mentions that Lauverjat extracted the infant by an incision through the vagina, and the woman recovered. (*De la Med.* tome i. p. 136.)—Now this operation is evidently preferable to gastrotomy, because much less important parts will be divided, less hæmorrhage, less inflammation, and less suppuration will be induced. Besides, the abdominal muscles and diaphragm may expel the infant, and if expulsion be not effected in this way, the feet of the infant can be brought down, and turning performed. The placenta should be left attached, lest fatal hæmorrhage ensue, and the operation should be performed even if the infant were dead, but had arrived at the completion of the ordinary period of pregnancy, to save the woman from peritonitis. The wound should be left open, to allow the discharge of liquor amnii, blood, membranes, placenta, or purulent matter; of course the after treatment ought to be strictly antiphlogistic.

If the infant's head can be felt, in these unfortunate cases, through the vagina, which is extremely probable, from the superincumbent weight of the foetus during the latter months of gestation, it must be admitted, from the preceding observations, that extraction through the vagina is much safer than gastrotomy. Happily, however, these cases are of extremely rare occurrence; but when they do present themselves, as in the example which gave rise to these remarks, they become subjects of grave consideration.

Retroversion of the Uterus.—Dr. Hunter first described this disease in 1754. It happens in the third, fourth, or fifth month of pregnancy, by the distended bladder pressing upon the enlarged uterus, and forcing its fundus downwards and backwards, between the vagina and rectum. This position of the organ prevents the discharge of urine and fæces, and consequently may destroy the patient. Severe bearing-down pains are felt, but especially when the bladder becomes distended. The complaint may be confounded with enlarged ovary, or extra-uterine conception;

but this is of little consequence, as the indications of cure are similar in these instances, namely, to draw off the urine and procure stools. The greater danger is, that the bladder becomes distended, may be inflamed, become gangrenous and perforated, or may adhere to the abdominal parietes. Inflammation and gangrene of the vagina may also be produced. Suppuration may happen, and purulent matter be discharged with the urine.

Treatment.—The grand object is to evacuate the bladder; and in order to succeed in effecting this by the catheter we must call to mind the position of the urethra, which is curved towards the sacrum. Hence we turn the concavity of the catheter towards the sacrum, and then generally succeed. In some cases the finger is to be passed into the vagina, so as to press down the os uteri and facilitate the introduction of the instrument, and an elastic catheter only will sometimes succeed. We seldom fail in drawing off the urine; but if it should so happen that we cannot succeed, puncturing the bladder is advised (Sabatier); an operation seldom, indeed never necessary. (Burns.)—Moderate pressure is to be made on the bladder while the urine is coming off, as otherwise a considerable quantity of it might remain behind. The water is to be drawn off, morning and evening, and by this plan alone the womb will regain its natural situation. After the first use of the catheter, a purgative or cathartic enema is to be given, and an anodyne clyster, if there be much bearing down pain. If any signs of inflammation appear, the usual depleting remedies are to be employed. Burns strongly contends, that in most cases the proper evacuation of the bladder will cure the retroversion; but should it fail, which is most unlikely, an attempt is to be made to replace the uterus. This is done by passing two fingers into the rectum and two or more into the vagina, and pressing up the uterine tumour. (Sabatier, Blundell.)—After reduction, the patient should lie on either side, and not on the back. (Capuron.)—Hamilton recommends this practice in every instance, although Denman thought the morbid position should be left to nature, and Burns is of the same opinion (1829.) The os uteri faces upwards, and presses on the neck of the bladder, so as to prevent the introduction of the catheter. When the catheter cannot be employed, Drs. Hunter, Jourel, and Hamilton recommend puncturing the membranes, to bring on miscarriage. They deem retroversion a most dangerous disease. Merriman said it might happen at the full

time ; but this appears impossible, the uterus being so much higher than the bladder. Duges says it cannot occur after the fourth month. Dr. Hunter said the bladder has been so much thickened that some bystanders thought it was the womb itself. If labour happens during retroversion, it will be slow and tedious ; but it is very rare, and scarcely ever occurs under such circumstances. The complaint is said to arise from agitation and violent exertion, or coughing but this opinion is doubtful. Dr. Dewees seems to deny it.

Anteversion of the womb is said to exist when the fundus is thrown forwards, between the vagina and bladder ; the orifice of the womb being turned to the sacrum—a rare occurrence. Dr. Burns never saw an instance of this ; the urine is to be drawn off and the fundus raised up. The bladder is thrown forward by pregnancy, distorted pelvis and pendulous belly ; so that in passing the catheter, as soon as we clear the pubes, the handle of the instrument is to be depressed ; whereas in retroversion, inversion, or prolapsion, it is to be elevated, as the bladder, in all these cases, is thrown backwards into the cavity of the pelvis. It is very important that these observations be borne in mind, otherwise we shall be foiled in attempting to pass the catheter.

Another derangement of the impregnated uterus occurs, which is named *obliquity* by authors. The obliquities are, first, the lateral obliquity ; second, the anterior obliquity, or anteversion ; third, the left lateral obliquity ; and fourth, the posterior obliquity, or retroversion. Two of these conditions I have just described. The right lateral obliquity is caused by the distension of the rectum, which presses the uterus to the right side. The distension of the sigmoid flexure of the colon, and promontory of the sacrum, assist in effecting this position ; hence it is the most frequent by one hundred to one, according to Baudelocque. In fact, the os uteri will not be always in a line with the fundus ; and hence the severity of labour, under such circumstances—a frequent occurrence. The anterior obliquity happens rarely in first pregnancies, owing to the firmness of the abdominal parietes ; but it often occurs to the same woman, in future cases. In the latter months, anterior obliquity becomes very inconvenient, by pressing forwards, and inclining the woman to make water and void fæces ; it has been so urgent, as to oblige the patient to remain in bed. It is most common in small short women. (Dewees.) The best

and only remedy for this distressing state, is a pair of drawers and a half waistcoat, which are to be put on in bed ; the patient being in the recumbent posture. She is to raise up the womb, by locking her hands together, then slip on her dress ; while an attendant is to lace the waistcoat tightly, so as keep up the uterus. This is to be done before the patient assumes the erect posture, otherwise it could not be effected but with difficulty. Thus the womb will be prevented from falling forward ; the half-waistcoat need not extend higher than the navel, and may be supported by suspenders, if necessary ; and thus will anterior obliquity or antiversion be prevented and the woman be rendered comparatively happy and relieved. The same treatment will also relieve lateral obliquity ; but before applying the dress, the woman is to lay on the opposite side. These obliquities are to be relieved by manual exertions during labour ; and the proper relations between the axes of the uterus and pelvis are to be maintained.

If the os uteri is not brought to the proper axis in the pelvis during labour, much suffering must be endured, and great risk incurred, by permitting the head to descend, covered by the uterus. The hand, after being lubricated with lard, pomatum, olive oil, or fresh butter, must in some cases be passed into the vagina in order to discover the orifice of the uterus ; a finger is then to be introduced into the orifice, if dilated, or easily dilatable, so as to hook it down into the vagina, and it is kept there until the regular pains force the uterus to correspond with the axis of the pelvis. By pursuing this plan, the patient will be saved from suffering severe pain. Until a recent period, this condition of the uterus was unknown ; and we find no mention of it by Hamilton, Denman, Burns, and other British obstetric writers. The malposition has been mistaken for occlusion of the os uteri, and an incision has been made to allow the exit of the infant, although the same woman had borne children afterwards by the natural passage. The French writers describe inclination of the womb, that is, where it has a tendency to be displaced.

Nauche describes degrees of retroversion and anteversion under the denominations retroflexion and anteflexion ; elevation and descent, inclination or lateral obliquity, hernia, renversement when the internal surface descends through the vagina, all of which occur in vacuity of the organs during pregnancy, at the moment of delivery, or after delivery. (1830.)

The British obstetricians have nearly described obliquity of the womb, in speaking of this disease under the name of pendulous belly. Sometimes the abdominal muscles do not yield in first pregnancies; at other times they yield readily, allow the uterus to fall forwards, and form this disease. The drawers and waistcoat are the only remedies for this state, as already mentioned. When the parietes of the belly do not yield freely, the patient complains of pain and tension; and irritation may be so great as to cause miscarriage. This state will be relieved by blood-letting, and warm fomentations of poppies, &c. Sometimes one part yields more than another, even one part of a muscle, and causes deformity; but it is attended with little inconvenience. Hamilton places a woman with pendulous belly on her back, during labour, or for a few pains, when the position will be rectified, as the weight of the infant will fall on the spine and back of the pelvis, and the head will be forced into the natural outlet.

Leucorrhœa is often a troublesome attendant on pregnancy, the symptoms and treatment of which have been already described, p. 182.

Hydrometra—Hydrorrhœa.—False or Spurious Waters.—From the third to the ninth month of uterogestation, there may be a watery discharge from the vagina, which may happen in gushes, or escape slowly, and be continued for six months, without impeding the development of the gravid uterus, or without inducing abortion or miscarriage. This disease has been described under the denominations at the commencement of these remarks. It was first noticed by Mauriceau, and denied by Baudelocque. In some cases there is a sudden gush of fluid, and afterwards a continued draining, or the quantity may amount to several pints. The discharge may or may not be preceded or followed by uterine contractions, or by dilatation of the os uteri, the woman going to the full time, and always having the membranes distended as in natural labour. The quantity of the fluid varies exceedingly, for sometimes an incredible amount is effused. The discharge may appear once or oftener, and at different intervals, sometimes continuing for a long time, increased by mental or corporeal excitement or depression, the cause is sometimes undiscoverable, and the discharge is greater in some cases at night, in others during the day. The fluid is generally yellowish, sanguinolent or perfectly limpid, or filled with flakes of fibrine.

A great diversity of opinion exists as to the source of this fluid. Some think it is produced by the amnios, others that it is contained between the amnios and chorion, others that it is caused by a rupture of lymphatics or hydatids, situated between the chorion and uterus; and by far the greatest number maintain that it is situated between the chorion and uterus. The first opinion cannot be correct; because all admit that rupture of the amnios is invariably followed, in a few hours or days, by expulsion of the embryo or foetus. The next opinion is also untenable, as no fluid is found between the chorion and amnios after the third month; nor is it easy to understand by what cause there could be rupture of the lymphatics; and even admitting this for the sake of argument, it would not account for the large quantity of fluid which is often effused. The existence of hydatids must be admitted; but even these cannot produce the quantity of discharge. The following cases, I think, clearly prove the received pathology: Puzos describes four examples which occurred in the last two months of gestation, in which the fluid was situated between the membranes and uterus, the pregnancies were completed, the membranous sac in each case was perfect, and the labour natural. Hildanus relates a case which occurred at the fifth month of pregnancy, attended by labour pains, and followed by a discharge of ten pints of fluid, the pregnancy went on without any other accident. Mercier describes a case at the same period, the patient was attacked with fever, accompanied by pains in the pubic and lumbar regions, ardor urinæ, constipation, and a slight discharge from the uterus. On the sixth day, a dead and a living infant were expelled; and between the births an elongated bladder presented in the vagina, from which ten pints of a lactescent fluid, in which flocculi of albumen floated, were discharged. A membranous sac followed. Burns has met with several cases, and does not consider the fluid amniotic. Pentland, of Dublin, also met with the disease (Dublin Med. Essays, Nos. I. and II.); and I have met with a case which occurred at the third month, and the pregnancy was uninterrupted. Mr. Burton Brown, of Blackfriars' Road, related four cases at the London Medical Society this year, in two of which labour did not happen for a period 132 days—nor was it accelerated. Various other examples might be quoted; but enough has been said in support of the opinion, that the discharge is not amniotic. Should the reader wish for farther evidence, he may con-

sult the London Medical and Surgical Journal, 1830, vol. iv., where he will find a good account of the disease, translated from an Essay by Dr. Geil, of Heidelberg; and he will find much information in the Dict. Abrégé des Sc. Med. Art. Hydrometre. (See p. 300.)

Redundance of the fluid of the amnios—Distension of the Abdomen.—This fluid may be so much increased, that a woman, at the seventh month, appears as large as at the full time. This is a dropsy of the ovum, *hydroamnios*, the health of the woman seldom suffers. The fœtus is expelled in general about the eighth month; and the labour is attended with hæmorrhage. The motion of the fœtus is obscurely felt in the fluid, and it is usually in the upper part of the womb; and water, to the amount of some pints, is towards the orifice. This disease has been called a monstrous conception. It may be caused by the venereal taint, general or uterine debility, or original disease, or imperfection of the ovum, in the ovarium. The infant, if born alive, is weak and delicate, and seldom lives—it generally dies in the womb; and its death is marked by a shivering fit, cessation of motion in it, and flaccid breasts. This sort of pregnancy frequently occurs to the same woman. *Treatment.*—Tonics, cold bath, laxatives, blood-letting, and mercury, are the remedies to be employed, which may or may not be effectual. A course of mercury before conception is the only remedy, when a venereal taint is suspected; and it must be used by both parents. (Trans. Dub. Col. of Phys. 1824, vol. iv.) Also Drs. Joseph Clarke and Hamilton.—I have lately met with two cases of this disease: one woman miscarried at the seventh month, with a copious discharge of amniotic fluid, and a putrid infant; she had lost six children in this way, and three at the eighth month. According to Dr. Beatty, of Dublin, both parents must use a full course of mercury; and unless a large quantity be taken, a cure will not be effected. His papers, in the Transactions of the Dublin College of Physicians, vol. iv. p. 24, are worthy of serious perusal. He informs us, that the Dublin physicians have held this opinion since 1792. Dr. Hamilton inculcated it in 1819 and 1820. After taking a proper quantity of mercury, healthy infants will in future be produced. In one of my cases, a quantity of sarsaparilla has been tried, after mercury, without success; the lady is now pregnant, and has had a dead child, her last, after the use of sarsaparilla. She is a del-

icate woman, and is subject to herpes on the mons veneris. When the liquor amnii is copious, and the uterus largely distended, the os uteri was forced open by the older practitioners, in order to evacuate the fluid; an improper operation. Sometimes the os uteri dilates; and then Puzos and others recommended the laceration of the membranes; but although this causes expulsion of the fluid and infant, it will not cure the disease.

I have described the *various tumours* that occur in the unimpregnated state, which may be attached to the vagina and uterus, and stated that conception may take place even when such tumours are very large. If they impede labour, as they often do, endeavours must be made to remove them. Pregnancy has taken place in scirrhus and cancer of these parts.

Muscular pains may arise in the parietes of the abdomen, in the loins, and small of the back, which are generally produced by walking, riding, dancing, or some other exertion. They may be so severe as to threaten abortion. Rest and anodyne fomentations are the best remedies.

Pain in the side is a frequent occurrence in the last months of pregnancy, owing to the weight of the uterus, or to the violent motion of the infant. Pain is also experienced in the course of the colon, from the enlargement of the uterus. Anodyne frictions, and attention to the bowels, may give relief; blood-letting is seldom useful, although often employed. Miscarriage seldom happens under these circumstances. Hernia may also occur, as also starting, or distension of the navel, and can be only palliated. Pain in the back, and region of the kidneys and uterus, sometimes occurs, causing severe strangury and premature labour. The pulse is slow and soft in these cases, and flatulence is troublesome. Saline clysters, followed by injections of starch, and a half a drachm of tinc. opii, to half a pint of the former, are used with advantage, and also a sinapism to the back, as we ought never apply a blister to the region of the kidneys, as absorption of the lytta would take place, and cause violent strangury. The ung. tart. ant. is a useful remedy in such cases. Its effects are promoted by the addition of a few drops of croton oil, as recommended by my friend Dr. Shortt. Leeches to the loins, and drachm doses of carbonate of soda, will be tried with advantage. I have given ℥vj daily.

Spasms, cramps, and numbness of the lower extremities, in the

latter months, arise from the pressure of the enlarged uterus on the nerves of the pelvis. Frictions of the legs, and change of posture are the best remedies. The muscles of the thighs and loins are also affected by such pressure. These spasms may go off after some time; in some cases they will continue to the end of pregnancy.

Anasarcous and œdematous swellings of the lower extremities are also caused by pressure of the enlarged womb on the lymphatic blood-vessels; aperients and frictions are the best remedies.

Ascites, or dropsy of the abdomen, may also occur during pregnancy. It has been mistaken for pregnancy, and *vice versa*. Tapping has been employed with success, although condemned by Denman. Few persons, now-a-days, mistake dropsy for pregnancy. By attending to the history of the case, a correct diagnosis is generally formed; of course there is scarcely one of the signs of pregnancy attendant on dropsy. Dropsy may exist, and conception also occur; the abdomen will be greatly distended in such cases. Burns recommends tapping in the early months, and asserts it is more successful than towards the end of pregnancy. Great care must be taken, lest the uterus should be punctured, with the abdomen; an occurrence that has often happened. If dropsy depends on an enlarged liver, the distension of the abdomen and pressure of the infant, after the seventh month, increase the irritation, and death in general happens. Mild purgatives and diuretics, as the compound powder of jalap, or the electuary of sulphur and cream of tartar, are used with advantage until after delivery.

Varicose Veins.—The legs, thighs, and abdomen, may be attacked with a varicose state of the veins, or œdema, during pregnancy. This condition is also induced by pressure of the uterus on the large veins in the pelvis, and thus interrupting the circulation. These varicose tumours, although painful, are not dangerous; the recumbent posture and tight pressure generally give relief; but tight bandaging is injurious, and must be resorted to after delivery.

Syphilis may be communicated to pregnant women. Denman recommended the use of mercury, so as to impede, but not cure it completely. He was of opinion, with other eminent men, that mercury, if used freely would destroy the infant. He recommended the farther use of the remedy after delivery. He asserts,

that he never saw an infant born with true signs of venereal. Hamilton inculcates the contrary, and maintains that he has often seen the infant covered with the copper-coloured venereal eruption. This is the received opinion. There can be no doubt of the fact. Mr. Abernethy asserts, that the infectious diseases of the mother are communicated to the child, after a certain period. He asserts, that if the mother have the measles, small-pox, or hooping-cough, the child is liable to participate in such diseases, and premature labour coming on, children have been covered with small-pox; but this does not happen till, perhaps, the seventh or eighth month. He knew an instance of a mother who had the hooping-cough, who produced a child with the same disease, at the time it first breathed. He thinks these diseases are not communicated before the sixth month. (Lectures in Lancet, 1827, vol. xi.)—This is an erroneous idea, the embryo is infected at its formation. I have known a case where the lady was salivated during three pregnancies, and before the sixth month, and on the last occasion six months after conception; but she produced her putrid infant at the eighth month. I advised her and her husband to undergo a course of mercury after her delivery, and to avoid nuptial intercourse. They did so, a cure was effected; and she has now living infants. Mr. Abernethy's opinions on this and many other physiological subjects were far behind the present state of science.

If *gonorrhœa* occur during pregnancy, it is to be cured as soon as possible, otherwise miscarriage might be induced from the great irritation it produces. I have seen every sign of miscarriage most urgent, in consequence of this disease. It is a difficult matter to cure it during pregnancy, and the infant is generally born with purulent ophthalmia. A cure is effected by cubebs.

Pleuritis may occur during pregnancy, and may be combined with pleurodynia, or the neuralgic pain in the side, already noticed. In such cases, venesection, a sinapism, or antimonial pustulation over the affected part, with proper attention to the bowels, will be generally effectual in removing the disease.

Spasms of the ureter may occur during gestation, and induce all the symptoms of nephritic affection. There is generally dyspepsia, with much flatulence, and strangury, which may cause premature labour. Warm fomentations to the affected loin, and an anodyne draught should be administered; the bowels are to be

regulated by a saline clyster, a rubefacient embrocation is next to be tried, and if this fail, venesection and leeches to the affected part, with hip-bath, will become necessary.

Spasm of the uterus may be induced by the last affection, or may be idiopathic, and is soon followed by hysteritis. The ovum is generally expelled, and the woman dies soon afterwards. The treatment necessary in this formidable case is the antiphlogistic, with anodyne clysters. Leeches are to be applied to the groins or vulva, hip-bath and internal use of opium are to be used; and should the disease proceed, in defiance of these remedies, the rapid employment of mercury, both internally and externally, affords the only chance of success. The free use of opium, by the mouth and rectum, is strongly advised by Bates and others, as will appear in the article on *Puerperal Diseases*.

Violent motion of the fœtus causes much sickness and uneasiness, which are produced, perhaps, by too much sensibility of the uterus. These symptoms are extremely urgent in cases of the neuralgic pains, already mentioned. Relief is obtained by regulation of the bowels, and anodynes at bed-time. In the latter complications the practice has been already detailed.

Umbilical and ventral hernia may occur during pregnancy, and are to be relieved by a proper bandage.

In first pregnancies the abdominal muscles are often unyielding, or they distend unequally, and in either case there may be much irritation of the abdominal parietes. This is best relieved by anodyne fomentations and liniments.

Inodorous or fœtid gas has escaped from the gravid uterus, and also during parturition (Mauriceau, Larrey de Nismes, Baudelocque), and this *physometra*, or uterine tympanites, may not be discovered before parturition.

Hydrometra, or uterine dropsy, has been already alluded to, p. 317.

Moles, hydatids, and polypous tumours may exist in the uterus during pregnancy. See pp. 202, 207.

Tubal, abdominal, and ovarian pregnancies are described by authors under the term extra-uterine gestation; but these are of such rare occurrence that we need not allude to them further in this compendium. (See p. 310).

Various other diseases may exist during pregnancy, which will

be found in the section *On Diseases of the Internal Genitals*, p. 177, which are to be treated in the manner therein described.

Abortion, Miscarriage.—When the fœtus is expelled before the sixth month, the process is called abortion, when after this period, premature labour. There is first a separation of a portion of the membranes from the uterus, which is followed by hæmorrhage, and next the expulsion of the fœtus with its appendages.

There is always more or less pain with hæmorrhage during abortion, and the process of expulsion is both tedious and imperfect during the first three months, as either the embryo or its appendages will be retained for days or weeks. Abortion is generally over in two or three days, yet it may not be completed for six weeks. When it occurs during the first two months, we can only distinguish it from excessive menstruation by the blood coagulating, an appearance seldom witnessed in the menses. The quantity of blood lost will vary according to the age of the fœtus; it may be from one to eight pints, again it may be very trivial. There is most nervousness during the first three months when abortion happens; such state succeeds the event at a later period. When the infant is dead abortion will in general happen. Premature expulsion of the fœtus may be induced by an innumerable variety of causes; in fact, by every motion and exertion of the parent, by general or uterine debility, disorders of the stomach, bowels, rectum, bladder, excessive nuptial enjoyment in full habits, external injury, or exertion of any kind, violent exercise, muscular fatigue, much walking, riding, dancing, strong mental emotions, either exhilarating or depressing, irritable and debilitated condition of the womb, or its not developing beyond a certain extent, and the various diseases of the internal organs of generation already described. It is worthy of mention, that consumptive women, who have a great aptitude to conceive, seldom miscarry. those who marry late in life are most liable to it. Habit, too, will effect it and we know that women may abort successively at the third month so often as twenty-three times. Many diseases impede the developement of the fœtus, as scirrhus, polypus, moles, excessive menstruation. Vigorous salacious women, newly-married, often miscarry from too much nuptial indulgence, so that when abortion successively happens to well-looking, healthy, young married women, we are to suspect this cause. Diseases of the infant, or its coverings, are frequent causes; it may die, and

be converted into a mole, or hydatid. Emetics, purgatives, emmenagogues, or mechanical interference may cause abortion.

Many of the causes of abortion have been described, p. 145 ; and here I should state, that plethoric women, who menstruate freely, or the irritable, excessively sensible, nervous, hysterical, lymphatic, delicate, who have large blue eyes, or those tainted with syphilis, scurvy, rickets, or labour under any chronic disease, abort most readily, so also those who reside in marshy, malarious situations. Certain states of the weather render abortion epidemic (see p. 146). All chronic diseases of the uterus and all affections of the ovum will induce it. Diseases of the chorion, amnios, vesicula umbilicalis, and vesicula erythroides produce this event. Almost all the diseases to which infants are subject after birth may affect them in the uterus, and cause abortion. Falls, blows, or external injuries of any kind on the abdomen, may separate the placenta, and produce the expulsion of the uterine contents. Mechanical causes must be recollected, more especially in a forensic point of view. Pregnant women should avoid long walks, hastily running up stairs, lifting heavy weights, unpleasant sights, heated rooms, stimulating or warm drinks, which hurry the circulation, much vegetable food, which causes flatulence and irritation in the intestinal canal, late suppers, much bowel medicines, tight lacing, immoderate use of tea, coffee, opiates, and narcotics, long repose in warm feather beds, severe study, in a word, all causes that debilitate mind or body.

These are frequent causes, but others might be enumerated, perhaps to infinity. With regard to the prognosis, or termination of a threatened abortion, there is no malady out of the many "to which flesh is heir," that requires so much caution in pronouncing an opinion. We can never be positive whether it may or may not happen. Besides, it may lay the foundation of many chronic diseases, or at once destroy the female by hæmorrhage. "We must be also cautious," says M. Desormeaux, "as the disposition to abortion becomes less, according to successive pregnancy." The French law makes it a veritable homicide to provoke abortion. Spontaneous abortion, however imminent, is not always inevitable, even though blood has escaped, and the labour pains have commenced, or even if the membranes give way. (Pentland, Burns, Desormeaux, Morlanne, and the author.)—In some cases the rupture of a hydatid causes the effusion (see p. 210).

Again, one foetus may be expelled and another remain, and be developed, or a dead foetus may be converted into a mole. The prognosis in abortion is often doubtful, but in general favorable.

The *treatment* may be divided into preservative, palliative, and active. In all cases, the cause is to be removed, the urgent symptoms alleviated, and the female confined to the horizontal posture on a couch, or much better on a bed. A mattress, or sacken bottom, should be preferred, the apartment to be airy, the bed-clothes to be as light as possible, no fire to be allowed unless in winter, and the most perfect rest of body and mind to be observed. All officiousness of nurses and their garrulity to be prevented, all marvellous stories do mischief by depressing the patient's mind, and one or two persons only should be allowed in the chamber; they are sufficient for every useful purpose. The diet should consist of the vegetable jellies, as sago, arrow-root, tapioca, water-gruel, barley-water; the drinks to be mild, as lemonade, barley-water, &c. and are to be taken in the recumbent posture, and rather cool. This plan will usually succeed in preserving the infant, unless the uterine pains be urgent, the discharge of blood copious, the orifice of the womb gradually dilating, and the woman advanced in pregnancy, when preservation, or palliation, is of no avail. If the pains be slight and irregular, and no discharge, this plan will be effectual, and may be assisted by the exhibition of an opiate. The horizontal posture is to be observed for weeks or months, especially if the woman has aborted frequently, and must be continued until the usual period of aborting has elapsed. The French writers lay great stress on blood-letting, either in the arm or foot; a practice not depended on in this country. Desormeaux recommends the application of leeches to the groins, vulva, and anus, to relieve local plethora. Duges asserts that bleeding is the best means of arresting febrile or inflammatory labour, by giving the uterus the contractility it wants.

In this country, venesection is considered one of the best means of promoting uterine contraction in tedious labour, when the patient is plethoric, and has been for some time labouring under useless pains. If the pains cease in the case under consideration, and the abortion be averted, the patient should take a light, moderate diet, live abstemiously, avoid exertion and conjugal intercourse, take gentle exercise in the open air, and regulate the bowels by mild laxatives.

If the symptoms of abortion or miscarriage be urgent between the third and sixth month, the pains constant, the womb dilating, the discharge of blood considerable, then we must endeavour to use palliatives. The treatment just described must be resorted to; a napkin, wetted with cold water, or vinegar and water, in the proportion of half a pint to the quart, is to be applied to the naked abdomen and genital fissure; and the opium and acetate of lead, and the tampon or plug, together with the cold injections described under the treatment of excessive menstruation, p. 233, employed. Blundell recommends drachm doses of digitalis, to act on the circulation; but Haighton found this a most dangerous and unmanageable remedy. The plug or tampon recommended by Hippocrates, Moschion, Paulus Eginetus, Hoffman, Desormeaux, Lachapelle, Capuron, Velpeau, Duges, Smellie, Leroux, Denman, Hamilton, Burns, Merriman, Dewees, &c. is now generally employed. In this country, old linen or calico is preferred; the French use chapie, Dewees, a sponge squeezed out of vinegar. Any of these substances, after being wetted in a saturated solution of alum, and smeared with some oleaginous matter, is to be passed into the vagina, in order to act as a nidus, on which the blood may coagulate. The vagina is to be completely filled with the plug, otherwise the hæmorrhage may go on to a considerable extent. A fold of linen is then to be applied to the genital fissure, and a T bandage is to be put on. Nothing is more easy than the extraction of the plug, with the fingers, and this, as well as its safety and great utility, ought to be explained to the patient. It will not prevent the evacuation of the bladder, if properly applied: if it does, it is to be partially withdrawn, to allow the escape of the urine. In some cases the genital fissure is so much contracted, and the vagina is dilated, that much pain will be produced in passing strips of calico, or a sponge of sufficient size, and in other cases the vagina, though tightly plugged, may dilate, and hæmorrhage return. Under these circumstances an injection of a weak solution of alum and water will often arrest the bleeding. Dewees applies a bladder of cold water to the pubes. Blundell recommends sprinkling the abdomen by means of a hearth-brush dipped in cold water.

Dewees, Conquest, and others recommend the injection of cold water into the rectum, or a solution of acetate of lead and opium; but this practice is generally very much objected to by the woman.

If the patient be of full habit, venesection may be tried with advantage. Dewees bled such a patient seventeen times in seven days, and prevented a miscarriage. Some of the older obstetricians even yet depend on infusion of roses and sulphuric acid, to allay hæmorrhage in abortion. Would they resort to this remedy, if one of them cut his finger? It is just as useful in one case as the other. When regular uterine pain commences, I believe nothing can prevent expulsion; and our chief endeavour should be to restrain the hæmorrhage as much as possible, for this is the real cause of danger. If regular pains become more violent, after a trial of the remedial measures enumerated, we might accelerate the expulsion of the infant by the use of the *secale cornutum*, or ergot of rye, in the manner already described. Tedious hæmorrhage is often caused and may continue for five or six weeks, in consequence of the ovum, or a part of its appendages, being retained, and when in the orifice of the womb, may be drawn down with a finger, or a clean curved dressing forceps. Levret, Leroux, Burton, Dewees, and Blundell, recommend a wire forceps to be passed into the womb in such cases; a practice strongly censured by Puzos and many others, and long since discarded in practice. There would be imminent danger of tearing and wounding the womb by such an operation. (Duges.) If the pregnancy (says Burns) be not beyond the fourth month, it would be better to trust to smart clysters, and restrain the hæmorrhage by the plug. Some writers recommend the introduction of the hand into the uterus, to extract the abortion, but this is a cruel, barbarous, and impracticable operation, at any period before the sixth month. Such men seem to have forgotten the size of the uterus, and the progress of its development. If any part of the ovum or secundines is left behind, we might expect hæmorrhage and putrefaction, together with severe nervous and constitutional irritation. Happily the ergot of rye will obviate all these evils. The worst consequence of abortion is debility, induced by the hæmorrhage, and hence tonics, air, exercise, and nourishing diet, are to be employed during convalescence. Mauriceau, La Motte, Dewees, &c. inform us that the orifice of the womb may be dilated to a considerable extent in the latter months of pregnancy, and yet no expulsion of the infant take place; and yet it almost invariably happens, to the danger of the life of the female, when rude or artificial means are attempted to procure it.

The venereal disease, when imperfectly treated, and left uncured is a frequent cause of premature labour, after the seventh month of pregnancy. Several infants will be expelled in a putrid state, about the seventh or eighth month. This cause of premature labour was discovered in Dublin, in the year 1792, according to Dr. Beatty (Trans. Dub. Col. Physicians, 1824, vol. iv.); and has also been described by Dr. Hamilton, in his valuable Lectures for some years. Both male and female must undergo a complete course of mercury, and then they will have healthy children. I lately had a lady under my care, who used a vast deal of sarsaparilla after a slight mercurial course; but she and her husband resumed the latter medicine by my advice, as they had had three putrid children after they had taken the sarsaparilla. The liquor amnii may become too redundant, and induce premature labour, in the last months of pregnancy. Improving the general health is the only cure for this disease. Women who marry late in life, are very apt to abort: and in such case, I apprehend very little can be done. It may be worthy of remark, that all acrid medicines exhibited to produce abortion generally destroy the female, by causing inflammation of the stomach and bowels; a fact to be borne in mind by the medical witness. The woman may also be destroyed by hæmorrhage and flooding.

Premature Labour, or the expulsion of the fœtus after the sixth month, requires the same management as natural parturition. (See p. 103.)

Uterine Hæmorrhage.—This formidable and dangerous disease may occur at any period of pregnancy, before or after quickening, during premature labour, during natural labour, after the birth of the infant, and after the expulsion or delivery of the placenta, in consequence of want of contraction in the womb. The hæmorrhage is slight in the early months, owing to the smallness of the ovum; and is most copious in the last months, when the vessels of the maternal surface of the placenta are so enlarged, as in some parts to admit the point of the little finger. Of course a rupture of such vessels, by a partial separation of the placenta, must cause very copious effusion of blood. The discharge may be sparing or slow, or it may be copious and sudden, when the quantity may vary from a pint to a gallon in a very short time. The placenta or decidua may be partially separated by the most gentle exertion, in a carriage or on foot, by blows, falls, lifting heavy

weights, &c. An uneven step, or a sudden start, has caused flooding; and it is inevitable in those cases in which the placenta is attached over or near the orifice and neck of the womb. It is always to be looked on as a formidable occurrence; and yet, on the whole, it is, if judiciously managed, more alarming than dangerous. In every case it requires immediate and active *treatment*, which has been in a great measure detailed when treating of abortion. It is worthy of remark, that flooding is less formidable, and more easily controlled in the early than in the last months of pregnancy. When the placenta is attached to the fundus uteri and is partially separated, the blood insinuates itself between the decidua and uterus, and will suddenly escape unless coagulated, upon the slightest exertion. It is said that two-thirds of the hæmorrhagic cases arise from implantation of the placenta over the os uteri; and the majority of the remaining one-third depends upon placental adhesion adjacent to the cervix uteri. Nature arrests the disease by syncope, or by the induction of labour. There is no dependence to be placed on the use of the ordinary astringents, as kino, alum, catechu, &c. To use the words of that eminent obstetrician, Dr. Blundell, "they are of excellent service when the battle is won." The acetate of lead with opium is the best remedy. If any pain arise in the bowels from this medicine, a very unusual occurrence, an injection of one ounce of castor oil and a drachm of laudanum should be used as a clyster; injections of cold water, solution of acetate of lead and opium, are to be thrown into the vagina and rectum; plugging the vagina in the early months, and applying cold to the pubes and loins, as already described, are the best remedies in this species of abortion. As the strength of the woman always suffers from severe hæmorrhage, we should administer nutritious diet, in order to obviate debility, which often happens. The vegetable jellies, as sago, arrow-root, pearl-barley, tapioca, &c., strong animal broths, and jellies as soon as they can be prepared; eggs, milk, "fish, flesh, or fowl," are to be employed in proper proportion, according to the desire of the patient, or urgency of the hæmorrhage. Dewees, Burns, Blundell, and many others, approve of this practice; while Conquest advises "as little food as possible to be given, and that neither warm nor spiced."

If these means fail, and expulsion of the infant appears to be inevitable, the flooding continuing urgent, it has been proposed by

Rigby and Merriman to pierce the membranes, evacuate the liquor amnii, and thus favour the contraction of the womb. This method was found effectual by the former in sixty, and by the latter in thirty cases. The operation is performed by passing a finger or two into the uterus, and then introducing a sharp pointed wire, or female sound sharpened for the purpose, through the membranes, thus allowing the escape of the liquor amnii, or waters. Others separate the membranes for an inch round the orifice of the womb, while Dewees recommends the hand to be passed towards the fundus uteri, in the last months, between the womb and membranes, when the latter are to be ruptured. He recommends the passage of the hand thus high to prevent the escape of the liquor amnii; but how can this fluid escape, if the wrist or arm fills up the vagina? Another extraordinary assertion is that of Dr. Blundell where he recommends the introduction of the hand into the uterus, in the early months; he says that there is danger attending it; but it is possible to introduce even a small hand into the womb during the first five months of pregnancy? Burns condemns this proposal. Happily that invaluable medicine, the ergot of rye, will wonderfully expedite uterine contraction, much more certainly than any other means.

When the flooding is violent and great prostration of strength produced, the womb incapable of contraction for want of vitality, the affusion of a basin or bucketful of water to rouse the uterine contraction, ought to be applied to the abdomen. If the vital spark is all but extinct, I think, with Blundell, that such a practice would be dangerous. The practice might be used in the early months of pregnancy with less danger. Formerly women were recommended to ride about in their coaches on rough roads, to separate the miscarriages; but the poor cannot have this advantage.

In excessive flooding in the last months of pregnancy, where asphyxia seems to be approaching, the face pale; countenance ghastly; pulse small, irregular, intermitting, or absent altogether; the respiration hurried and gasping, with jactitation of the arms and legs; a feeling of the most oppressive anguish; a sense of coldness and insensibility; the woman, on no account, should move or sit up, as the slightest motion brings on a repetition of the flooding and instant death. Blundell bears testimony to this point. Again, no man should remove the clots from the vagina in such a

case, as such removal would produce fatal effects. Dr. Blundell would not suffer a woman, after such flooding, to be moved for twenty-four hours; but she might be made as comfortable as possible, by dry napkins. Diffusible stimulants, as the ardent liquors, brandy, rum, whisky, gin, &c. with ammonia, opium, are now to be given freely. Half a glass of any ardent spirit is to be repeated every ten or fifteen minutes, carefully watching the effects. When the pulse rises or returns, the lips redden, and the woman is roused, the liquor has done good. A pint of pure brandy has been given in such cases to a female, who never before took a glass full in the whole course of her life. But the stomach, to use the words of an able teacher, like all other parts of the body, is half dead; and this accounts for urging the spirit so far. Any liquor will be preferred to medicine, and little or no reliance is to be placed on large doses of opium, as recommended by Hamilton and Stewart, according to Denman, Dewees, Blundell and Barlow. Hamilton gives five grains of opium, and three every hour, until seventeen grains are given. Stewart exhibited a hundred drops of laudanum, and fifty or sixty every twenty minutes, until the desired effects were produced; two or three drachms of tincture of opium may be given in two or three hours.—(Med. Chir. Trans. v. iv.)

When the cervix uteri begins to develope, and the *placenta is adherent to it*, there will be a separation of the connecting vessels, and consequently more or less hæmorrhage. The quantity of sanguineous effusion will depend on the extent of separation; is at first slight, but soon very copious. It generally occurs between the seventh and ninth months of gestation. It ceases for a day or two, and sometimes for a week, and on its recurrence is much more copious; and ultimately, after such alternations, becomes continued and fatal, unless labour comes on, or art is employed. I have been informed of an exception to this conclusion, by a surgeon of great obstetric experience, who assured me that he attended a lady between the seventh and eighth month, and found the placenta detached to the extent of two inches, yet she went to the full period.

In these cases we institute a vaginal examination, and carefully determine whether the placenta is directly over the os uteri, or an edge of it adjacent to this orifice. Care must be taken not to mistake the membrane for the placenta, or a clot of blood for the lat-

ter. The os uteri will be dilated, and a soft fungous mass will be adherent to it, which is the placenta. I have been called to a fatal case, in which there was scarcely half an inch of the edge of the afterbirth detached. This hæmorrhage is much more fatal than that caused by abortion, though pregnancy has gone to the completion in such cases. (Duges.)—But in these cases, the woman will be enfeebled, premature labour will be induced, and cannot be effected by art without danger; and finally the fœtus will be dead.

When flooding cannot be controlled in the latter months, it has been proposed to deliver the woman by turning the infant, that is bringing down the feet as soon as the os uteri is dilated to the size of a crown piece, or by puncturing the membranes, as I have already described. The first method is applicable to these cases in which the orifice of the womb is sufficiently dilated, and no uterine pains present; and secondly, when the pains are urgent. Mauriceau, Dionis, La Motte, Mesnard, Heister, Puzos, Pasta, Kok, Leroux, Baudelocque and Dewees recommend delivery; and Meygrier and other moderns contend it ought to be effected indiscriminately. Puzos, La Motte, Smellie, Dewees, and others, found it difficult to effect delivery at the sixth month and a half. In bad cases of flooding, delivery will not always save the woman. Some persons recommend indiscriminate delivery, at every period of pregnancy; these are few in number. Others have forced the uterus, about the middle period of pregnancy, and delivered by the feet. Some of this class bring the feet through the orifice of the womb, and leave the rest to nature. The most numerous class wait for dilatation of the womb, or rupture of the membranes; others trust to natural efforts, if the pains are strong, or deliver at once.

Another cause of flooding is the *adhesion of the placenta* over the neck of the womb, or partial attachment to it. This was first described by Levret. Rigby asserted that dilatation of the orifice of the womb seldom happened in those cases before the time of natural labour, in consequence of the uterine vessels shooting into the placenta; but Denman, Burns, Dewees, Baudelocque, Leroux, Kok, and others, relate cases in which it dilated much earlier. The best practice in this case is, to pass the fingers at the edge of the placenta, separate it from the womb, rupture of the membranes and bring down the feet, that is, perform the operation of turning.

If the placenta was pierced through the centre, when it lies over the os uteri, the root of the navel string most probably would be ruptured, and the infant destroyed ; besides, the opening might admit the hand and arm of the practitioner, but not allow the passage of the infant. "Boring the placenta," is therefore highly objectionable, if it can be separated at a side. Smellie, Delamotte, and Pardigon, assert, that the placenta may separate, the membranes present, and the placenta be first expelled. Leroux informs us, that clots may form and arrest the flooding. Baudelocque states, that the placenta may entirely separate, the membranes present at a side, burst, and delivery happen. All obstetric writers agree, that delivery should be effected as soon as the hand can be passed with safety, that is, when the orifice of the womb is dilated to the size of a crown piece. Dewees records the case of a lady, who was sitting in the midst of her family, when she suddenly lost half a gallon of blood, owing to a slight dilatation of the os uteri. I have known a female lose nearly a wash-hand-basin full of blood in about ten minutes, and others who bled to death when the os uteri was not dilated more than the size of the disc of a shilling.

Our indications of *treatment* are to prevent the flooding, to promote the natural dilatation by the ergot, when the presentation is natural, and to deliver with as much speed as is consistent with the welfare of the woman and child.

The plug will arrest the flooding, and is indispensable, upon it the life of the woman depends ; and if the pains do not cease, the ergot promotes the dilatation ; and as to delivery, the strength, loss of blood, and extent of contraction, are to determine the proper time for its accomplishment. Such is the treatment, when the os uteri is rigid and undilatable.

When the uterus is but little opened, but disposed to dilate, we are to wait for some time, and never leave the patient, lest flooding come on suddenly and destroy her. Sometimes the dilatation will not exceed a certain extent, according to Mauriceau, Leroux, and Rigby ; and here there will be a danger of laceration by turning. At other times, the os uteri remains closed, but is easily dilated, and the woman delivered, if necessary. This condition is not to be confounded with rigidity, just described. If the os uteri is opened to the extent of the size of half-a-crown, but yet is unyielding, we ought to delay the operation if possible ; for al-

though the hand may pass, yet the body of the child may cause great laceration. By hooking down the os uteri on the finger, we will find it rigid, or soft ; if the latter, we may deliver.

In some women the uterus opens very suddenly, and here delivery is to be speedily effected, lest hæmorrhage destroy the patient. This proves the necessity of not leaving the chamber in placental presentations. The uterus may open suddenly, and the infant's head may push the placenta before it, and so press on the open vessels as to relieve hæmorrhage, as Baudelocque, Leroux, and others, inform us. Sometimes the hand will not stop the bleeding, so that we must still deliver as soon as possible. Some recommend the puncturing of the membranes ; this cannot be done when the placenta lies over the os uteri without piercing it, and increasing the bleeding ; and even, although we perforate it, we cannot always reach the membranes ; and if even pierced and the waters evacuated, the flooding will be rarely restrained, and the difficulties of turning be greatly increased. If even the flooding cease, after the rupture of the membranes, it returns on the dilatation of the womb. The only exceptions to these directions, is when the membranes present. Baudelocque seldom saw the rupture of the membranes stop the hæmorrhage. All the difficulties attendant on placental presentations, are considerably increased where hæmorrhage occurs at the sixth month. Here we cannot pass the hand into the uterus, in order to turn, without danger, and there is a great want of disposition in the organ to dilate. Nature saves the woman in this case, as Rigby and Leroux inform us ; and we should leave all such cases, during the first six months, to nature, and only palliate by the plug and cold applications, and the acet. plumbi. (Dewees, Leroux, and Duges.)—The plug arrests the flooding, saves the strength of the patient, and favours the relaxation by allowing nature time to effect it. The precept of Denman and Rigby, to allow the flooding to cause relaxation, is dangerous. When there is no pain in placental hæmorrhage, but the womb sufficiently dilated, ought we to deliver in the last three months of pregnancy, for if the plug is used, internal flooding cannot destroy the patient.

The uterus is filled by the product of conception ; it resists all distension ; blood cannot be effused, if a proper plug is employed, and this remedy allows the labour to proceed, which is the most certain means for removing the evil. When labour has com-

menced, and the presentation of the fœtus is natural, we should puncture the membranes, (Mauriceau, Deventer, Puzos, &c.) and expedite the process by the ergot of rye, or in preternatural cases by the forceps or operation of turning. In all cases, the placenta should be extracted immediately after the birth of the infant, and permanent contraction of the uterus ensured by the ergot.

In such cases, puncturing the membranes and evacuating the amniotic fluid, might induce uterine contraction; but if the fœtus and placenta were extracted without pain, and no contraction to occur, the flooding would be fatal. In the presentations under consideration, some advise us to perforate the placenta, to which there are many valid objections: 1. the increase of the hæmorrhage, which occurs by making a hole in it, and also the pressure used in making such aperture, will separate it from the uterus; 2. although the hand may pass through such opening, the body of the infant cannot, without enlarging it; 3. the body of the child drawn down to the arm-pits, will be arrested; and if force now is employed, the whole placenta will be separated, and its bulk added to that of the arms and head (Baudelocque.) Again, in piercing the afterbirth, we may rupture the umbilical vessels, and kill the child by hæmorrhage; 4. it will be difficult, if not impossible, to pierce the placenta, when its centre lies exactly over the os uteri (Rigby).—The placenta should be separated from the uterus at one side, as I already stated; the hand and arm of the operator press on the bleeding vessels, and thus restrain the bleeding, which saves the mother and infant.

Uterine hæmorrhage may occur to a frightful extent during labour, although the patient may be at the full time, owing to a partial or total separation of the placenta, or a want of uterine contraction to close up the open vessels of the mother. The ergot of rye should be exhibited, and delivery effected by the forceps, or other means, as soon as circumstances will permit. Unless the placenta is speedily expelled after the infant, affusion of cold water on the naked abdomen, from an ewer or large vessel, should be applied, and the hand introduced into the womb, in order to extract the placenta, and make pressure on the organ, so as to excite contraction. Pressure is to be made on the abdomen with the other hand at the same time. If the uterus contract, the hand will be pushed through the vagina, and the womb will ap-

pear a hard round tumour, above the pubis, about the size of an infant's head, when no more hæmorrhage can take place. The woman is never safe until such contraction occurs. This latter treatment is to be actively employed after the birth of the infant, if hæmorrhage is urgent. Hamilton inculcated, "that we should wait an hour after the birth of the infant, for the expulsion of the placenta; but not a moment if hæmorrhage set in." With great deference to the justly celebrated professor, to whose valuable instructions I am greatly indebted, I must observe, that I fear this rule has been much abused or mistaken, and leads generally to an unnecessary introduction of the hand. Young practitioners are alarmed, if they observe a slight effusion of blood at the expiration of an hour, and immediately proceed to extract the placenta. But, in referring to the report of Dr. Clark, of the Dublin Lying-in Hospital, I find that in more than ten thousand cases, it was only necessary to extract the placenta twenty times. The placenta will be mostly found in the vagina within an hour, or certainly within two, and will come away without any hæmorrhage. I need scarcely remark, that the introduction of the hand into the uterus after delivery is a most painful operation to the patient, and one that ought not to be resorted to on every occasion, when the placenta is not expelled at the end of an hour. Dr. Blundell is of the same opinion. There can be no danger from retained placenta when the uterus is contracted, even if it should remain an hour or two; but in general it is in the vagina before the expiration of an hour.

The last species of hæmorrhage is when it occurs after the birth of an infant, or after the expulsion of the placenta, and arises from want of contraction in the fibres of the uterus. This is denominated *after hæmorrhage*. The ergot should be given, and pressure made on the abdomen, as recommended by Smellie fifty years ago, by placing a pillow or large volume under the common roller. Clarke, of Dublin, recommends constant pressure, by the nurse, for six hours, lest dilatation should return after contraction, which is a frequent occurrence. Others recommend placing a large volume, as the family Bible, on the abdomen, and securing it with a roller; while others have proposed to sit on the patient's abdomen. The man who made the last uncouth and barbarous proposal, knew as much about the science of medicine as about the knowledge of the world or society. In the first place, respiration would be im-

mediately interrupted; and, in the second place, no educated female would consent to such an indecent and ridiculous proposal. The ergot of rye is invaluable in these cases.

If the patient has lost a large quantity of blood, a strong tendency to fatal syncope, or asphyxia, is apparent; the face is pale, the lips bloodless, the pulse rapid, tremulous, fluttering, occasionally absent altogether; the extremities cold and clammy, the respiration gasping, the deglutition gone; there is nothing to save the patient but that godlike operation of restoring the flickering vital spark—transfusion. Hamilton knew the pulse to be absent for twelve hours, and the patient recover, by the use of diffusible stimuli. In these extreme cases, the slightest motion of the female will extinguish life. The removal of the clots from the vagina, by introducing the hand, will produce the same effect. Cold affusion, if freely applied, would also destroy the patient. Dewees recommends a warm blanket to be wrapped round the legs and arms, and cold cloths to the abdomen, a nice and scientific distinction.

There is no disease incidental to females which requires more serious reflection than that under consideration; the mind ought to be made up as to the treatment, before the alarm of the case could impede our judgment, for delay or precipitancy will seal the fate of the patient. A question has been discussed by the theologians, whether it was ever lawful to extract the infant in cases of flooding, or placental presentation, before the seventh month, as it could not live sooner. But if the loss of blood is great, the infant cannot survive, and there is a greater chance of arresting the hæmorrhage by such extraction. Yet it is not a certain mode of arresting flooding, and therefore is a strong argument against producing indiscriminate abortion in all cases of hæmorrhage.

When the placenta presents, flooding is most common in the last three months of pregnancy, and therefore is more easily managed, as the hand can be passed into the womb, if necessary, which is seldom the case before the sixth month. Again, delivery is more easily accomplished at this period in ordinary hæmorrhages. The membranes ought not to be ruptured in any case before the sixth month, and until every other means had been tried in vain. We ought not to force the uterus if rigid and undilatable. The bowels ought to be regulated by laxatives, as manna, castor-oil, magnesia, Epsom salts, according to Hamilton; while the late Sir

R. Croft and Dewees were of opinion, that constipation ought to be allowed for three or four days. The diet should consist of vegetable and animal jellies, eggs, milk, ardent spirits, warm water and sugar, in proper quantities ; a form of diet that can be readily procured. The diet should be nourishing in the more severe floodings, as those after labour, in which the prostration and inanition are great asphyxia approaching, for the best physiologists are of opinion that four or five ounces of blood, and consequently nutrition to that amount, will save the patient. The stomach can bear no more than half a pint of any of the jellies at once ; but this quantity may be frequently repeated. In extreme cases of flooding, where every sign of death becomes apparent, the face blanched, respiration scarcely audible, gasping, hurried, pulse scarcely perceptible or entirely absent, cold and clammy extremities, power of deglutition lost ; there is nothing to save the female but the operation of transfusion. The name of the man who employed it successfully in restoring human life will live for ever : the name of Blundell will be revered as long as the god-like science of medicine is cultivated.

The operation of transfusion, is not a recent discovery ; it had been tried by the French some centuries ago, but was revived and applied by our countryman in a manner and under circumstances never before attempted. The operation was first tried in France, where it was proposed to reanimate the aged and infirm by transfusing the blood of healthy young persons into their veins. The clergy objected to this as irreligious, and derogatory to the will of the Supreme Being ; and their opposition soon put an end to the operation. The discovery lay dormant for many years, until the rage for experiments on animals in France and this country caused it to be revived by Dr. Blundell. He was the first who proved to demonstration, that human blood might be infused into human veins with safety ; nay, with the perfect success of restoring human life, when it was all but become extinct, from loss of blood, as often happens in the worst cases of uterine hæmorrhage. He tried a great number of experiments on dogs, drained them to asphyxia and death, and resuscitated them afterwards by the syringe, and the blood of their own species. He found that when he used human blood, or that of the other animals, the dogs, although revived, died in a short time afterwards ; and this fact was suggested by Dr. Locock, in his Thesis, published at Edinburgh

about twelve years ago. The blood of one genus of animals cannot be substituted in large quantities for that of another. Dr. Blundell also proved, that the passage of blood through the syringe, although of course deteriorated, yet would not be fatal to human life. For a full account of his experiments, see *Medico-Chir. Trans.*, *Physiological Researches*, and *Lectures in the Lancet*; all of which are well worthy of attentive perusal and reflection. From a most attentive perusal of all the observation on transfusion, I shall endeavor to sum up a succinct, although perfect description of the operation, in as plain a manner as possible.

The usual mode of performing the operation is as follows:— We take a two-ounce brass syringe, tinned internally, perfectly air-tight; not clogged with oil, yet perfectly free and clean, with the lateral tube affixed in the manner employed for injecting, and at the end of this tube is a small ivory one, also perfectly clean, with the extremity somewhat bevelled. The basilic or cephalic vein in the patient's arm, is to be cut down upon with a sharp scalpel, and separated from the integuments, so that a probe may be passed under it. It is then to be opened, about one-eighth of an inch with a lancet, perfectly clean and in the best order; and we are now to ascertain whether the small ivory tube can be easily and freely inserted into the opening. We are next to heat the syringe by warm water, or by drawing up the piston several times, so that when the blood is drawn into it, coagulation will not take place. This done, we open the vein in the male person, by a free incision, and receive the blood.

The blood is to be drawn into the syringe, the instrument being held in the vertical position, and a small quantity left in the vessel, for if all were taken, air would also be taken into the instrument. Now reversing the syringe still vertically, the handle of the piston being lowest, we force out about a tea-spoonful of blood, thus expelling all the air from the tube and end of the syringe; and this done we place our finger on the end of the ivory canula, lest the air rush in, or the weight of the piston press it down; we now give the instrument a horizontal direction, and carry the end of the tube to the vein of the woman. The assistant is to press the vein with the probe, and thus prevent the flow of blood, and sponge all off the opened vein, if necessary; when done, we are now cautiously and steadily to introduce the ivory tube, about half an inch towards the heart; we are then to inject

the blood slowly and gradually, for if suddenly, we should overpower the heart, and extinguish life. We should slowly and cautiously urge on the blood, and watching the countenance of the patient; if the lips quiver, or eyes flicker, we are to cease; if the countenance improve, then we are to proceed. If we are obliged to delay for a minute or two, we must discharge the instrument, and refill it with blood, in the same manner as already stated. We are to wait six or eight minutes between each injection, that the injected blood may circulate through the system, even where the operation succeeds according to our wishes. The syringe is to be washed out with tepid and cold water between each injection; and from four to sixteen ounces of blood, although eight or ten are generally sufficient, may be injected. Dr. Blundell assures us, that four or six turn the balance in our favour; but that the large quantity may be used, if we wish to restore vigour. If the respiration stop, all is over; if the respiration go on well or improve we have every hope of success. Such is the brilliant and wonderful operation of transfusion. There will be great difficulty encountered in the performance of this operation, unless the vein is fairly raised on the probe, and unless the syringe is in perfect order. The former will be experienced when operating on the dead subject.

All the objections that are raised against transfusion, are equally applicable to any capital operation in surgery, which is also likely to prove fatal. I think there are thirteen successful cases now on medical record; and if even the operation were less successful, as the Cæsarian section certainly is, yet it ought to be performed. It is the only chance of life for the patient; and I apprehend there is none of us if equally reduced by hæmorrhage, as a patient for whom the operation is necessary; nay, if even friends, more dear to us than ourselves were concerned, but would readily submit to this only chance of existence. The simple and golden rule laid down in the sacred volume, "do unto others as you would wish they should do unto you," is here applicable, and is to direct us in the performance of this operation. Ask the question in your mind: would you submit to the operation, if equally situated, or would you perform it on the nearest friend, the partner of your heart, and an inward monitor will apprize you, whether it is right to resort to it or not. No doubt flooding of the most alarming kind will not prove fatal in nineteen out of twenty cases: but then

in the twentieth case, is the only chance of life to be withheld from the patient? I answer, no; for if the operation fail, the patient can only die, and will die without it. In this, as in all extreme cases of medicine or surgery, it is our imperious duty to give every chance, if even one chance out of a hundred be in favour of the patient; such is the opinion of that Leviathan of the profession, the late Dr. Gregory, of Edinburgh. I cannot state precisely what are the chances in this case; but I rather think that there are thirteen chances to one in favor of the operation. The great dangers of the operation are immediate death, if too quickly performed, or inflammation of the vein, afterwards extending to the heart, which hitherto has not happened.

Before I conclude my remarks on this subject, I should observe that reaction is to be expected after severe hæmorrhage, with or without transfusions; and this should prevent us from infusing more blood than is absolutely necessary for resuscitation. Such reaction is not to be subdued by antiphlogistic measures. Haigh-ton observed that bleeding, leeching, and blistering, did not relieve the vertigo, and other symptoms consequent to uterine hæmorrhage. Who could think of bleeding a woman in extreme flooding, or after transfusion, but an ignorant man, and one who forgets the loss of blood already sustained. A troublesome diarrhœa occasionally succeeds during the convalescence after flooding, and may withstand all the ordinary remedies, and will be found to yield to change of air, when all else fail; this may appear incredible, but it is a certain fact; of course, the ordinary remedies are to be employed.

Before I dismiss the subject of flooding, it is to be borne in mind, that it may take place during labour, and this species is of the most alarming kind. If the woman have arrived at the latter months, or end of pregnancy, delivery is to be effected by turning, or the forceps, as soon as the os uteri will permit of it. Another species of flooding is that which occurs when labour has been tedious, and then a tremendous hæmorrhage will come on, as the placenta may have been separated for some time. Pressure on the uterus, and extraction of the placenta, are to be resorted to in the manner hereafter to be described. Affusion of cold water is here really most valuable, before much blood has been lost. We should remain with a patient, after bad flooding, four or six hours, as the flooding may return in such time and destroy her; and in

such cases, no matter how much the patient or nurse may entreat, there should be no "putting to bed," that is, making the woman comfortable by change of posture. She is to remain twelve or twenty-four hours in a most quiescent state, as the slightest motion would bring on the flooding, or hæmorrhage; and she is to be made as comfortable with dry napkins as possible, but without any motion.

Flooding may occur after delivery, or there may be *internal flooding*; the womb being filled with blood. In all cases of tedious or lingering labours, the first thing we should do after delivery, is to press the hand on the abdomen; and if we find the uterus contracted, hard, and like a full grown infant's head, all is right; there is no room for internal hæmorrhage; if the womb cannot be thus felt, then it is dilated, and there is great danger. The introduction of the hand is a most unpleasant operation, and happily is seldom necessary. We should be ever averse to introducing the hand into the uterus; it is a most painful, cruel, and dangerous operation, not only to the poor sufferer, in consequence of the contraction of the passage after delivery, but it is abhorrent to our own feelings, and injurious to our reputation. By grasping the womb through the abdomen, rolling the hand on it, or shampooing it, we shall succeed in causing it to contract, as well as if we introduced the hand into the cavity. Bandaging and pressure, as already described, are here most useful and important auxiliaries. The womb may be contracted and again dilated, and these states recur alternately for an hour or two after delivery; here of course there is danger of hæmorrhage. I have lately seen a case of this kind with Mr. Wilson, of Northampton Square, which required pressure with the hand for three hours, ergot and cold affusion. In spite of strong pressure, the uterus dilated repeatedly. Another frequent cause of flooding after delivery is *retention of the placenta*, and this I explained on a former occasion; it prevents the full contraction of the uterus, and thus the open vessels may pour out their contents, for they are only closed by uterine contraction. A portion of the placenta may be retained, and hence the rule always to examine that substance after expulsion, in the presence of the nurse or some of the females; for if we neglect it, this examination will be made in our absence, and our knowledge a good deal questioned by a jury of matrons. The uterus may be partially or completely inverted, and may be

in the vagina or beyond the external parts, and cannot then be found above the pubis ; it is to be reduced as soon as possible.

A portion of the placenta may remain in the utero, and hence it is a grand rule always to examine that mass, by spreading it on a napkin, and even where it has passed before our attendance. This examination satisfies our own mind, and the mind of the patient and her friends. We ought also to pass up a finger, to examine whether the womb be inverted, which may occur, if too much force be used in pulling the umbilical cord. The womb has been inverted and drawn down between the limbs by midwives, and then cut off. This is called *renversement* by the French. If the womb is inverted in the vagina, flooding will be kept up for a considerable time, unless we shall discover the cause. I have observed cases of flooding produced by this cause, which continued for six weeks after delivery. When there is a sanguineous discharge after the ninth or tenth day subsequent to delivery, we ought to suspect this cause. Replacement of the uterus, plugging the vagina, acetate of lead with opium, and cautious stimulation where prostration occurs, are the best remedies. If a portion of the placenta, not larger than a walnut, remain in the uterus, flooding will come on, and prove very troublesome. Such portion may be left by the operator, when he is flurried by the alarm of uterine flooding. The ergot is of great value in this case. In such cases, or where the whole placenta remains in the uterus, friction on the abdomen, gentle pressure, grasping the uterus, or shampooing, will frequently excite contraction. Should these methods fail, the flooding be great, and the strength of the woman allow it, the hand must be gradually and cautiously introduced in a conical form into the uterus, following the cord to the placenta ; and as soon as the hand shall reach the placenta, it is to be separated at the circumference and drawn to the centre, which readily detaches it, and when loosened, we are to press the knuckles on the uterus gently, while the other hand is to make pressure on the abdomen, and thus will contraction be induced ; in a word, the uterus ought to contract, lessen its cavity, and force down the hand and the placenta. The contraction of the womb is most necessary in all cases of flooding, and is the only certain and infallible means of arresting the hæmorrhage. Dr. Hamilton's rule is never to be forgotten, which is, "if there be hæmorrhage, the placenta is to be extracted as soon as possible," unless

the woman be moribund, and then if we attempt it, the patient will expire, as I have witnessed; "wait an hour after delivery, if no hæmorrhage—not a moment if hæmorrhage," unless asphyxia be present. We shall best prevent flooding and asphyxia by keeping the woman in the horizontal posture, with the head low, for by obstructing the circulation in the brain, and accumulating it about the heart, by raising the lower limbs with pillows, we shall best prevent these, and fatal syncope. When faintness is slight, we need not interfere—if deep and grave, then we are to stimulate. We are to depend on ardent spirits, as brandy, rum, whiskey, gin, &c., with which most women are more satisfied than with medicines. The vagina must not be plugged, lest internal hæmorrhage should occur. We can always learn from the patient, whether she found any thing coming away; care must be taken that hæmorrhage does not take place in the bed without her knowledge, which is obstetrically called *hidden flooding*. The countenance, respiration, pulse, and state of the womb are to be closely examined, and their appearance taken conjointly, which will enable us to form a proper prognosis of the danger, or unconsciousness of uterine hæmorrhage. We are to bear in mind, that uterine hæmorrhage is more alarming than dangerous; for in nineteen cases out of twenty, the woman will recover. A recollection of that fact will tend to allay too much perturbation. Our minds should be always tranquil in these cases, and our reason and judgment should be clear and collected. Again, if the patient survive a bad flooding five or six hours, she will in general do well. Happily, copious flooding is a rare occurrence in ordinary practice; and we may be years in active practice and not meet half a dozen cases of it, although it may happen that our first essay in obstetric life will be connected with this occurrence; we must recollect that the employment of the means already pointed out, will enable us to treat it with success. Before I dismiss this subject, there is one other remark well worthy of consideration, which is management or prevention of frequent miscarriages. Some women will abort four or five times in twelve or fifteen months, and suffer great hæmorrhage on each occasion, so that their health and strength will soon be destroyed. I have known this happen to a fine young woman, during the first year of marriage; and the consequence was, that she died of phthisis in fifteen months from her bridal day. How are we to manage such cases? We cannot

advise any unnatural preventives of procreation, without incurring a weighty moral responsibility.

If procreation be impeded or prevented, the moral crime is as great as if the grosser, beastly, and unnatural means were resorted to. Canonists, divines, and lawyers, hold the affirmative of this opinion. A separation of the parties can only be proposed, a cessation of connubial intercourse, which will be seldom complied with, and will lead too often to infidelity and domestic misery. Depraved and loose as the present age is, I cannot bring myself to imagine that a recommendation of performing the procreative act imperfectly could be safely inculcated, or would be generally complied with by even illiterate individuals. A great moral guilt, and an open violation of the divine and natural law, would be effected by any unnatural suggestion on this point. The frequent repetition of the conjugal act would be natural, but yet debilitate the female; this, however, is still less objectionable than any of the artificial methods proposed by the French, or by the disciples of Malthus in this country. The French proposal, although partly unnatural, is effectual in preventing insemination; while the modern plan proposed in this country is not a bar to procreation.

ARTICLE XV.—DYSTOCIA, DIFFICULT, PRETERNATURAL LABOURS, MECHANICAL, MANUAL, ARTIFICIAL, &c.

These terms, with the exception of the first, are too arbitrary, and have led to a great confusion among authors. The designation of dystocia employed by Hippocrates, Sauvages, Merriman, Blake, Desormeaux, and others, expresses the whole of the cases of labour which require the aid of art, and is decidedly preferable as a generic term.

The subdivisions of this class proposed in this work are more explicit and exact than those at the head of these remarks; for example, dystocia, hæmorrhagica has been placed in the classes of difficult, preternatural, laborious, mechanical, manual, and instrumental labours, according to the pleasure of the different writers. It is evidently better to base upon nature the causes of difficult labour. This plan offers real and incontestible advantages; it allows us to reduce or multiply the genera or species without injuring in any way the general classification; and it combines all the methods proposed by authors. After all, difficult labours are

characterized by the accident that complicates them, and not by the kind of succour which they require.

The causes which render labour difficult depend on the mother and the infant. Those of the mother are the acute diseases, as inflammations of the brain or its membranes, of the lungs or pleura, of the peritoneum, or of the uterus, &c. which occur during labour; a hæmorrhage which endangers the life of the mother and of the infant; convulsions, syncope, prolapsion of the uterus, premature expulsion of the placenta or of the umbilical cord, hernia, aneurism, asthma, deformities of the pelvis, and the various diseases of the generative organs, which narrow the vagina, as fibrous and other tumours; transverse presentations of the fœtus, its deformities and diseases.

Section I.—Obstacles dependent on the Mother.—Dystocia anenergica.

1. *Inertia of the Uterus.*—Inertia of the uterus depends on two causes; 1. torpor, or primitive feebleness; 2. exhaustion. In the first, there is want of power and flaccidity; in the second, fatigue and rigidity, or permanent contraction without expulsive efforts.

Causes.—Organic lesions, lacerations, over distention of the uterus by an excessive quantity of water, (hydramnios), or by twins, fever, abuse of alcoholic liquors, sometimes fright, shame, drowsiness, distention of the bladder, and sudden discharge of the amniotic fluid, produce the first species of inertia; all the mechanical obstacles dependent on the mother or fœtus produce the second, which is most common with the primiparous, or in first labours. The premature rupture of the membranes allows the escape of a small quantity of water during each pain, and prevents the uterine contractions from dilating the orifice. Labour is then prolonged, and the multiplied contractions it requires, cause exhaustion. In all cases of protracted labour, this exhaustion may occur, and expose the woman and fœtus to great danger. This fact must never be forgotten by the obstetrician.

Treatment.—Our first indication is to dissipate the inertia, when this is possible, which may be effected by frictions on the abdomen. A moderate use of cordial and stimulant drinks, of clysters and catheterism, may be highly efficacious. In cases of distended bladder during labour, we must sometimes use a gum elastic

male catheter straightened, as the female instrument may be found too short. Rupture of the membranes is to be effected when there is over-distention of the uterus. The ergot of rye is invaluable in these cases, in the doses already described, p. 141.

Exhaustion will be removed by repose, which is to be induced by some of the sedative preparations of opium, as the acetous solution of the Dublin Pharmacopæia, Battley's sedative liquor, morphine, &c., and these are always to be preferred to common laudanum when our object is to allay pain, and produce sleep. The French writers recommend warm baths or fomentations, fumigations, and blood-letting. With respect to venesection, it has been strongly recommended in cases of rigidity of the soft parts of the generative organs, by my justly celebrated preceptor, Dr. Hamilton, of Edinburgh. This was his practice when the patient was robust; and the starch and opiate clyster when she was delicate. I can add my testimony in favour of the great value of these remedies. When the membranes are very strong, they ought to be ruptured, either with the finger, or a female sound sharpened. When these means fail, Duges advises us to terminate labour, by version, or turning, the forceps, &c. I do not think it possible that the ergot of rye, when properly preserved, can fail to excite uterine action; and if the delivery be accomplished without the contraction of the uterus, there would be danger of hour-glass contraction and hæmorrhage; and if the organ was not excited on the extraction of the placenta by the obstetrician, which might fairly be expected in a case of great prostration of the vital powers in consequence of exhaustion, death must be the inevitable consequence. But I am very confident that few cases can occur, in which uterine action cannot be induced by the remedies already mentioned.

Mechanical Obstacles offered by the soft Parts.

Dystocia ectopia; Obliquities of the Uterus.—These have been already described, p. 315; but I may observe, that right lateral obliquity is most frequent, in the proportion of one hundred to one of the left. The effects of obliquity are displacement of the os uteri, so that the expulsive efforts cannot dilate this opening, it being carried to one side, or pushed backwards, so that one of the parietes of the neck presents in the centre of the pelvis; pressed by the fœtus, it is expanded and thinned, and descends

into the vagina, or appears at the vulva (Morgagni, Slevogt, Baudelocque,) where it is lacerated, or becomes gangrenous, and gives a passage to the infant, or it is incised for this object (Cathral.) More frequently nature reduces the orifice to the centre, and dilates it (Boër); above all, it is reduced by placing the woman on the opposite side, and by bringing the orifice to its proper place with the finger (Baudelocque, Dewees, see p. 317.)—The internal orifice is sometimes rigid, tense without our being able to determine whether it be the result of organic derangement, or a state of spasm or cramp; its sides are thickened, hard, rounded; it has even, in some instances, been thought advisable to make incisions into them: an uncertain method, and which may cause lacerations extending as far as the body of the uterus. More frequently, after a considerable lapse of time, which weakens the womb, and invariably produces pains in the kidneys, the orifice becomes softened, thinned, and dilated. Warm baths, fumigations, blood-letting, hasten this happy termination, which often requires much time and patience. In order to hasten it more, opium, in clysters, have been recommended (Asdrubali); the application of an ointment made of the extract of belladonna has proved successful (see p. 135.)

It is not unfrequent to find this orifice surrounded with scirrhus, thick, hardened, rounded with uneven edges. The orifice resists for several days all efforts at expulsion, at last it becomes lacerated in several parts, the scirrhus lobes separate, and allow the child to pass; but the uterus, by being fatigued, requires frequently to be aided by making use of the hand or the forceps. It is not impossible but that an extensive scirrhus may destroy the life of the woman, instead of yielding to the usual remedies. In similar cases the neck of the uterus has been seen to break off above the scirrhus, the child tear the rectum, and pass out by lacerating the anus (Archives de Medicine). This would probably be a case for making several slight incisions around the uterine orifice by the means of a bistoury, covered with linen nearly to the point (Baudelocque). This method has been used with success. Probably the scirrhus may be easily removed, and this cancerous degeneration, which brings on death in a few months, a year, two years, or even more, prevented.

Finally, the neck of the uterus being thinned as much as possible without rigidity or scirrhusity, it may happen that its external

orifice will remain closed, and almost obliterated. It has sometimes been thought that there was a complete adhesion of its edges, and that laceration was necessary for the passage of the child. The orifice may possibly be deformed by cicatrices, rendered less distensible, and may even require incisions; it may be conceived, that although the examples are doubtful and of rare occurrence, that the adhesion of the lips of this orifice has been complete (Portal, Martin, Amand, Sanson, Weis); but in many cases it is only apparent; an inequality, somewhat deep, is felt at first near the centre of the hemispherical projection, formed by the thinned neck of the os uteri, distended, and forced out by the waters or the head of the fœtus; this point yields to the pressure of the end of the finger, by which the lips of this orifice are separated, and which, if we may be allowed the expression, are *hidden*, obstructed, and agglutinated by those thick mucosities which are found usually at the neck of the uterus. When once the separation has been effected, dilatation follows spontaneously and without difficulty, and this obstacle, which had for a long time resisted the uterine efforts, gives no more obstruction to the progress of labour. If art does not aid nature, the latter will at last effect the separation and dilatation of the opening.

Tumours of a fibrous, hydatid, sarcomatous, osseous, and syphilitic character, may offer an obstacle to the passage of the child (Viardel, Mauriceau, Voigtel, Beclard, Moreau, Jackson. Med. Repos. 1826, Peleten. Clin. Chir. tom. i., Park. Med. Chir. Trans. vol. ii., Davis, &c.) either having taken root in the uterus itself, in the ovary, or in the vagina (Merriman, Lachapelle, and others), or they may be produced by the walls of the pelvis itself, (See p. 202, et seq., Thiery, Drew, Stark, and Ramsbotham.) A calculus in the bladder, a considerable thrombus of the sides of the vagina, may cause the same effect (Voigtel.) Sometimes, those tumours will allow of sufficient compression, so as to permit the spontaneous passage of the infant, or by the aid of the forceps, or by version if it be alive, or craniotomy if dead. At other times we should try to remove those tumours (*polypi, calculi*), to push them above the superior strait (Beclard); tumours filled with matter may be opened; and finally, if those tumours should be so numerous as to obstruct altogether the passages, and cannot be displaced by art, extracted, or destroyed, no other resource will remain, but the Cæsarian operation. In a case of this kind, nature

may effect delivery (Beatty and Crampton, Dublin Med. Trans. 1824, vol. iv. see p.258).

Imperforation of the vagina by bands, membranes either congenital or accidental, the hymen being rigid (Bœhmer, Baudelocque, Smellie, &c.,) may offer so much resistance to the passage of the infant, as to render labour difficult (see article on Impotence, p. 248); but it rarely happens that nature alone cannot overcome such difficulties, either by dilatation or laceration, and may be assisted by incisions. The same thing is observed in cohesion or cicatrices of the genital fissure. But as the vulva and perinæum are gradually dilated, by the repeated pressure of the infantine head during labour, we should allow sufficient time, and have sufficient patience before we resort to incisions; and it is only when the rigidity is such as to offer an invincible obstacle, that an incision becomes necessary to prevent laceration, which may extend even to the anus. The necessity for such operation is however extremely rare, and has not been met with during a long life of active practice. In rare instances the vagina has opened into the rectum (see article Impotence); impregnation and parturition have taken place (Lois, Barbout); but this is still a more rare occurrence.

Dystocia Amorphica.

Mechanical Obstacles formed by the Pelvis.—The deformities of the pelvis have been partly described in the article of Gynæcotomy, p. 9. The brim, or superior strait, may be deformed in every part, and its dimensions be diminished so much that the pubis may approach the sacrum, and *vice versa*. Exostosis may form any part of the osseous canal of the pelvis. The rami of the ischium may approximate so closely as almost to touch each other; and the coccyx may be within an inch of the pubis. Every imaginable degree of deformity between the natural dimensions and these now mentioned may take place. The causes of these malformations have been detailed in the article already referred to (p. 9.) I have also described the dimensions which ought to disqualify the other sex from marriage, and these are to be ascertained by the finger, or according to the French, by pelvimeters. (See pp. 9, 10, 246.)

Prognosis.—The degree of deformity must determine our prognosis. We have to fear the prostration of the vital powers by the long protraction of labour, fever, inflammation, rupture of the ute-

rus, gangrene, and fistulæ (vesico-vaginal, or recto-vaginal) from compression of the soft parts. We must recollect that delivery may happen though there is considerable impediment, either by relaxation of the pelvic joints, by putrefaction of the infant's head, or by premature labour. The infant is destroyed when subjected to much compression by fractures of its bones, or when born by apoplexy, convulsions, or asphyxia.

Indications.—These are based upon the degree of contraction or deformity, upon the life or death of the foetus, its age, and the strength of the woman. 1. We should favour spontaneous labour, which may happen when the sacro-pubic diameter is three inches and a half in extent. 2. The long forceps will diminish the head and effect delivery in such a case; but version or the operation of turning, will save most infants. It has been found, at the *Maternité* of Paris, that the former saves less than one-half, the latter fully two-thirds. 3. We should favour premature labour, when the infant is viable, which is after the seventh month. This method was proposed by Macauley, and is adopted in Germany and Italy, as well as in this country. This operation, which is performed for the preservation of the infant's life as well as the mother's, is a felony, according to the law of this country. (See *Abortion*.)—But the humane and benevolent intention of our criminal law on this, and all occasions, is highly commendable, though here erroneous.

The French resort to symphyseotomy or division of the pubic joint in these cases, when the infant is alive; but this is an operation not performed in these countries. (See pp. 7, 307.)

4. Craniotomy is performed in this empire; but not until the infant is dead in other countries. In extreme cases of deformity, the instrument called *terebellum*, or *cephalatrobe* by the present *Baudelocque*, of Paris, who is nephew to the distinguished obstetrician of that name, or the instrument of Professor Davis, of the London University, will be used with advantage in extreme cases of deformity.

5. Gastro-hysterotomy, or the *Cæsarian* operation, is performed in France when the infant is presumed to be alive, and when the sacro-pubic diameter measures only two inches and a half. This operation is not performed in the British dominions under such circumstances; Craniotomy is preferred.

Section 2.—Obstacles dependent on the Infant.

It has been long held by women, that the death of the infant impedes labour. This *dynamic* obstacle is at present regarded as no criterion; it, however, is certain, that a dead fœtus paralyses, in some degree, the uterus, by depriving it of the sympathetic activity which the living child keeps up in its circulation; besides, a putrified fœtus is less under the influence of the movements and mechanism of parturition; it fills up the passages, and is often tediously expelled. But these difficulties are not in any respect so serious as those we are about to describe.

Obstacles arising from Malpresentation of the Fœtus.

This article treats of all those obliquities of the fœtus, dependent or independent of those of the uterus. The obliquities of the pelvis prevent the proper position of the fœtus, force it in a direction contrary to the axes of the pelvis, pressing the presenting part against the walls of that cavity, or against the border of the superior strait. These are to be remedied by the means pointed out under the head of uterine obliquity, or by those recommended in cases of preternatural presentations.

The *posterior obliquity* of the fœtus occurs frequently, and more so in first labours, when the abdominal parietes being but slightly distensible force back the fundus of the uterus, causing those positions known by the names of *super-pubic*, and *head retained above the superior strait*, they are without any known cause, and frequently embarrass the obstetrician.

It is to be recognized, 1st, by that particular elevation, and by the position of the head of the child above the pubis, or sometimes it is difficult to reach it; 2dly, by the vacuum which remains behind the head, at the opening of the strait, or as much as can be felt in consequence of the sac of the membranes, or the water contained therein; 3dly, by the elevation of the uterus and the flattening of the abdomen.

It not unfrequently happens that the membranes burst, and the fœtus is precipitated into the cavity; but sometimes it continues elevated, and the labour must be accomplished by artificial means.

Instead of having recourse to version, as some eminent practitioners advise, upon a misunderstanding of the circumstances, we have always succeeded in lowering the head of the fœtus, by directing the woman to walk about, or remain standing up, especi-

ally at the moment the membranes burst. It may even be of service to place her on her knees and elbows, so that the body of the fœtus falling forwards, the elevation and depression of the whole womb may bring the head backwards and towards the centre of the strait. We have sometimes been able to reduce the head into the same centre by pressure upon the hypogastric region, as recommended by Baudelocque, in certain false presentations of the ear. Version should always be a last resource.

Obstacles arising from an irregular Position of the Part presented at the Superior Strait.

Presentation of the Vertex.—The occipito-posterior and the transverse are frequently of such a mechanism as to require the aid of art, and particularly the use of forceps.

They may be all different from the obliquities of the uterus, by slight irregularities of the pelvis, or some primitive arrangement of the fœtus, by the presence of twins, &c.; the consequences are, that the head cannot be bent so as to enter the excavation, and offers to the strait the anterior part of the head, or even the forehead; that one of the parietals may be retained by the sacro-vertebral angle (anterior obliquity, malformation of the pelvis), most usually occurs, or by the pubis (posterior obliquity,) occurring seldom, or by one of ilia (lateral obliquity), which is still less frequent. The other parietal then advances into the cavity, the ear gets near the superior strait, and can be felt. Can the head form an excessive flexure, and present the occiput too plainly? We think not, although this has been made the subject of a particular set of presentations.

These alterations can be distinguished by the displacement of the sutures and fontanelles, which have been described as signs of natural presentations. These imperfections are often rectified by the effect of uterine contractions; but sometimes they must be obviated by art, either by adjusting the head, or by effecting version. Others recommend the lever, or one branch of the forceps. When the child is dead, we should perform the operation of Craniotomy.

Dystocia glutealis.

Pelvic presentation.—When the breech presents, we should, by the aid of the fingers, fillets, or blunt hook, applied over the

groins, assist in extracting the infant. The forceps applied over each hip will often materially assist delivery. This is the most common presentation next to the vertex.

Dystocia humeralis.

Presentation of the Shoulders.—When the shoulder, arm, or any part of the trunk, from the base of the skull to the breech, presents, we must perform the operation of version. This is a general rule, liable like all such, to exceptions. I have known two instances in which the arm presented; the pains having ceased, the arm was returned, the head brought down in the proper relation of the pelvis, and the rest of the labour was natural. But this success is not to be always expected, as the greater part of obstetricians have observed the immense difficulty, nay, impracticability, of this operation, and hence recommend version in performance. When the uterine contraction is violent, the arm or shoulder impracted in the pelvis, and version impossible, as soon as the infant is destroyed by compression, we should decapitate it with a scalpel or blunt hook, as recommended by Celsus, Smellie, and Vanhorne, and laying hold of the arm for the extraction of the trunk, and by applying the forceps to the head, we can readily extract it; or should we find this difficult, pressure should be made on the abdomen, the head fixed in the pelvis, and its volume reduced by craniotomy. I fully agree with the eminent Velpeau, that all preternatural presentations may be divided into, 1. those of the head, 2. those of the breech, and 3. those of the shoulder. The presentations of the feet, knees, and breech, are examples of spontaneous version; and many anormal positions of the head, including frontal, occipital, facial, and aural presentations, are to be relieved by imitating this operation, by performing version. When the arm or leg presents with head, we should, in the absence of pain or uterine action, return either into the pelvis, and this I have repeatedly done without the woman having been aware of it.

Malformation of the Fœtus.—When the infant is hydrocephalic, or has dropsy of the chest, abdomen, or spine, labour will be impeded; but these causes are of rare occurrence, and are to be obviated by paracentesis or tapping, after the uterus had sufficient time to effect delivery. When the fluid is evacuated, the uterus may expel the fœtus; and should this not happen, we should

have recourse to the forceps, to version or cephalotomy. Such tumours developed on different parts of the fœtal trunk may impede parturition; but these can scarcely be discovered during labour. The simultaneous presence of many infants in the uterus, may offer impediments to delivery. In twin cases, both infants may present in the natural way, or one may present the vertex and the other the feet. Cases are recorded in which both heads presented through the genital fissure at the same time, before and at the expiration of the full period of pregnancy. This fact was illustrated by the Siamese boys, and the Hungarian sisters, already mentioned. This union of infants offers great varieties, whether by a circumscribed junction on the trunk or superior extremities, or on the whole surface of the back or abdomen, or even by the heads. Sometimes there are two heads on one trunk, or two trunks for one head; and again, the lower extremities of two bodies to one trunk. An infant may be expelled by the feet until its head is in the pelvis; and that of another fœtus may descend into the same cavity, when both will be immoveable. In such case, the forceps or version is impracticable, and craniotomy must be performed. But then a question arises, which head is to be opened? Velpeau proposes detroncation, it is not stated of which fœtus, as the only resource we possess to save the mother and one infant. Now, supposing that the protruded infant is alive, which actually occurred in a case recorded by Dr. Fergusson in the Dublin Medical Transactions, 1830, is the infant to be sacrificed? The narrator intended to craniotomise the other; but nature expelled the second head first, accompanied by that of the first. The first infant was dead, the second alive. Perhaps it might be possible, in the absence of uterine action, to push up both heads, so as to raise that of the second above the pelvic entrance or brim; while the other might be depressed into the cavity of the pelvis by traction on the body or neck of the infant partially protruded. The positions of the head impede labour.

Dystocia Facialis et Frontalis.

Facial and frontal presentations usually terminate without assistance; but sometimes require operations which will be described hereafter.

Dystocia Occipitalis et Nuchalis.

Occipital and *nuchal* presentations are exceedingly rare, and are to be rectified with the fingers, the lever, or one blade of the forceps.

Dystocia Auralis et Temporalis.

The *aural*, *temporal*, and *lateral* positions are to be reduced to the vertical presentation by the means stated in the last paragraph, and if the shoulder is low, version ought to be performed. There is a general rule applicable to all malpresentations of the head, that they should be reduced to natural, if possible, by the means just stated; and if these fail, embryotomy must be resorted to. The various operations under this head will be described in the article on *Artificial Parturition*.

Section 3.—Accidents relative to the Mother.

Various accidents occur to women during parturition, and these differ according to their situation.

A woman who makes violent efforts of expulsion, and suppresses her voice, or "holds in her breath," may become affected with emphysema of the neck and chest. This arises from rupture of some part of the trachea. The disease disappears spontaneously in a few days; but in some cases punctures become necessary.

The symphises, or joints of the pelvis, are more or less relaxed during pregnancy and natural labour, and in some cases the pubic and sacro-coccygeal joints are lacerated and inflamed. The inflammation may extend to the peritoneum, to the glands or vicinal nerves, and cause phlegmasia dolens, according to Velpeau. These abscesses are generally fatal, and therefore ought to be prevented by local and general bleeding, warm bath, fomentations, calomel and opium. I have already described the treatment of inflammation of the pubic and sacro-coccygeal joints. (p. 6. 307.)

The ovary and uterine tube have burst during labour, and caused fatal hæmorrhage. The distended bladder has burst, and caused fatal peritonitis (Ramsbotham.)—There may be chronic peritonitis and hysteritis, and gangrene of the uterus, before delivery; cases of which I have witnessed. (See Lond. and Med. Surg. 1831, vol. v. vi.)

Dystocia Laceratoria.

Rupture of the uterus may occur in all cases of preternatural or dystocial labour, but more especially when there is some mechanical obstruction to the passage of the infant. It may occur in natural labour, and during pregnancy. The symptoms and treatment have been, in some measure, described. (See p. 308.) I may, however, remind the reader, that rupture or laceration may take place in any part of the uterus; the hæmorrhage is seldom fatal; but the escape of blood, amniotic fluid, or some part or whole of the infant into the cavity of the abdomen, will generally induce fatal peritonitis or enteritis, as the infant only can be removed. Nevertheless, when the fœtus is extracted, the patient may recover. This fact is now well attested by recent writers. (M'Kever, Labat, Collins, &c.)

Treatment.—When the rupture is slight, and situated near the orifice, the application of cold, astringents, and the plug; and carefully to guard against abdominal inflammation. Opium, and wine when there is much prostration, are highly useful. As a fold of intestine descends through the laceration, it has been proposed to cut through the linea alba to relieve the strangulated intestine (Pigrai, Labat.)—This operation can be seldom, if ever, necessary; as it is easy to return the bowel into the abdomen; at least I have found it so.

When the infant has escaped into the abdomen, with the exception of the head, which remains in the pelvis, the forceps should be applied to accomplish extraction. If the fœtus has passed entirely through the uterine laceration, the hand should be passed after it, the feet grasped and brought through the opening, and the operation of version performed. But should the laceration be small or diminished by uterine contraction, so as to prevent the performance of version, and the woman vigorous and the infant alive, it is generally recommended to have recourse to gastrotomy. This practice has succeeded (see p. 311, et seq.); but it appears to me to be, in general, unnecessary, for many valid reasons. It is to be recollected, that the uterus can be dilated by the gradual pressure of the hand; and here we must bear in mind the occurrence after dilatation of the organ, and I cannot understand upon what grounds it is said that the uterus cannot be dilated, and that the body of an infant cannot be brought through an aperture, through which it has already passed. Even admitting

this conclusion, it is manifest that a further laceration of the organ, by the extraction of the fœtus, could scarcely be more dangerous to the woman than cutting through the abdomen, and exposing her to the danger of an operation generally fatal, and doubly so from the effects of the laceration. Again, it is universally admitted that the uterine contraction almost always ceases on the occurrence of the rupture, and therefore there can be no difficulty in passing the hand through the lacerated opening, and extracting the infant by the feet.

When the woman is moribund immediately after the rupture, it is recommended to introduce the hand, and bring down the infant; and if this be impracticable, which I cannot think, to perform gastrotomy to save the infant. But how can we ascertain that the infant is alive? Do we not generally find it is usually destroyed by compression long before rupture takes place? If these questions are answered in the affirmative, it is obvious that we ought to hesitate in laying open the abdomen of a woman in the agonies of death for the extraction of a dead infant. Neither can I agree with the proposal of performing gastrotomy after death, as advised by some writers. If there was reason to believe that the child was lately alive, the operation should be performed in a few minutes, for example, in a quarter of an hour after the mother expired, as the infant might be resuscitated. Dr. Blundell succeeded in saving the infant, though extracted by gastro-hysterotomy fifteen minutes after the mother had expired. (See p. 169.)

Rupture of the vagina is followed by the same consequences as described in the last paragraph, and requires the same treatment. This accident is not so dangerous as the former; it usually yields to proper treatment.

Rupture and sanguineous infiltration of the labium arise from laceration of the spongy tissue of the vagina by continued compression of the head.

The labium becomes tumefied to such a degree as to oppose the passage of the infant, the evacuation of the bladder and rectum, and the tumour formed by it is of a black colour. The swelling extends to the bladder and rectum, and terminates in abscesses, which may prove fatal.

The *treatment* consists in incision of the labium, evacuating the coagulated blood, and plugging the vagina to prevent hæmorrhage.

Rupture, inflammation, and gangrene of the vagina, of the

bladder, and rectum, may occur from the long continued pressure of the head upon those parts, the results of which will be perforations of the bladder and rectum, technically denominated vesico-vaginal and recto-vaginal fistulæ. The consequence of these disgusting and distressing fistulæ are incontinence of urine and fæces. These openings appear about the second or third day, and when small may heal spontaneously (Hildanus, Mauriceau), and when large are treated with sponges, pessaries, and the catheter (Desault). These means having proved ineffectual, the actual cautery has been applied by Dupuytren, upon the principle that burns contract, and he also employs the catheter. This plan has become general, (see p. 177;) but is not invariably successful. Lallemand has cured a large transverse vesico-vaginal fistula by the repeated application of nitrate of silver. The sutures proposed by Hobert (see p. 179, and Nægele have been used with success by Malagodi; but may also fail. Holmes and Earle have proposed the introduction of a gum-elastic bottle. While writing these pages, and since my description of the disease under notice in a former part of the work, (p. 178) was printed, an interesting case of this kind was placed under my care. The sufferer was twenty-one years of age, of low stature, general health always good, was delivered of her first child after a labour of three days' duration. The medical attendant said there was no malformation. On examination, it was discovered that she had recto-vaginal and vesico-vaginal fistulæ. She was visited by Dr. Conquest, who was of opinion an operation was indispensable; and he recommended the patient to Mr. Earle. She however applied to Mr. Brodie for the purpose of performing the operation; but that gentleman declined to operate, and advised her to place herself under the care of Mr. Earle, in St. Bartholomew's Hospital. On application at that Institution, she was admitted under Mr. Lawrence who, with Mr. Earle, considered an operation impracticable, as there was no laceration of the perinæum, and as the genital fissure was so contracted as to preclude the possibility of applying sutures to the vesico-vaginal aperture. An ingenious and most industrious pupil of mine, Mr. Hargreaves, of Burnley, Lancashire, then dresser to Mr. Vincent in the hospital, proposed my plan of treatment to Mr. Earle; but he considered it not likely to succeed. The patient remained in the hospital for a fortnight, and was then dismissed, with the declaration, "that nothing could be done for

her." My intelligent pupil thought this an unwarrantable decision, and therefore recommended the patient to consult me, and place herself under my care, should I consider any treatment likely to be of use to her. She first consulted Mr. Salmon, who thought he might cure the rectal aperture. I saw her on the 6th of May last, two months after delivery. On making a vaginal examination, I experienced considerable difficulty in introducing the finger. This arose from the contracted state of the genital fissure, which was as small as that of a person at puberty, but more especially from the existence of a strong ligamentous band, which ran across the vagina, and occupied the situation of the hymen. It occupied the lower third of the vaginal orifice, and could not have escaped laceration during the passage of the infant, had it existed before delivery. On passing the finger beyond it, I discovered, a transverse aperture in the neck of the bladder, fully an inch in length, and about three lines in width; its edges were smooth and hard, and it was sufficiently capacious to admit the introduction of two fingers. There was an opening in the rectum an inch and a half in length, and the vagina was in a high state of irritation from the passage of the fæces and urine into that canal. The vulva was slightly inflamed. The urine was constantly escaping from the vagina. The general health was excellent. The *treatment* consisted in relaxing the bowels, and keeping them in that state, in introducing as much oiled lint as was borne without pain, and strenuously advising the patient to lie on either side or on the face, so that the urine might be collected on the sound surface of the bladder, and the cause of the irritation in the vagina in this way removed. In three days the vagina was filled tightly with oiled lint, which was removed every third day. This plan was pursued in until the 1st July, when the fæces no longer escaped through the vagina, and the vesical opening was contracted to the size of a sixpence. The urine escaped in diminished quantity. The fibro-membranous growth had gradually ascended towards the pubis, and formed an excellent support for the tampon or plug. The patient remained in bed during this treatment, and was allowed to sit up in the middle of July, as scarcely any urine passed through the opening unless on coughing or walking much. She suffered no inconvenience, and on the 1st of August considered herself well. At this time the fistula was scarcely perceptible; but the orifice of the vagina is nearly closed by the ad-

ventitious membrane already mentioned. This production must be incised, as it will effectually prevent sexual congress. The operation is deferred until exercise in the open air will remove the effects of such long confinement. The result of this case clearly proves that fistulæ of the description under notice may be cured without sutures, caustic, or cautery. It shews the importance of attending to the position of the patient during the treatment. In all the cases I have hitherto heard of in the London and French hospitals, the patient was allowed to lie on her back, and consequently the escape of the urine into the vagina, or in other words the cause of irritation was allowed to continue. Under such circumstances, a cure could not be reasonably expected. It was unnecessary to employ catheterism in this case, as the urine was retained by the position of the patient as soon as the vagina was plugged, and it was regularly voided by the urethra. In another case of vesico-vaginal fistula an abscess formed, and pointed on the tuberosity of the ischium, on opening which a pint of fœtid pus escaped; the constitutional irritation and hectic continued, and in despite of all remedies the woman sunk in a month afterwards. The nymphæ may be inflamed or lacerated; but little inconvenience arises, and the treatment must be conducted upon antiphlogistic principles.

Rupture of the Perinæum.—When the genital fissure is small or rigid, as in young girls or women advanced in life, the head large, instruments badly applied, the perinæum labiorum and perinæum may be lacerated, and the passage of the shoulders enlarge the laceration, unless the perinæum is properly supported. The laceration may occupy the superior part of the perinæum, or the inferior part near the sphincter ani. In some cases the laceration occurs in the centre, and as the head advances through the superior part, it extends through the inferior commissure. My friend, Mr. Matthews met with a case of this kind, in which there were first, two perpendicular lacerations, one of which extended through the commissure. I have seen a case in which there was an opening in the centre of the perinæum. Merriman relates such cases, as also Duges. In first cases of labour there is a slight laceration at the vaginal edge of this part. In such cases, simple dressing to prevent the irritation of the lochia and urine, and keeping the limbs together by a bandage, effect union by the first intention. But if the laceration is considerable, the insertion of sutures be-

comes necessary ; and should its edges cicatrize without cohesion, their surfaces are to be excised and sutures applied.

Dystocia Hæmorrhagica.

Hæmorrhage during Labour.—This may depend on laceration of the vagina or neck of the uterus ; but it most commonly arises from separation of the placenta, and it is distinguished from the former by the abundance of blood which follows the labour pains. The practice in this case has been partly described in the section on hæmorrhage in the last months of pregnancy, in speaking of the plug, rupture of the membranes, &c. Sometimes natural labour will arrest the hæmorrhage ; but the rule is to deliver, as soon as possible, in unmanageable cases, either by the forceps or by version. (See p. 336.)

Dystocia Convulsiva—Labour with Convulsions.—The convulsions of parturient women may be local or general ; a single member or part may be affected as the face, or all muscles, as the pharynx, œsophagus, stomach, intestinal tube, bladder, uterus, heart, diaphragm, and voluntary muscles. The synonyms of dystocia convulsiva are *convulsio apoplectica*, *apoplexia hysterica*, *a. lactusa*, *a. sympathetica* and *eclampsia*. The last term is generally employed in France. The cause of this disease is congestion in the brain. The subjects most liable to it are nervous, irritable, and delicate women, and more especially those who are in labour for the first time, and who are illicitly in this condition.

Some have gone so far as to say the disease was occasionally epidemic.

Symptoms.—The patient complains of intense pain in the head, vertigo, confusion of ideas, depraved vision or hearing, defective speech, mental depression ; the countenance is wild, or she is attacked with general convulsion without any premonitory symptom. Dr. Hamilton was wont to observe, that there was generally intense pain in the forehead, which was a premonitory sign. When the fit comes on, every muscular organ in the body may be convulsed. In some cases the contents of the stomach, intestines, bladder, and even of the uterus, are expelled during the paroxysm. The duration of the paroxysm is as variable as its intensity ; it is in some cases of ten, fifteen, or thirty minutes ; in others it continues twenty-four hours. Coma may supervene and render the patient insensible for some days, and terminate in complete resto-

ration of health (Velpéau) ; but it may end in apoplexy and death. Certain functions may be depraved after recovery, as vision, hearing, smell, and even some of the intellectual functions, and these are explained by some degree of compression on the brain. When the woman recovers from the convulsive fit, she is languid, and generally unconscious of what has happened.

When consciousness returns in the interval between the fits, the convulsions are designated *epileptiform* ; and when coma and stertor supervene, they are called *apoplectic* or *eclampsic*. This division is useful, as the epileptic or hysteric convulsions are less dangerous than the latter, and differently treated.

The *autopsy* does not always account for the symptoms. Sometimes there is a small quantity of serum in the ventricles, the encephalic veins and sinuses are more or less engorged ; the meninges and cerebral substance are red or natural, or there are evident marks of congestion, or effusion of blood. In many instances no appreciable lesion exists.

The *prognosis* is unfavourable, as a third of the affected is destroyed. The disease is of rare occurrence ; but certainly not so rare as the French would lead us to believe. They say, that it only occurred in sixty-five out of forty thousand cases. It is much more common in these countries, and very often supervenes on transverse and other dystocial labours. It occurs in the last three months of pregnancy, or during labour, and is less dangerous after delivery.

The infant is usually destroyed in convulsions, from the extraordinary movements during the fits.

Treatment.—In these kingdoms, copious depletion with camphor mixture, ether, &c. are chiefly employed. When there is reason to suppose the disease is of the epileptic or hysterical character, the most powerful antispasmodics, as opium, ether, castor, camphor, &c. are used by the French. Dr. Hamilton considered opium highly injurious, and copious depletion with camphor mixture the best remedy. Mauriceau, De la Motte, and Puzos, were strong advocates for venesection ; and there can be no doubt of the value of this remedy, when the signs of cerebral congestion are unequivocal. The venesection should be repeated to the third or fourth time, according to the strength of the patient, and the blood should be taken from a large orifice ; should the pulse contra-indicate repeated venesection, thirty or forty leeches should be applied to the temples, behind the ears or to the neck. When coma supervenes,

we should abstract blood by cupping from the neck, and apply sinapisms to the feet and legs. The temporal artery might be opened with advantage. I should prefer this operation to cupping in a desperate case, as blood can be taken more rapidly. Baudelocque, and others preferred opening the saphena vein in all cases; but this practice is not followed at present.

Tepid-baths are useful, when apoplectic symptoms are absent, and after blood-letting, if the patient is in a fit state to lose blood without danger, otherwise they promote the afflux of blood to the head; they are to be avoided when the convulsions depend upon loss of blood or inaction, as after severe hæmorrhage.

The woman might remain in the bath about twenty minutes and cold water or ice might be applied to the head at the same time (Denman, Baudelocque.) Velpeau thinks the latter practice must be employed with great caution and circumspection.

Irritating clysters are also advantageous as revulsives, and upon this principle the French apply synapisms to the feet, legs and thighs, a blister to the neck, and frictions along the spine.

In all cases of convulsions, immediate delivery is to be accomplished as soon as possible, either by the forceps, version, or craniotomy. Though the disease ceases in general on delivery, I have known it to continue for a day after in despite of all remedies. The young practitioner must be reminded that copious depletion can be only employed with safety in strong, young, plethoric women, and that local bleeding is preferable in nervous, delicate, and lymphatic persons, and also when the disease comes on after hæmorrhage. In the last, the narcotics will be used with success. I am very much astonished that Dr. Burns, in his last edition, 1829, has not distinguished the forms of this disease, and has indiscriminately recommended copious depletion and narcotics in no instance (see p. 305,) But it often happens that the os uteri does not dilate during the most violent convulsions, and consequently delivery cannot be effected. In such cases the French apply extract of belladonna to dilate the uterine orifice, and when this fails, the woman and infant being in danger, Boelin recommends incisions through the uterus, and Simson and Lauverjat think the operation should be called the vagino-cæsaean. In such a case, I agree with Ashwell, that it would be much safer to dilate the os uteri with the fingers: a proceeding which would give the mother and infant a much better chance of life. I have held

this opinion, and taught it in my lectures long before Mr. Ashwell's work appeared, and it was forcibly impressed upon my mind in a case where there was no dilatation, and the woman died undelivered. When we consider the dilatability of the os uteri in every stage of pregnancy, more especially in the last three months, the plan I propose is not so objectionable as it would appear at first sight. Should the woman die undelivered, we ought to perform the Cæsarian operation about ten minutes after death, as the infant might be resuscitated, even after two days, according to others.

Dystocia syncopalis.—*Labour with syncope.*—Delicate, nervous, irritable women, sometimes faint from the slightest pains, or from severe pains, hæmorrhage, and inanition. Syncope is, however, a rare occurrence. If the life of the woman is in danger, we must deliver as soon possible. In slight cases, we exhibit cordials, antispasmodics, and treat them upon ordinary principles (see p. 318.)

Dystocia with Asthma, Hydrothorax, Ascites, Ovarian Disease, various Tumours in the Abdomen.—It is well known that violent exertion accelerates the respiration, and induces a sense of suffocation in diseases of the chest, or when the lungs cannot expand properly from incurvation of the spine, or from tumefaction of the abdomen (see p. 240.) As the efforts of the most natural labour affect the respiration, it must be obvious that in the cases under notice, there must be considerable danger, and therefore it is a rule to effect artificial delivery as early as possible. The efforts of the woman may induce asphyxia, or fatal collapse. Nevertheless many hydropic women have the easiest labours (see p. 321.)

Dystocia with Hernia.—The practice in this case is to reduce the hernia, if possible, before the pains become strong, and to make pressure on the opening through which it passes, during each pain.

Dystocia vesicalis.—The bladder may be protruded in the early stages of labour. It is to be returned and retained in its situation; and when the head advances into the pelvis, it is, in the absence of uterine action, to be kept in the natural situation, when the next pain may push down the head. This is a rare occurrence (see p. 437.)

Dystocia placentalis.—Placental presentation has been described in the section on Abortion (see p. 324.)

Section 4.—Accidents relative to the Infant.

Dystocia Funiculis.—Dystocia caused by the premature escape of the umbilical cord. This accident causes the death of the infant, which is induced by the compression of the navel string, which interrupts the circulation of blood between the mother and infant.

The *treatment* in this case consists in preventing the cord being compressed, and to perform the operation of version, should the presentation admit of it, as when the abdomen is over the os uteri. When the breech presents, we must facilitate delivery in the manner described for the management of that presentation. Various methods have been proposed for retaining the cord in the uterus. Dudan proposed a sound for pushing up the cord; Wellenberg, a canula; Duchamp, a ring; others retained it with a sponge; and Sir Richard Croft recommended the hand to be passed into the uterus, and the cord to be placed on the inferior extremities. All these plans are useful when the child is alive; but as soon as pulsation ceases in the cord, death has happened, and then they are unnecessary. When the head presents it is advisable to push up the cord; when the presentation is transverse, the plan proposed by Croft is advisable as a preparatory step to the operation of version. It must be unnecessary to state, that whether we perform a manual or instrumental operation in these cases, we should carefully avoid compressing the cord, or effecting that mischief which we wish to prevent.

Dystocia from shortness or excessive length of the Cord.—Baudelocque, De la Motte, and others, supposed that when the cord was only six or eight inches in length, it impeded the descent of the head, if the placenta was attached to the fundus uteri. It was said that the recession of the head, after the cessation of the uterine contractions, was accounted for by this cause. But every one knows that such recession occurs in all cases, more especially when the perineum is rigid. Shortness of the cord, however, may cause detachment of the placenta, expose the woman to hæmorrhage, and destroy the infant; and the repeated extension or pulling of the cord may diminish or arrest uterine contraction, and in this way impede labour. When the cord is too long, it is likely to present, or to be twisted round the neck, body, and limbs of the infant, and produce the same effects as in the preceding case. It is therefore, more liable to pressure during the contractions, or

during the passage of the infant through the vagina. Nevertheless we see infants born alive with the cord twisted round the neck, trunk and limbs, and even knotted in three or more points. But if we found the cord too short in a case in which the infant was in danger, and on the point of birth, it ought to be cut, and delivery effected by the hand or forceps as speedily as possible. When we discover the cord round the neck, after the expulsion of the head, we should rub the abdomen, and excite uterine action as speedily as possible to effect delivery, for otherwise the compression of the vulva will arrest the circulation, and kill the infant. Should contraction not come on, we ought to loosen the cord, by pulling it gently, or slip it over the head in some cases.

Artificial Parturition.—Operative obstetrics may be divided into three parts—1. The operations which preserve the integrity of the organs of the infant and mother.—2dly, the operations which require some solution of continuity of the organs of the fœtus.—3. Operations which require some solution of continuity of the maternal organs. Such is the division of M. Duges, which is the best hitherto proposed. I have divided obstetric operations into two classes—.1. Chiragotocia, manual labour.—2. Organikotocia, instrumental labour.

Chiragotocia, manual extraction of the fœtus. Version—Turning.

There are two species of version, one in which the head, and the other in which the feet are extracted first.

Hippocrates advised version by the head in all presentations; and Celsus maintained that by the feet, after the infant was dead. Ætius and Paulus Eginetus followed the practice of Celsus when the fœtus was living, as also did Wolf, Franco, Parè, and Mauriceau. Guillemeau proposed to perform version by the feet when presentation of the head was accompanied with accidents. Version by the feet is decidedly preferable. The circumstances favorable to the performance of this operation are dilatation of the cervix uteri, without rupture of the amniotic sac, or bag of waters, or immediately after rupture has happened. The most favorable moment for the performance of version, is while the amniotic sac is entire, and the uterine orifice dilatable. The best position in which to place the woman is on the side, according to British and American writers; but the back is preferred by the French, and the pelvis should rest on the edge or foot of the bed. The ope-

rator may be seated, or kneel upon one knee; some advise to take off his coat-sleeve, others to turn up his cuffs; and in former times he wore a napkin as an apron. The last appendage is seldom employed at present. The sleeve of the coat should be taken off, as pulling it above the elbow causes so much pressure upon the arm, as to impede its free motion. The object to be effected is to pass the hand into the uterus, to seize the feet, and bring them through the pelvis. The operation is required in all transverse presentations, when any part of the infant, from the base to the skull to the breech, presents. Others advise us to push up the trunk with the palm of the hand, and thus affect a rotation of the fœtus, so that the feet may be brought over the uterine orifice. The former practice is in general preferred. The choice of the hand cannot be determined before the rupture of the membranes; and when the hand is introduced, and cannot be employed conveniently, it is to be withdrawn, and the other introduced.

When the feet, knees, thighs, and posterior region of the fœtus are at the left side of the strait, the left hand should be preferred; and when the positions are inverse, we use the right.

When the vertex presents in the occipito-pelvic position, the left hand must be used, and the right in the inverse position; in the antero-posterior positions of the head, either hand may be employed.

In shoulder presentations, the left requires the left hand, and the right must be employed when the right shoulder descends. The right hand is to be preferred when the sternum or back presents, the head being to the left, and in the opposite cases the right hand is to be chosen.

Some distinguished obstetricians recommend the introduction of the hand in a state of semi-pronation, so that the palm may be turned towards the abdomen and feet of the fœtus (Baudelocque, Lachapelle, Duges, Desormeaux, Major de Lusanne, &c.); but this rule is liable to exceptions; it is not perfectly applicable in presentations of the pelvis, back, or shoulder (Velpeau).

Others recommend the hand which is naturally turned to that side of the pelvis in which the feet are placed. Dr. Breen, of Dublin, prefers the left hand in all cases, in order that the right may most commodiously aid the uterine action by pressing on the hypogastrium. The choice of the hand should be determined according to the former rule; and this selection may be facilitated by

changing the position of the woman on her sides, abdomen, or back.

The hand being chosen, it is to be smeared with some oleaginous or mucilaginous substance, both to render its introduction less painful, and to guard the practitioner against infection from contagious diseases. The back of the hand may be lubricated with lard, pomatum, butter, oil, mucilage, &c., as this part only can produce pain; and the palm ought to be dry, as it is to be applied to the surface of the infant, which is moist and slippery. This was the precept of Rœderer, and is generally followed. The forearm must be also lubricated.

Introduction of the Hand.—The fingers are to be brought together in the form of a cone, and gradually introduced into the vulva and along the axes of the inferior and superior straits. This must be accomplished very slowly in the absence of pain, if possible, for unless this caution is attended to, uterine action may be excited, and the operator rendered incapable of proceeding. The palm of the hand is to be passed along the shoulder, side, thighs, legs, and to the feet, and both these brought down into the pelvis, though sometimes one foot only can be grasped. In bringing down the foot or feet, the body of the foetus undergoes an evolution, and hence the origin of the term turning.

In effecting this evolution or mutation, care must be taken to bring down the inferior extremities on the anterior surface of the foetus, by seizing the knees or ancles in preference to the feet (Burton, Delpech, Breen).

Extraction.—When the feet, legs, and thighs are extracted through the vagina, they are to be enveloped in a napkin. The thighs and hips must be turned to the long diameter of the inferior strait or outlet; that is, in the ischio-pubic, or partly towards the pubis and coccyx, and must be elevated and depressed until the lower or posterior hip is first expelled; the hands are to be applied over the ilia or hips, but not on the abdomen, and the thumbs upon the loins. The lateral regions of the trunk should be in the long diameter of the outlet, or nearly so, until the infant has descended to the axillæ, when its abdomen should be turned towards the spine of the mother. As soon as the umbilicus has passed the genital fissure, the navel-string must be drawn down and liberated, or the pressure of the external genitals will speedily interrupt its circulation and kill the infant. If it cannot be loosened, it should

be cut, and the labour finished (Hatin). If uterine action commence, so much the better ; and if it fail, it is to be induced by the ergot of rye.

The Extraction of the Arms next claims attention. The arms are on the sides of the head, and are situated differently in relation to the pelvis, according to the position of the infant. If the abdomen of the infant is turned to the spine of the mother, the occiput will be to the pubis, the forehead towards the sacrum, and the arms towards the iliac bones, and sometimes on the neck (Duges.) If, upon the other hand, the abdomen of the infant is turned to the thigh of the parent, then one arm will be towards the pubis, the other towards the sacrum. The practice in either position is to introduce the index and middle fingers over the shoulder and on the elbow joint, and then gradually extract the arm, supporting the perinæum at the same time. The first position, in which the limbs face the hips, is recommended in these countries, and renders the extraction much easier than in the last position, which is the ordinary one according to Duges. In it the lower arm should be extracted first, and to accomplish this, the body of the infant must be elevated towards the maternal abdomen.

The operation of extraction would be rendered exceedingly difficult, if the back of the infant was towards that of the mother ; and it would also be difficult to extract the head in that position.

Disengagement of the Head.—When the forehead rests on the promontory of the sacrum, the long diameter of the head is to the short of the pelvis (see p. 11), and our object is to adapt the long diameters of the head and brim, or superior strait of the pelvis to each other, which in general can be easily accomplished by turning the forehead to either sacro-iliac symphysis. The head being thus brought into the cavity of the pelvis, we have next to imitate nature, by turning the face into the concavity of the sacrum. The body of the infant should now be raised towards the abdomen of the mother, by placing it on the left arm of the operator. Velpeau says it should be first depressed towards the perinæum, to facilitate the escape of the occiput. The index and middle fingers of the right hand are to be placed on the neck, and the index of the left in the mouth, to depress the chin, then place the fingers on each side of the nose ; when in general, gentle traction in the axis of the outlet, during uterine action, accomplishes delivery. If there be no uterine pain, we should excite it by friction on the

abdomen, or by the ergot, or the pressure on the navel string will kill the infant. The chin, face, forehead, vertex and occiput escape in succession, so that the back of the infant must be gradually elevated until placed on the abdomen of the mother. The following cautions are to be attended to in performing the operation of version. The hand should not be introduced during pain, as it would be benumbed and partially paralysed. According to British practice, it must be passed during the interval of pain (also Desormeaux and Velpeau.) By observing this precaution, Middleton succeeded in version when all others had failed. He boasted of having had a secret, which he revealed in his old age; and and this was a large opiate to tranquilize the uterine action. The sedative preparations of opium, as the sedative solution, morphine, &c. are to be preferred in this case, as the common tincture often excites instead of allaying uterine action, and sometimes fails to produce either effect. I have known a drachm of the sedative liquor of opium to be exhibited in a case of cholera, in the space of eight hours, with the effect of arresting the vomiting and diarrhoea; and yet well-marked uterine action commenced, which was removed by a starch clyster only. The patient was under the care of my friend Mr. Holloway, of Leather-lane.

The os uteri ought to be dilated to the size of the disc of a half-crown, and dilatable, to justify the operation of version.

The general plan is to bring down one or both feet; if only one can be found, the other will be bent on the abdomen or back, and must of course come on when the breech is propelled. The practice of bringing down one foot, and re-introducing the hand to bring down the other, as advised by MM. Velpeau and Hatin of Paris, is not easily effected: but this is obviously unnecessary, according to the opinion of British obstetricians, and of M. Duges of Montpellier.

Care must be taken to ascertain the position of the feet before passing the hand, as otherwise we should be obliged to withdraw and re-introduce it, which might excite uterine action, and defeat our object.

The bowels and bladder should be evacuated before we commence this and most other obstetric operations.

We must prevent the descent of the infant with its abdominal surface towards the pubis; for in such case the chin would be

hooked on the pubis, and could not be brought down unless by adapting the head to the long admeasurement of the pelvis.

In order to depress the face in this case, the body of the infant should be lowered, and the finger placed in the mouth (Portal, Smellie, Deventer, &c.), or the lever or forceps should be applied in the manner hereafter mentioned. Asdrubali advised the elevation of the body of the infant, to allow the escape of the occiput; but all these manœuvres are difficult, and ought to be avoided, by attending to the directions already detailed.

The operation of version is required in all transverse presentations, as when the neck, back, abdomen, and superior extremities, descend, and according to the French, in many presentations of the head. Dr. Burns thinks that in cases in which the labour is rapid, and the membranes unbroken, it would be good practice after rupturing the membranes, to adapt the head to the proper diameters of the pelvis, though as a general rule turning is to be preferred. We need not wait for the complete dilatation of the os uteri, as in general the waters are effused at this period of labour.

After the rupture of the membranes, and when the uterus acts powerfully, we should exhibit from forty to eighty minims of common laudanum according to the received axiom; but I prefer twenty-five or thirty minims of the sedative solution of opium. In general we find, that after two hours the uterus will be tranquil, and the operation can be easily performed.

When the anodyne fails, it has been proposed to employ venesection to syncope, or to the approach of that condition; and should this fail, I would certainly try the tartarized antimony to produce nausea, as in cases of strangulated hernia. When the infant is dead, and version impracticable, which I can scarcely think possible after venesection and antimony, Dr. Burns recommends perforation of the abdomen, and the application of a hook on the pelvis, so as to pull it down. This practice may succeed if the infant be small; but it must fail when the infant is large. I am surprised that the able author I have quoted has not given a more minute account of the management of cases in which version is impracticable; that is, in cases in which the operation cannot be performed with safety in consequences of uterine action. It is a great oversight to omit the mode of proceeding in transverse cases, in which the operation of version cannot be accomplished. The woman is not to be deserted in such circumstances;

and the young practitioner should be informed of the practice which ought to be employed. In such cases, the infant being alive, the Cæsarean operation was formerly proposed and practised, as Baudelocque states in the *Recueil Period.* xiv., cases five and fifteen. When the child is dead, as it soon is by pressure, it has been pulled down by the breech, by Peu, Smellie, Giffard, and others; and the vertebræ separated by Hamilton and Perfect, and the thorax eviscerated by J. Clarke. In cases of arm presentation, when turning cannot be accomplished, F. Ramsbotham divides one or two ribs, eviscerates the chest and abdomen, having perforated the diaphragm; the body collapses, and may be expelled by the process of spontaneous evolution; or should the pains cease, the crotchet should be fastened on the spine or pelvis, so that the breech may sweep the sacrum and perinæum: he saw this practice successful five times. Douglas, of Dublin, recommends the extraction of the breech, in imitation of spontaneous evolution; and Lee is of the same opinion. *Edinburgh Medical and Surgical Journal*, April 1828. Velpeau loudly condemns this practice, and proposes in its stead the Cæsarean vaginal operation, whether the infant is living or dead; a practice which no man who wishes to save the life of the mother, is justified in adopting. But spontaneous evolution is a rare occurrence, and out of thirty cases collected by Denman, there was but one where the infant was born alive. It can seldom happen at the full period of pregnancy. It is most frequently observed in premature labours, before the seventh month.

With respect to the evisceration of the chest and abdomen, it may be well to state that it is a tedious and difficult operation, and will require, at least, one hour for its proper performance. I have performed it in the following manner, after the death of the infant:—The arm may or may not be removed; the thorax is to be opened by means of a scalpel, with a long handle, or with the perforator; the ribs are to be broken by the craniotomy forceps, which will also readily enable us to extract the viscera of the thorax; the diaphragm is next to be torn with the same instrument, or with the sharp hook, and the abdominal viscera extracted through the chest. The body then collapses, and if the pelvis be capacious, it may be extracted, by fixing a blunt hook on the pelvis or spine of the child, and cautiously using such traction as will bring down the breech. But if the infant is of the full size, the

pelvis small or contracted, the breech cannot be extracted as now described. In such cases, the infant may be decapitated in the manner about to be mentioned, the arm and thorax being first delivered, and then the head. But if the head is so high in the pelvis, that it cannot be reached with ease, even after the removal of the arm, then I have succeeded by separating the dorsal vertebræ, by the careful application of the blunt hook, and divided the trunk completely; so that the upper part, arm, and head, can be extracted; and next, the lower, by fastening the blunt hook on the pelvis. I have performed the operation twice in this way, and with perfect safety to the woman. This method is not mentioned in any writer or teacher on Midwifery with whose work I am acquainted. The operation of decapitation, when practicable, is more simple; but the introduction of a sharp sawing instrument, as recommended by Ramsbotham, senior, and D. Davis, I think very objectionable; for I apprehend that dividing the neck of the infant, "when the instrument is to be used as a saw," must injure the soft parts of the mother. There might be a curved saw constructed, so that its extremity might be blunt for an inch or two, and by this contrivance there would be less danger of injuring the uterus. The instrument which I employ for this purpose is the blunt hook, with one end roughly pointed, which when fixed firmly on the cervical vertebræ, by a gradual steady pressure, will divide the neck and soft parts. The arm is next to be drawn down, and the chest and body delivered; and the head is then to be adapted to the proper axes of the pelvis, and extracted by the blunt hook, forceps or perforator. There seldom can be any difficulty in finding it in the cases under consideration.

Decapitation is most proper when the neck is the presenting part.

The operation of turning is applicable to all the transverse presentations, from the First to the Eighteenth Orders of the Second Class (see p. 109,) except in pedal presentations; and if it cannot be performed with safety to the parent, the operation of embryotomy, in the manner now detailed, must be resorted to. I have succeeded in finding one leg, by passing up the blunt hook, without introducing the hand, and have drawn it down into the vagina. If we cannot bring down the leg next the os uteri, the infant must be turned in the womb, by bringing down the other.

Baudelocque maintained, that every part of the infant might

present, and divided the body into four regions ; but his classification, though long received with enthusiasm in France, was opposed by Lauverjat, Flammant, Meygrier, Gardien, Capuron, Lachapelle, and recently by Velpeau. The last author in his essay (*Remarques sur les Positions Vicieuses et la Version du Fœtus* 1830,) with a copy of which he has favoured me, contends that "daily observation and reason demonstrate, that the infant pressed by the uterus presents to the orifice the head, pelvic extremity, or shoulder." He alludes to the frequent transmutations of the fœtus when one part presents, and is replaced by another, and thinks that the spontaneous evolution mentioned by Denman is not so rare as is generally considered. He gives an exact description of the various transverse presentations, and endeavours to prove by experience, that all of them were primarily to be referred to one of three already mentioned. He argues that presentations of the loins, groins, abdomen, back, neck, sternum, &c. are rarely met with, and are supposed to exist though never observed by the most eminent practitioners. He cites the works of Bland, Merri-man, Boivin, Lachapelle, Dewees, de Deutsch, Nægele, to prove that in 100,000 cases there was not one of the presentations under consideration ; but all were to be referred to the head, breech, or shoulder. He concludes, "*that every presentation of the fœtus which does not belong to the free or deviated positions, whether of the head or of the feet, enter necessarily among the free or deviated positions of the shoulders.*" He thinks that this position will be found agreeable to truth and science, and therefore worthy of adoption. It certainly reduces all the anormal or preternatural presentations of the head and trunk to a small number, and brings them into a small focus, thus simplifying the practice of obstetrics. This reminds us of the opinions of Dionis, A. Petit, Bounder, &c. that the feet ought to be brought down even when the vertex presented. The descent of the fœtus by the feet is contrary to the laws of the organism for the reasons already mentioned, and though they with the legs and thighs escape in the form of a cone, we must recollect that after the escape of the pelvis, such pressure is made on the abdomen by the uterine orifice, as to produce dangerous consequences. 1. By strong compression of the viscera, and in particular of the liver, which by its size and structure is more liable than other organs to contusion or rupture by mechanical injury. 2. By obstacles opposed to circulation in the abdo-

men. In effect, the circular strangulation to which the abdomen is subjected may be extended to the aorta, vena cava and vena porta, so that the circulation of blood in the inferior parts of the body must be interrupted. 3. The pressure of the funis umbilicalis may destroy the fœtus, as well as pressure on the head in the pelvis unless speedily extracted. The former occurs when the uterus ceases to act after the descent of the head into the pelvic cavity; and the latter when the head is too voluminous. It is therefore manifest that the passage of the fœtus by its pelvic extremity, breech, knees, feet, or by the operation of version, is more dangerous than the descent by the vertex, and cannot be classed with it as natural labour.

Version in Cephalic Presentations.—All the presentations of the head may be reduced to two; 1. when the occiput is to the left side of the pelvis, the left occipito-iliac position of the French; 2. when the occiput is to the right side of the pelvis, or the right occipito-iliac position; the object in these cases is to raise the head into the iliac fossa, press the hypogastrium with the other hand, and incline the uterus to the side, and bring down the feet. Wiggand and Velpeau have brought the head into the natural position by mere pressure on the abdomen. In some cases the head may be adapted to the proper diameter of the pelvis; but in general this cannot be accomplished. After elevating the head, the hand is to traverse the neck, shoulder, side, thighs, and legs, until it arrives at the feet.

Face Presentations.—The chin should be bent on the neck, and the head adapted to the pelvis; but if this cannot be effected, the feet must be brought as in the former cases.

Shoulder Presentations.—When the left shoulder presents, the operator should introduce his left hand, and place the thumb on the sternum, and the fingers on the back; he is then to elevate the body, and facilitate the descent of the lower extremities by pressing on the hypogastrium with the right hand. He is next to search for and bring down the feet. When the head is turned towards the right side of the pelvis, the right hand must be employed.

When the right shoulder presents, the right hand is to be employed. *The operation of version is unique, and is the same for all the presentations of the head and shoulders. Sternal, dorsal, and right and left lateral presentations, are to be managed al-*

most in the same manner as the former. In the latter, the lower shoulder is to be depressed, and the remainder of the operation is the same as in shoulder presentations.

Arm Presentations.—The arm is to be drawn to one side, the hand introduced, the body elevated, the feet brought down, or the hand may be pressed at once to the feet. It is bad practice to amputate or twist off the arm, as neither proceeding can change the transverse position of the infant, and no man would adopt such an absurd proceeding but an ignorant practitioner. The only case that warrants the removal of the arm, is when the infant has been dead for some time, and the arm so tumefied that the vagina is filled up, and there is no room to pass the hand. When an arm and leg presents, the operation of version is partly performed; the leg is to be drawn down, and the body pushed up with the other hand. No one but an ignorant practitioner would pull down the arm and leg at the same time. When both arms or legs present, we must ascertain whether they belong to the same infant. Before dismissing the subject of version, it is right to notice what is termed *spontaneous evolution*.

In transverse presentations, it has happened that the breech of the infant has been gradually expelled, and this has been called *spontaneous evolution* by Denman; and *spontaneous version* by Murat. It has also been observed by Gartshore, Martineau, Lachapelle, Douglass of Dublin, Gooch, &c.; but is an exceedingly rare occurrence at the full period, and in general should not be expected. Some of the most experienced obstetricians have never seen a case of it, and others have observed it between the sixth and seventh month, when the infant is not fully developed. I have known it occur at the full time in two cases of arm presentations, and in both the infants were born dead. Denman observed thirty cases, and in one only was the infant born alive. The universal opinion of the profession now is, that the knowledge of the possibility of spontaneous evolution should never prevent us from performing version. It would be bad practice to leave a transverse presentation to nature in expectation of such an occurrence. Burns has not met with a single case of it; neither has Clarke of Dublin. It is sometimes possible in brachial presentations to push up the limb in the interval of pain, and bring down the head; an operation performed twice successfully by my friend Mr. M'Nolty, of Queen-street, Golden-square. On the other hand, M. Deutsch,

a Russian professor, has succeeded in pushing up the body with the palm of the hand, and effecting a rotation which brought the feet to the uterine orifice ; and assures us that this operation is exceedingly advantageous in shoulder presentations (Duges).

When the breech has approached the vulva, we must raise it towards the abdomen, in order to disengage the hip, which is towards the coccyx first. Sometimes the forceps, blunt hook, or fillet, must be employed to assist its extraction, as will appear hereafter.

Sometimes the inferior extremities are flexed upon the back, in which case they are to be brought down by the fingers or blunt hook. Velpeau states, that in breech cases, the limbs being on the abdomen, we must extract these first ; but in this empire they are allowed to descend without any interference. When only one limb descends, he advises us to search for the other ; but this practice is considered unnecessary by British obstetricians.

In all presentations of the face or vertex, we commence by elevating the head on the iliac fossa, press on the hypogastrium, and push the uterus to one side, so as to bring the breech into the cavity of the pelvis. In shoulder, sternal, and abdominal presentations, the same revolution or version of the breech is to be accomplished. In a word, the same manœuvre is required in all cases which require version by the feet.

Here I must caution young practitioners against using violent traction during the operation of turning, and especially when the body is expelled, and the head is in the pelvis. The spinal marrow in the neck may be contused, or otherwise injured as to destroy the infant, and hence great care is necessary to manage this part of the operation as already mentioned.

"All the positions of the head," says M. Velpeau, *"reduce themselves to two, in the manœuvre (version) ; all the positions of the side belong to the second part of the manœuvre of positions of the head ; all the positions of the back and of the sternum should be reduced to positions of the shoulder ; and all the positions of the shoulder are at first transformed into positions of the feet. There are, in reality, in version, but two essential positions, and are comprized in the rule laid down in speaking of version by the feet in presentations of the vertex."* (Par. 1046.)—In concluding this article, I cannot but highly applaud the accuracy and really scientific views of M. Velpeau, to whose admirable Treatise

and Essay on Version, I am much indebted for many valuable facts on this important subject.

Section 5.—Organikotocia—Instrumental Parturition.

I find, on referring to the works of Hippocrates, *De Morbis Mulierum*, that he recommended all the obstetric instruments now in use, but, of course, in an imperfect form. He advised a small sword to open the head, pincers or forceps to extract the bones, and also a blunt hook. His forceps had teeth to extract the dead infant. Celsus recommends the hook in his Seventh Book. Avicenna speaks of a forceps which did not injure the infant, (*lib. iii.*) Albucasis describes many kinds of forceps (*Meth. Med. lib. ii.*); and Rueff improved and brought them to perfection (*De Concept. et Gen. Hominis.*)—The compendious form of this work precludes me from following up the history of the forceps, and therefore I must content myself with stating, that the Chamberlains of London are admitted to have introduced the modern forceps in 1672.

Smellie introduced a simple instrument, which, with slight modifications, is employed at present. If the reader is desirous of obtaining full information on modifications of the forceps, I beg to refer him to the *Operative Midwifery* of Professor Davis, of the London University; a work that evinces great research, acute discrimination, ample observation, and high talent.

Obstetric instruments are divided into two classes; 1. tractors, as the forceps, lever, blunt hook; 2. incisors, as the perforator, crotchet, craniotomy, forceps with teeth, sharp hooks, and scalpel.

1. *Organikotocia tractativa.*—The instruments comprised in this class are blunt tractors, and are called the forceps, the lever and blunt hooks. The forceps is composed of two parts or blades, which have been denominated *male* and *female*, *right* and *left*, but no two writers agree in the use of these terms. Some call the blade which is turned to the right side of the pelvis, the right hand blade, and that to the other side the left (*Duges*); but as the blades cross at the joint, the handle of the right branch will be in the left hand, and is called the left branch by *Hatin*, and the handle of the left branch is the right branch of the same author.

General Observations on the Forceps.—The forceps is to be applied, 1. When the head of the infant is too large to pass through the passages without exposing the woman to danger, as when the pelvis is small; 2. when the uterus is inert, from long

continued exertion, after the dilatation of its orifice and the rupture of the membranes ; 3. when some serious accident renders the extraction of the fœtus indispensable, as in cases of hæmorrhage, eclampsy or convulsions, syncope or extreme prostration ; and when the head presents preternaturally, or is impacted or locked, as the old writers had it. According to some writers, the head may be considerably compressed, and according to others not more than three or four lines. In cases of simple inertness of the uterus, and in which there is no enlargement of the head or narrowness of the pelvis, and consequently no undue pressure on the head or on the soft parts of the pelvis, the ergot of rye should be administered before the use of the forceps. This instrument has been properly called an artificial pair of hands, which enables us to extract the infant without any danger to it or to the parent. When properly constructed and applied, it will not injure either parent or offspring ; but when improperly employed, and the extraction made too quickly, it may lacerate the vagina or uterus, contuse the vulva, rupture the perinæum, and expose the vagina to fistulous openings ; contuse or lacerate the scalp of the infant, or fracture its cranium. When the head is impacted, the pressure causes congestion and slow inflammation of the soft parts, which generally terminate in sloughing after delivery, or may extend to the uterus or peritonæum, and cause death. There may be rupture of the uterus from spasmodic pain ; and tumefaction of the scalp of the infant with elongation of the head, and the long continued pressure will destroy the fœtus. General irritation and exhaustion may destroy the woman. Rigidity of the soft parts will also require the forceps after a sufficient time is allowed for their dilatation. Protracted labours predispose to puerperal cases. Less pain would be produced by the forceps than by nature in some of these cases ; and the woman would be more likely to recover. Mischief can only arise from the forceps, by delaying its use too long, or by an incautious employment of it. Drs. Hamilton, Burns, and Oslander recommend an early use of the forceps, and oppose the disciples of the school of patience, who would leave all to nature. Decided impaction oftener requires craniotomy than the forceps. Hamilton held, that twenty-four hours of real labour should elapse before we interfere ; Burns is of the same opinion, when he says from twenty-four to thirty-six hours ; while Denman thought we should operate after six hours. The time must be de-

terminated by the circumstances of the case, as the state of the constitution, and of the softer parts.

It is right to mention that Dr. Hamilton prefers the curved to the straight forceps, of which Dr. Burns is not satisfied of any material advantage, though he prefers the former. I cannot help thinking that the straight instrument is very objectionable; for I have found its application more difficult, besides it is liable to injure the rectum when the handles are elevated. The French forceps is slightly curved, though not so much so as our own.

The forceps can be applied at the superior and inferior straits.

Dr. Conquest observes, in his excellent work, that the long forceps answer the purposes of the short, and is a most important substitute for the perforator and crotchet, in many of those cases in which children are doomed to be destroyed. It is applicable in all cases, when the head is above the brim of the pelvis, where the head is beyond the reach of the short forceps, and where delivery is essential to the well-doing of the mother: as in cases of convulsion, hæmorrhage, or in cases of distorted pelvis, where the deficiency of space is from pubis to sacrum, and is so slight that a little power beyond that of the uterus will enable us to extract living infants, that are too often doomed to sacrifice by the incisive instruments. Dr. Burns is against the long forceps, until the practitioner is well acquainted with the application of the short or common one, (Work, 1829.)

The foreign obstetricians use the long forceps in all cases.

The short forceps is a more favourite instrument in this country, and is useful in cases where the head is in the cavity of the pelvis.

In some very rare cases of natural labour, that is when the vertex presents, as in cases of extreme debility, hæmorrhage, or convulsions, states that may supervene, the short forceps must be applied to save both mother and infant.

General Rules for the Application of the Forceps.

1. The patient and her friends should be apprized of the necessity, the intention and importance explained, and the parties assured of the safety of the operation. This is most requisite, in order that other advice may be had, if desired; and in all cases, it would be safer for the practitioner to have further advice before he resorts to the use of instruments; it divides the responsibility;

satisfies the relations ; and if any unfavourable issue occur, he will avoid much blame and censure. Females are greatly alarmed at the application of instruments ; and should the patient die of any disease during the puerperal state, it will be ascribed to their use alone, or even if she should die in months afterwards.

2d. The bladder and bowels should be evacuated by the catheter and clysters, before the use of any instruments. It is almost unnecessary to remark, that the os uteri should be fully dilated, and the perinæum be in a dilating condition.

3d. The patient should be in the usual obstetric position, on the left side, or on the back, in order that the operator may use his right hand more efficiently. The instrument should be applied over the ear, and its convex edge should be turned to the cavity of the sacrum in all the direct positions of the head, and the exceptions in the diagonal positions at the superior and inferior strait, as will be stated hereafter.

4th. The instrument should be brought to the temperature of the body by being held near the fire, or immersed in warm water, and then should be smeared with some oily substance before its introduction.

5th. It should be introduced during the interval of pain, slowly and cautiously, the greatest care being taken not to include any part of the mother, two fingers of either hand being passed into the vagina on the scalp, so as to serve as a director, on which the respective blades of the forceps are to be passed. According to Velpeau, Hatin, Duges, &c., the lefthand branch of the forceps should be first introduced.

6th. Each blade of the forceps is to be gently moved before locking, in order to ascertain that no part of the mother is included ; and care must also be taken, that no part is included in the lock, by examining carefully with the fingers.

7th. Unless the blades lock or meet accurately at the joint, the instrument is improperly applied, and either blade must be frequently withdrawn or elevated and depressed, until the proper adaptation of the locking parts shall be effected. No traction should be made until the blades are locked, otherwise the instrument will slip.

8th. The instrument being properly locked, a ligature may be tied on the handles with a running knot ; and it should be recollected, that the handle of each blade will not be in close contact,

and that if the lock or joint be even, the instrument is properly applied.

9th. The instrument is to be worked from side to side, very gently, and always in the axes of the pelvis, and only during pain; if no pain is present, then it is to be worked at intervals, in imitation of the natural efforts. The time necessary to effect delivery will depend on the difficulty to be overcome.

10th. The infant's ear should be felt distinctly, before the short forceps can be applied with safety.

11th. Recollect that the forceps is very rarely requisite, not more than once in two hundred, and in private practice one in one thousand cases; and now more rarely since the use of the ergot of rye; and also, that the incisive instruments are three times less in use than the former.

Positions of the Vertex at the Inferior Strait or Outlet.—There are six positions of the head at the inferior strait, namely, two *direct* and four *diagonal*; though in this country it is generally said there are but four, namely, the *occipito-anterior*, or the *face in the cavity of the sacrum*; the *occipito-posterior*, or the *face towards the pubis*; and the right and left *occipito-ischiatic*, or the occiput to either ischium. I shall, however, describe the former as the more comprehensive and complete.

First direct Position of the Vertex at the Inferior Strait—Occipito—Anterior Position.—The occiput corresponds to the pubis, and the forehead and face to the curve of the sacrum.

Application of the Forceps.—In these countries the woman is placed on her left side, and in continental Europe and America on her back. The obstetrician introduces two fingers of the left hand, and passes them over the right ear; and then the right-hand branch of the forceps, previously warmed and lubricated, is to be carefully insinuated between the fingers and the ear. The fingers being withdrawn, the branch or blade is to be held with the right thumb. If well applied, it will be parallel to the axis of the inferior strait, and the joint will be in the centre of the vagina. An assistant may keep it steadily fixed. Two fingers of the right hand are next to be carried over the left ear of the infant, the former blade being supported by the right thumb, or by an assistant. The left-hand branch is now to be introduced along the fingers, and between them and the head. The fingers are to be withdrawn, and both blades or branches articulated or locked, no

part of the woman being included, and the handles being nearly in opposition, they are secured by a tape, with a running knot. The handles are now seized with the right hand, they are to be worked from side to side, during a pain, or at short intervals if there is no pain, and with a very slight degree of traction in the axis of the outlet; the perinæum being supported with the left hand. If the woman complains of cutting or laceration during the movement of the instrument, it is hardly applied, and some of the soft parts are included. In such case the instrument must be removed, unless the woman complains from fear, which is often the case when the forceps is properly applied.

The lateral motion of the forceps being continued until the head approaches the perinæum, the handles are now to be depressed towards the coccyx, to facilitate the escape of the occiput under the arch of the pubis; and this being accomplished, they are to be elevated towards the abdomen, or in other words, in the axis of the outlet, so as to extract the head in the course in which it is propelled in natural labour. We must push back the head when on the perinæum, from time to time, in order not to dilate this part too rapidly. When the perinæum is much distended, we support it with the left hand, while we elevate the handles of the forceps on the abdomen of the mother. When the head is disengaged, we disarticulate the instrument, by removing one blade after the other.

When the head is extracted, we should excite uterine action if none exists, by friction on the abdomen, or by the ergot of rye; and when uterine action is excited, we facilitate the passage of the shoulders, by adapting them to the axis of the inferior strait, or outlet. The fingers or blunt hook must be sometimes applied on the axillæ; but the latter is scarcely ever employed in these countries. If the head is voluminous, and requires compression, the ligature on the handles of the forceps is to be tightly applied; and it is held that the head may be compressed to the size of the space between the blades of the forceps, without much danger to the infant. Compression, however, to this extent is very seldom necessary; indeed I have been often astonished at the slight degree of lateral motion of the head, which often enables it to descend on the perinæum. When this is the case, the forceps may be removed, blade by blade, and if there is uterine action, it will complete delivery. But when there is no uterine action, and convul-

sions, hæmorrhage, or syncope present, we must extract the head through the genital fissure in the manner above mentioned. In cases of first labours, the external genitals are rigid, or undilatable, and hence great care must be taken not to dilate the perinæum suddenly, or it will be lacerated. This caution is also to be observed when the woman is very young or advanced in life.

Second direct Position of the Vertex at the Inferior Strait—Occipito-posterior position.—The occiput corresponds to the curve of the sacrum, the forehead to the symphysis pubis.

Application of the Forceps.—The application of the forceps is exactly the same as in the preceding position, except the handles of the instrument ought to be held less elevated, in order to embrace the head more completely, in the direction of its length. The lateral motion of the forceps and head is the same as in the preceding case; but we must first elevate the handles towards the pubis, in order to allow the occiput to escape first; and then strongly depress the instrument to allow the chin to escape under the pubis. The perinæum must be well supported, and gradually expanded in this case, or otherwise it will be lacerated.

Right and left transverse Positions of the Head at the outlet. We are often able to rectify the positions in these cases with the hand, that is, to turn the face into the hollow of the sacrum; but should we fail, a blade of the forceps should be passed under the pubis, with its convexity towards the face; and after the application of the lower blade, or that next the sacrum, the handles are to be articulated, and the face is to be turned into the sacral concavity; and the remainder of the operation is the same as in the first position of the head.

Diagonal Positions of the Vertex.—First Diagonal Position at the Inferior Strait.—The occiput corresponds to the left cotyloid cavity or acetabulum, and the forehead to the right sacroiliac symphysis.

Application of the Forceps.—The occiput corresponding to the left cotyloid cavity, the obstetrician will take the right branch with the right hand, and after having inclined the handle towards the left groin, he will make it glide by the aid of the left hand placed in the parts, on the side of the head which is forwards. The thumb ought to be placed under the posterior cheek, or edge of the blade, as soon as the branch begins to enter. This branch being firmly held by an assistant, the obstetrician, without with-

drawing his left hand from the vagina, will carry it backwards. Then taking the left branch with the right hand, he will make it glide under the branch first introduced, and will conduct it by the help of the left hand, on the side of the head which is behind.

The two branches being applied, the obstetrician will withdraw his left hand from the parts, and will attend to the articulation of the instrument, behind which he will place himself. Then seizing the forceps as we have directed for the inferior strait, he will rotate the head, and once the occiput is brought under the pubis, and the face in the sacrum, he will treat it exactly as in the first direct position.

Second Diagonal Position.—The occiput corresponds to the right cotyloid cavity, and the forehead to the left sacro-iliac symphysis.

Application of the Forceps.—The occiput corresponding to the right cotyloid cavity, the obstetrician will take the left branch in the left hand, and after having inclined the handle towards the right hip, he will make it glide by the aid of the right hand placed in the parts, on the side of the head which is forwards, taking care to place under the most posterior cheek as soon as the branch begins to enter. This branch being supported by an assistant, the obstetrician, without withdrawing his right hand from the vagina, will carry it backwards. Then taking the right branch with the left hand, he will make it glide in front of that which was first applied, and conduct it by means of the hand left in the parts, on the side of the head which is behind.

The two branches being introduced, the obstetrician will withdraw his right hand from the parts, and after having articulated the instrument, he will place himself behind it. Then applying his hands as at the inferior strait, he will rotate the head, and will treat it afterwards as in the first direct position of the vertex.

Third Diagonal Position.—The occiput corresponds to the right sacro-iliac symphysis, and the forehead to the left cotyloid cavity.

Application of the Forceps.—The forehead corresponding to the left cotyloid cavity, the application of the forceps is practised according to the same rules as in the first diagonal, except that the face being above, the handle of the instrument ought to be held less elevated than in the proceeding positions, in order that the head may be better seized according to its length.

The instrument being applied, the obstetrician will place himself behind it, will rotate the head, and after having brought the occiput into the hollow of the sacrum, and the face under the arch of the pubis, he will then treat it exactly as in the second direct position of the vertex.

Fourth Diagonal Position.—The occiput corresponds to the left sacro-iliac symphysis, and the forehead to the right cotyloid cavity.

Application of the Forceps.—The forehead corresponding to the right cotyloid cavity, the application of the forceps ought to be practised according to the same rules as in the second diagonal, except that the handle of the instrument ought to be kept less elevated. The obstetrician, standing behind the forceps, will rotate the head, and will then treat it as in the second direct position.

1. If the occiput corresponds directly to the left side of the pelvis, and the forehead to the right, we treat it exactly as in the first and third diagonals, except that one of the branches is placed under the pubis, and the other in front of the sacrum.

2. If the occiput corresponds directly to the right side of the pelvis, and the forehead to the left side, we shall treat it exactly as in the second and fourth diagonals.

Positions of the Vertex at the Superior Strait.—The head will take the same positions at the superior as at the inferior strait. Smellie, Hamilton, and Osiander recommend the long forceps; Baudelocque, Capuron, Flamant, and Gardien prefer version unless the pelvis is contracted; and in such cases they use the instrument.

First direct Position.—The occiput is above the symphysis of the pubis, and the forehead in front of the sacro-vertebral angle, or promontory of the sacrum.

Application of the Forceps.—The branches of the forceps are applied exactly the same as in the first direct of the inferior strait, except that they penetrate farther, and the hand which serves as a guide, ought to be placed between the womb and the head of the fœtus.

Once the forceps applied, the obstetrician seizes it, as has been directed for the superior strait, and according as he places himself to the left or the right, he reduces it to the first or the second diagonal of the superior strait.

To change it thus, it is frequently useful to return it a little

above the superior strait. Once the head is placed in a diagonal, we draw it into the cavity of the pelvis, by making it follow the axis of the superior strait, and inclining the handle to the opposite thigh. The position is thus reduced to the first diagonal of the inferior strait. The hands are then applied as for this strait, we rotate the head, and treat it then as in the first direct of the inferior strait.

Second direct Position.—The occiput corresponds to the sacro-vertebral angle, or promontory of the sacrum, and the forehead to the symphysis of the pubis.

Application of the Forceps.—Exactly the same as in the proceeding position, except that the handle of the instrument ought to be held less elevated, in order that the head may be better seized in the direction of its length.

Once the instrument applied, we place ourselves to the left or to the right; we return it a little above the superior strait; and we change it into the third or fourth diagonal. We draw then the head into the cavity of the pelvis, making it follow the axis of the superior strait, and carrying the blade of the forceps to the side of the opposite thigh. We treat it then exactly as in the diagonals of the inferior strait.

First Diagonal Position.—The same as at the inferior strait, except that the head is less engaged.

Application of the Forceps.—Exactly the same as at the inferior strait, except that the branches, and the hand which conducts them, ought to be carried within the womb. The instrument being applied, the obstetrician places himself behind it, he draws the head into the cavity of the pelvis, always following the axis of the superior strait, and carrying the handle of the forceps towards the left thigh. The position is thus reduced to the first diagonal of the inferior strait, he replaces his hands as for this strait, and treats it exactly as for this first diagonal.

Second Diagonal.—The same as at the inferior strait, except that the head is less engaged.

Application of the Forceps.—The same as at the inferior strait, except that the branches, and the hand which conducts them, are to be carried further. We draw the head into the second diagonal of the inferior strait, in following the axis of the superior strait, and carrying the handle of the forceps towards the right thigh;

changing then the positions of the hand, we convert it into the first direct, and terminate the labour as in this position.

Third Diagonal.—The same as at the inferior strait.

Application of the Forceps.—As at the inferior strait, except that the instrument is to be carried within the womb. The obstetrician places himself behind it; and we draw the head into the third diagonal of the inferior strait; we rotate it, and then terminate it in the second direct position of that strait.

Fourth Diagonal.—The same as at the inferior strait.

Application of the Forceps.—The same as at the corresponding position of the inferior strait. Once the instrument applied, the operator places himself behind it; we draw the head into the fourth diagonal of the inferior strait, and treat it exactly as in that position.

1. If the occiput corresponds directly to the left side of the pelvis, and the forehead to the right, it is treated as in the first and third diagonals, except that the first branch ought to be placed under the pubis, and the second in the hollow of the sacrum, by rotating the head, we bring the occiput under the pubis, and the face into the sacrum.

2. If the occiput corresponds directly to the right side of the pelvis, and the forehead to the left, it is treated as in the second and fourth diagonals, except that the branches should be applied as in the preceding position, one before and the other behind. The occiput is then brought under the pubis, and the face in the hollow of the sacrum.

Impaction of the Head at the superior strait—Vertex presenting.—Authors admit generally *two species of impaction* of the head at the superior strait of the pelvis.

In the first species.—The antero-posterior diameter of the superior strait has four inches in extent, and the head of the foetus is impacted by its occipito-frontal diameter.

In the second species.—The antero-posterior diameter of the superior strait has less than three inches and a half in extent, and the head of the foetus is impacted by its bi-parietal diameter.

First Species. Impaction of the head according to its length.—The head of the foetus, according to its length, may be impacted in two different positions.

First Position.—The occiput corresponds to the pubis, and the forehead to the sacrum.

Second Position.—The occiput corresponds to the sacrum, and the forehead to the pubis.

Indications to fulfil.—We must return the head which is always possible in these positions, and place it in diagonal. These positions may be rectified with the hand, forceps or lever, the forehead or occiput being turned towards either sacro-iliac symphysis.

Application of the Forceps.—The forceps, in these two positions, ought to be applied exactly in the same manner as in the first and second direct of the vertex at the superior strait, except that the branches ought to be passed a little less deeply. The obstetrician, placed to the right or to the left of the instrument, will return the head, giving it slight lateral movements, and will draw it into a diagonal of the superior strait, to treat it exactly as in that position.

Second Species. Impaction of the head according to its thickness.—The head may be impacted, according to its thickness, in two different positions.

First Position.—The occiput corresponds directly to the left side of the pelvis, and the forehead to the right side.

Second Position.—The occiput corresponds with the right side of the pelvis, the forehead with the left side. These are of very rare occurrence.

Indications to fulfil.—1. If the infant is dead, it is better to open its cranium, in order to diminish its volume, and to extract it then by means of hooks.

2. If the child is living, we must extract it by means of the forceps. But on what part of the head are we to apply the branches? In the occipito-iliac positions at the brim, the sacro-vertebral angle, or promontory of the sacrum with the coccyx and perinæum will not permit the application of the instrument over the ears, and it would be almost impossible to use it in the axis of the superior strait.

M. Capuron, convinced that we can always return the head, rejects the application of the forceps on the face and occiput, as generally recommended, and advises in all cases to return it, and then to apply the branches on the lateral regions. He thinks that the instrument adds very little to the thickness of the head, which besides suffers a sufficient reduction for it to be afterwards possible to draw it into the cavity of the pelvis.

If we can return the head above the superior strait, we think

with M. Capuron, that we ought to apply the branches of the forceps on the lateral regions of the head, and we should attend for their introduction to the relations of the occiput with the pelvis. If it corresponds to the left we introduce the branches as for the first and third diagonals. If to the right, it is to be treated as the second and fourth diagonals. But if it should happen that we cannot return the head above the superior strait, we think, with the Professor Baudelocque, that we ought to place one of the branches on the face, and the other on the occiput.

We follow, for the application of the forceps, the rules already laid down, on the occasions of the direct positions. We draw the head into the cavity of the pelvis, in following the axis of the superior strait, and we replace then the branches on the lateral regions of the head.

In order to simplify as much as possible this second application of the forceps it is necessary to withdraw from the parts that branch only, which according to the relations of the occiput, ought to be applied behind: it being understood that for the replacing the branches, the rules laid down for the transverse positions are to be followed.

Positions of the face.—The face of the fœtus can take six principal positions at the inferior and superior straits of the pelvis. Of these six positions, two are direct, the other four are diagonal.

Indications to fulfil.—The positions of the face present two indications to fulfil; the one consists in returning the infant to bring it down by the feet; the other in rectifying the head.

If the changing of the infant is possible, we would treat it as in the positions of the vertex; and in the contrary case, we must endeavour to bring the occiput, in order that the head may present by one extremity of its greatest diameter. We can rectify the occiput by the help of the hand only, as I have described when on the anterior region of the trunk.

It can be rectified by means of a lever, as I shall shew when treating of the application of that instrument.

When we have rectified the head by one or other of these means, we abandon the labour to nature, unless any accident should oblige us to have recourse to the forceps, which ought then to be applied as in the positions of the vertex. But it may happen that the occiput cannot be lowered either by the hand alone, or by

the lever: then we must have recourse to the forceps. In all these cases the chin should be depressed on the chest if possible.

Positions of the Face at the inferior strait. First direct Position.—The forehead corresponds to the symphysis pubis, and the chin to the curve of the sacrum.

Application of the Forceps.—We introduce the branches, observing the rules prescribed for the direct positions; but here the head can be seized only in its occipito-frontal diameter. Once the forceps applied, the handle is seized with one hand, and the occiput lowered, whilst with the other hand placed beneath the branches, we return the face into the interior of the pelvis. When we have rectified the head, we separate the branches without disarticulating them, and we pass them into the direction of the occipito-mental diameter, by raising the handle of the instrument: we terminate then as in the first direct of the vertex.

Second direct Position.—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 seize at once the head in its occipito-mental diameter, by keeping the handle of the instrument much elevated, it would be quite useless to endeavour to bring down the occiput, since the chin can be first disengaged.

The obstetrician will place himself to the right or to the left of the forceps, disposing of his hands, as has been already directed for the inferior strait. Then giving lateral movements to the head, he will first lower the handle of the instrument to disengage the chin from beneath the pubis; after which he will turn it back on the abdomen of the mother, in order to disengage the occiput which is behind.

First Diagonal.—The forehead corresponds to the left cotyloid cavity, and the chin to the right sacro-iliac symphysis.

Application of the Forceps.—The face being placed in diagonal, the two branches of the forceps ought to be introduced according to the rules established for such positions. But here, as in the first direct, the head can be seized only in its occipito-frontal diameter: then the obstetrician, after having brought the face into the first direct, ought to treat it as such a position.

Second Diagonal.—The forehead corresponds to the right cotyloid cavity, and the chin to the left sacro-iliac symphysis.

Application of the Forceps.—Exactly the same as in the se-

cond diagonal of the vertex ; except the head, as in the preceding position, can be seized only in the occipito-frontal diameter. The obstetrician, placed behind the instrument, will bring the face into the first direct, and will treat it as such a position.

Third Diagonal.—The forehead corresponds with the right sacro-iliac symphysis, and the chin to the left cotyloid cavity.

Application of the Forceps.—The branches of the instruments ought to be applied according to the rules for the first diagonal : but here the head can be seized in the occipito-mental diameter, and to do this, it is sufficient to keep the handle well raised. The obstetrician, placed behind the instrument, will bring the face into the second direct, and terminate as in that position.

Fourth Diagonal. Principal Relations.—The forehead is directed towards the left sacro-iliac symphysis, and the chin to the right cotyloid cavity.

Application of the Forceps.—The same as in the second diagonal : except that the head can be seized in its occipito-mental diameter.

The obstetrician, placed behind the instrument, will bring the face into the second direct, and terminate as in that position.

1. If the forehead corresponds directly to the left side of the pelvis, and the chin to the right, it is treated as in the first and third diagonals.

2. If the forehead corresponds directly to the right of the pelvis and the chin to the left, it is treated as in the second and fourth diagonals.

Positions of the Face at the Superior Strait.—The face presents at the superior strait, in the same positions as in the inferior.

The relations of the head with the pelvis being exactly the same as at the inferior strait, except that the parts are less engaged, we do not think it necessary to repeat them at each position.

First direct Position. Application of the Forceps.—The same exactly as in the corresponding position of the vertex. Here, as at the inferior strait, the head can only be seized in its occipito-frontal diameter. The obstetrician, placed at the right or left of the instrument, will return the head a little above the superior strait, and change the position into the first or second diagonal of this strait. He will treat it then, as we shall speedily indicate, when speaking of these positions.

Second direct Position. Application of the Forceps.—The

same as in the corresponding position of the vertex. Here the head can perhaps be seized in its occipito-mental diameter. We return it a little above the superior strait, and change it into the third or fourth diagonal, to be treated as such.

First and Second Diagonals. Application of the Forceps.—The same as in the corresponding positions of the inferior strait; except that the branches and the hand which conducts them, ought to be passed deeper. Once the instrument applied, we draw the face into the first or second diagonal of the inferior strait, inclining the forceps towards the corresponding thigh, and it is treated exactly as in that position.

Third and Fourth Diagonals. Application of the Forceps.—The same as in the corresponding positions of the inferior strait; except that the branches are carried further. When the forceps are applied, we draw the face in the inferior strait, and terminate exactly as in the positions of this strait.

1. If the forehead corresponds directly to the right, or the left of the pelvis, we apply the forceps, and terminate exactly as in the corresponding positions of the inferior strait, after having drawn the head into the cavity.

Application of the Forceps, the trunk being external.—The head, after the birth of the trunk, may be stopped at the superior or the inferior strait of the pelvis. It may take at either strait, six principal positions; namely, 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; except that instead of the occiput, it is the chin which presents first. The forceps ought to be applied according to the same rules, since the positions are alike. These positions can in general be rectified by the hands.

Positions of the Head at the inferior Strait, the Body being born. First direct.—The occiput corresponds to the arch of the pubis: the face is in the cavity of the sacrum.

Application of the Forceps.—An assistant raises the body and arms of the fœtus. During this time, the obstetrician introduces the branches of the forceps beneath, in order to seize the head in the direction of its length. When the instrument is articulated, he gives it lateral movements, and terminates the disengaging the head, by turning back the handle of the forceps on the abdomen

of the mother. In this last part of labour one of the hands ought always to support the perinæum.

Second direct Position.—The occiput is in the cavity of the sacrum, and the forehead under the arch of the pubis.

Application of the Forceps.—In this position, we must apply the forceps above, in order to seize the head in its occipito-mental diameter. An assistant supports the body of the fœtus. When the instrument is applied, the obstetrician supports strongly the perinæum with one hand, and with the other he lowers the handle of the forceps, to disengage the face from beneath the pubis.

First Diagonal.—The occiput corresponds to the left cotyloid cavity, and the forehead to the right sacro-iliac symphysis.

Application of the Forceps.—The branches ought to be placed below the fœtus, which an assistant keeps raised. We then bring the head into the first direct, and terminate as in that position.

Second Diagonal.—The occiput corresponds to the right cotyloid cavity, and the forehead to the left sacro-iliac symphysis.

Application of the Forceps.—We must introduce the branches beneath the fœtus, and change it into the first direct, and terminate as in that position.

Third Diagonal.—The occiput corresponds to the right sacro-iliac symphysis, and the forehead to the left cotyloid cavity.

Application of the Forceps.—In this position we must introduce the branches above the fœtus, in order to seize the head in the direction of its length. We then rotate it, which brings the face under the pubis, and the occiput in the cavity of the sacrum, and we terminate as in the second direct. If we find too much difficulty in introducing the branches above the fœtus, we must introduce them below, and treat it, as we shall speedily direct, when speaking of the same positions at the superior strait.

Fourth Diagonal.—The occiput corresponds to the left sacro-iliac symphysis, and the forehead to the right cotyloid cavity.

Application of the Forceps.—We ought here to apply the forceps above the fœtus, in order to seize the head in its occipito-mental diameter. We then rotate it, and terminate it as in the second direct.

If we find too much difficulty in introducing the forceps above the fœtus, we must introduce it beneath.

1. If the occiput corresponds directly to the left of the pelvis,

and the forehead to the right, we would treat it in regard to the application of the forceps, as in the first and third diagonals.

2. If the head is in an inverse position, we should conduct it as in the second and fourth diagonals.

Positions at the Superior Strait.—The relations of the head of the fœtus being the same as at the inferior strait, except that it is less engaged, we shall not repeat them at each position.

First direct Position. Application of the Forceps.—The branches ought to be introduced below the fœtus, which an assistant raises. When the forceps is applied, we return the head above the superior strait; we change it into the first or second diagonal, according as we place ourselves to the right or left of the instrument; we draw the head to the inferior strait, and terminate as in the position of that strait.

Second direct Position. Application of the Forceps.—Here, although the face is forwards, we must apply the branches below the fœtus. In this manner the head is seized in its occipito-frontal diameter. We return it above the superior brim, and change position into the third or fourth diagonal. We draw the head to the inferior strait; we rotate it, and bring it thus to the second direct. But the head is badly seized for it to pass the inferior strait; we must then, unless the pelvis is very large, or the head small, disarticulate the forceps, without withdrawing them from the parts, raise the right branch, lower the left, and make the body of the fœtus to pass between them. We rearticulate the instrument in front of it, and by this manœuvre, the head is found seized in the direction of its occipito-mental diameter. We terminate the labour then as in the second direct position.

First and second Diagonals. 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 carried further. The obstetrician places himself behind the instrument, and draws the head to the inferior strait, carrying the handle of the forceps to the corresponding thigh. He then rotates the head, and terminates the labour, as in the first direct of the inferior strait.

Third and fourth Diagonals. Application of the Forceps.—Here it is indispensable to place the branches beneath the fœtus. We draw the head to the inferior strait, carrying the handle of the

forceps towards the corresponding thigh, and we rotate, which brings the face under the pubis, and the occiput to the cavity of the sacrum. We disarticulate the forceps then, without withdrawing it from the parts, we pass the foetus between the branches, and we rearticulate the instrument above. The head is seized in the direction of the length, and we terminate the rest of the labour as the second direct of the inferior strait.

1. If the occiput corresponds directly to the left or the right side of the pelvis, we apply the forceps, and terminate it exactly as in the corresponding positions of the inferior strait, after having drawn the head into the cavity.

Review of the different Applications of the Forceps.—In whatever manner the head presents, whether it be by its vertex, by its face, or by its base; whether it be stopped at the inferior or superior strait, the application of the forceps is always performed according to the same rules. To be properly placed, the instrument ought to seize the head laterally, and in the direction of its length, so that the occiput and chin be extracted first.

Positions of the inferior Strait. Direct Positions.—In all the direct positions of the inferior strait, whatever part of the head presents, we place first the left branch with the left hand, and then the right branch with the right hand. Dr. Hamilton recommends the right hand blade, and Professor Velpeau and other French writers the left hand blade. This difference is accounted for, by some designating the blades right and left, according to the position of the handles; and others according to the positions of the blades in the pelvis. We articulate the instrument, the joint of which ought to correspond to the centre of the vulva, and we place ourselves indifferently to the right or the left. Then seizing the forceps with the two hands, placed one below the handle, the other above the branches near the genitals, we move the head laterally, and disengage it by turning over the instrument on the abdomen of the mother, if the face is beneath; and in lowering it powerfully if it is above. The hand which is near the genitals ought to be carried in front of the perinæum, when the head is on the point of escaping.

Diagonal Positions.—In all the diagonal positions of the inferior strait whatever part of the head presents, we are guided, for the application of the forceps, by the relation of the occiput or forehead with the cotyloid cavities of the pelvis.

Each time that the occiput or forehead corresponds to the left cotyloid cavity, we introduce the two branches with the right hand, beginning with the right branch.

Each time, on the contrary, that the occiput or the forehead corresponds with the right cotyloid cavity, we introduce the two branches with the left hand, beginning with the left branch. We articulate the instrument, and we place ourselves constantly behind it. Seizing then the forceps with the two hands, placed one under the handle, and the other above the branches, near the genitals, we rotate the head, and terminate as in the first or second direct, according to whether the occiput or the forehead is brought under the arch of the pubis.

1. If the occiput corresponds directly to the left side of the pelvis, we treat it as in the first diagonal.

2. If to the right side of the pelvis, we treat it as the second diagonal.

Positions of the Superior Strait. Direct Position.—In all the direct positions of the superior strait, whatever part of the head presents, we apply the forceps as at the inferior strait; except that the branches, and the hand which conducts them, are passed deeper. The instrument being applied, we seize it with the two hands, placed one above the handle, and the other below the branches, the index extended as far as the head; we return this back, giving it slight lateral movements, and replace it in the diagonal of the superior strait. That being done, we draw it into a diagonal of the inferior strait, inclining the handle of the forceps towards the corresponding thigh, and we treat it then as in the positions of this strait.

Diagonal Positions.—In all the diagonals of the superior strait, whatever part of the head presents, we introduce the forceps in the same manner as at the inferior strait, except that the branches, and the hand which conducts them, ought to be carried farther. The instrument being articulated, we place ourselves behind it, and we seize it with the two hands, applied one above the handle, the other below the branches; the index extended in the parts. We draw the head into a diagonal of the inferior strait, and terminate them as in the positions of this strait.

1. If the occiput corresponds directly to the left side of the pelvis, we treat it as in the first diagonal.

2. If to the right of the pelvis, we treat it as in the second diagonal.

If the head is separated from the trunk, it may be extracted by the forceps-lever; or craniotomy may be performed. This occurrence seldom happens at present. Velpeau is of opinion, that the forceps should never be applied to the pelvis in breech cases, as it must contuse the abdominal viscera, and kill the infant. British writers consider the practice safe and valuable, and I think very justly. In France, Germany, Italy, and America, the woman is placed on the back, the inferior extremities flexed, and separated, the soles of the feet being on the bed; and therefore there is no necessity for a joint or screw in one of the handles of the forceps; there is neither in the French, German, nor American forceps. In this country it is said, that the back is an indelicate position; but in my own practice I have never known a patient for whom the forceps was required, make the slightest objection on this point. When placed on the left side, the right limb must be supported, and often is allowed to approximate the other, to the great annoyance of the operator. Again, the bed may be so placed that if the woman is to be placed on the side, it must be on the right, so that the other blade should have a screw or joint; but I repeat, if the woman is placed on the back, near the edge or foot of the bed, neither is necessary.

Of the Lever or Vectis.—Obstetricians designate by this name, an instrument intended by its inventors to act as a lever on the head of the fœtus, and to oblige it to descend across the canal of the pelvis and genital organs. The origin of this instrument is yet very obscure. Its invention is most commonly attributed to Roonhuysen, Herbiniaux, Denman, and Bruyn, a Dutch physician preferred it to the forceps; but at present the latter is the general favourite. The lever at present used resembles very much a branch of the forceps, not curved at the borders.

One of the extremities, which is called the branch, is constituted as that of the forceps, by two cheeks separated from one another by a long opening. These two cheeks are curved on their surfaces, so as to present on one side a concavity to accommodate the convexity of the head of the fœtus, and on the other a convexity to accommodate itself to the concavity of the pelvis. The other extremity of the lever is furnished with a piece of wood, and constitutes the handle of the instrument. Dr. Davis, of the Uni-

versity, who has modified obstetric instruments to a great degree, has proposed a new lever; but that of Lowder is, I believe, generally employed.

One of the branches of the forceps may very well replace the lever; nevertheless, as M. Desormeaux has judiciously observed, the lever, properly so called, is preferable when it is necessary to make direct traction on the occiput.

If we use a branch of the forceps in the diagonal position, we must use the right branch when the occiput is to the right of the pelvis, and the left branch when to the left. In the direct positions we may use either: in all cases, that which is used ought to be introduced by the corresponding hand.

Use of the Lever.—The use of the lever is employed chiefly to rectify the occiput, and to exercise direct traction on it to bring it to the centre of the pelvis, when it is turned on the back of the infant, as it happens in the positions of the face. The lever can be applied at the superior and inferior straits. It may be applied on the occiput, temple, forehead, mastoid process and chin. Its use is to depress the head at the superior strait, which is better done by the forceps or hand; and to extract it from the cavity, which it will frequently do better than the forceps. It is a useless instrument when there are no labour pains, and in the hands of the inexperienced may do great injury to the parent and infant. Dr. Hamilton says, “it should be only employed in certain cases where there is a slight degree of narrowness at the brim of the pelvis, or where the face of the infant is foremost.” (Outlines of Midwifery, 1826.)

Positions of the Face at the inferior Strait. First direct Position.—The occiput, turned back, corresponds to the pubis.

Application of the Lever.—One of the hands being introduced into the vagina we pass the lever on the side of the head, and then bring it with the fingers on the occiput, lowering strongly the handle of the instrument. Once the lever applied, we raise the handle, and seize it with one hand, whilst we place the other above near the pubis. With the first we draw to ourselves, in lowering: with the second, we press strongly the head from before backwards.

If we do not succeed in this manner in rectifying the occiput, we must, at the same time that we are acting on the lever, push the face backwards with some of the fingers of the hand placed

near the pubis. Once this see-saw motion performed, the labour will terminate commonly by itself, or else we may have recourse to the forceps, if circumstances require it.

Second Direct.—The occiput corresponds to the sacrum.

Application of the Lever.—In this position, we glide the lever in front of the sacrum, and as far as above the occiput; and when we are certain it is properly placed, we seize it near the perinæum with one of the hands, and with the other we draw on its extremity, raising it by degrees. If we find much difficulty in bringing down the occiput, we ought to assist the see-saw motion by pushing back the face with some fingers of the hand placed near the parts.

In this position it is preferable to employ the forceps, since we can at once seize the head in the direction of its length, and bring out the chin first.

First and Second Diagonals.—In the first the reversed occiput corresponds to the left cotyloid cavity; in the second to the right.

Application of the Lever.—One of the hands being introduced in the parts, we glide the lever on the side of the head, and bring it then behind the occiput, which is lowered as in the first direct. Once the head rectified, we abandon the labour to nature, or else we apply the forceps, if necessary.

Third and Fourth Diagonals.—In the first case, the reversed occiput corresponds to the right sacro-iliac symphysis, and in the second, to the left.

Application of the Lever.—In these positions we introduce the lever, and we treat it exactly as in the second direct.

In these two last positions, the forceps is preferable to the lever, since we can seize the head in its occipito-mental diameter, and disengage the chin first.

1. If the reversed occiput corresponds directly to the right or the left of the pelvis, we treat it as in the third or fourth diagonals.

Positions at the superior Strait. • *First and Second Direct.*—The same relations as at the inferior strait; but less engaged.

Application of the Lever.—Exactly as at the inferior strait: except that, as we lower the occiput, we must endeavor to bring the head to a diagonal.

Diagonals.—Same relations as at the inferior strait, except that the head is less engaged.

Application of the Lever.—To be treated exactly as at the inferior strait.

1. If the occiput corresponds directly to the right or the left of the pelvis, we treat it as in the third or fourth diagonals.

The lever is less useful at the superior strait than at the inferior, and many obstetricians prefer the forceps.

Of the Blunt Hooks.—The blunt hooks used for the extraction of the fœtus have not all the same shape; some represent a curve more or less open; others form with the principal branch of the instrument almost a right angle.

The handle is commonly made of wood.

The two blunt hooks at the end of the French or American forceps will serve instead of these.

Use of the Blunt Hooks.—The hook, bent at an acute angle, is destined to be applied in the hollow of the arm-pit, when the shoulders being retained in the pelvis, and the fingers cannot extract it. It will also serve to extract the knees at the inferior strait; and it may be applied in the mouth to finish the extraction of the head, after turning a dead child.

The rectangular hook is destined solely for the bend of the hip, in the breech positions at the inferior strait.* M. Desormeaux thinks that the finger will frequently serve instead of the blunt hook.

Introduction of the Blunt Hook.—There are not any determined rules for its introduction: the only precaution necessary is to precede it with the finger, in order to know well the disposition of the place we intend to apply it to. Once introduced, if it embraces a limb, it ought to be seized by the hand corresponding to that limb; and in extracting the fœtus, we ought to take care to direct it in the different axes of the pelvis.

Fillets.—Bands were used from the time of Hippocrates until the invention of the forceps to effect the extraction of the infant. They were composed of silk, cotton, linen, leather, and strengthened by the addition of cane, whalebone, wire, or thin plates of iron, variously braided and worked together. They were applied over the head, chin and hips of the infant in breech cases; but are now completely superseded by the forceps, blunt hook, and operation of version. A ribbon or tape is sometimes applied on the arm and leg when either presents, especially by the French; but seldom if ever in these kingdoms.

Every part of the pelvis may be attacked with exostosis, with mollities ossium, or softening of the bones, or may be fractured. Every part has been occasionally fractured, and driven into the cavity; and of course lessening its dimensions. The deformities may be slight, or so great, as to prevent the passage of the infant in the natural manner. This is called *impracticable*, or *instrumental labour*; and the question is, how is delivery to be effected? If the deformity admit the passage of the body of the infant, when divided into different parts, it has been proposed and adopted, especially in this country, to open the head of the infant, evacuate the brain, break the skull to pieces, open and evacuate the thorax and abdomen, and bring away the body in different parts; and this operation is called *craniotomy*, *cephalotomy* and *embryotomy*. Others open the abdomen of the parent, cut through the womb, and extract the infant; and this is called the Cæsarian section, or *gastro-hysterotomy*, *gastro-hysterotomy*. Again, it has been proposed to incise the symphysis pubis, which is called the Sigaultian operation, after Sigault, who first practised it, or more properly *Symphyseotomy*.

It is an established obstetric rule, that no woman should die undelivered, and that attempts must be made to save her and her infant, or to save the one at the destruction of the other. The last question, whether it was lawful to destroy one life to save the other? was submitted to the doctors of theology at the Sorbonne at Paris, in the year 1648, who answered, that in this case, neither ought to be destroyed, nor assisted; and their decision was as follows:—

“Nous sous signes, Docteurs, en théologie de la faculté de Paris, sommes d’avis que si l’on ne peut tirer l’enfant sans le tuer, l’on ne peut sans péché mortel le tirer; et qu’en ce cas là, il faut tenir à la maxime de St. Ambroise, ‘*si alteri subveniri non potest nisi alter lædatur, commodius est neutrum juvare.*’ Délibéré à Paris le 24 April, 1648.” This is the doctrine of the Roman Catholic church at present. Another great objection to embryotomy was, that the infant would be lost without baptism. It was contended by Thomas Aquinas, that the infant could not be baptized in the womb, for, according to Scripture, it should be first born, that is, it should be *natus* before it could be *renatus*, by baptism. This difficulty was over-ruled by the Sorbonne doctors in 1773, who declared that baptism was valid, if the water touched any part of the

infant's coverings. They said, "*dummodo infans sit vivus, et arte seu industria medicorum possit aqua ad ejus corpus immediate pervenire*" It remains as yet undecided, whether the outer surface of the membrane, which encloses the waters and infant, belongs to the uterus, as it is firmly attached to it, or the fœtus. The decision of the Sorbonne removed one objection to embryotomy, but admitted the former. In this country, the obstetricians are generally in favour of embryotomy, whether the child be alive or not, as the more valuable life of the mother, they contend, ought to be preserved. It is said, "the tree should be preferred to the fruit." The French, German and American accoucheurs are in favour of the Cæsarian operation. It has been performed nearly forty times in the British dominions, and only two women recovered; twelve infants were extracted alive, four of whom lived. Barlow's Essay, 1822; Conquest's Outlines, 1826. The writer in the London Encyclopædia has fallen into a mistake, when he asserts that the operation was performed only in twenty-two cases in this empire. Mr. Barlow's patient was a strong, healthy country woman, whose pelvis had been crushed by a waggon rolling over it. She recovered, and became pregnant, and the Cæsarean operation was resorted to with success, for the woman was attending her usual pursuits in three weeks afterwards. The only other successful case on record in the United Kingdom is that performed by an illiterate Irish midwife, named Mary Dunnally, who operated with a razor extracted the infant, and held the wound, while a messenger was dispatched a mile distant for some silk and tailor's needles, with which she sewed up the wound, and then smeared it with whites of eggs. The woman recovered in twenty-seven days. This case occurred at Charlemont, near Dungannon, county of Tyrone, and was seen by Dr. King and Mr. Stewart, who gave an account of it in the Edinburgh Medical Essays, vol. 1.

In all the British cases, the operation has not been resorted to until every other method has been tried in vain—the strength of the patients had been worn out, and hence the want of success. On the Continent of Europe, the operation is performed at an early period, before the exhaustion of the constitution; hence recovery is so common. In this country, the operation has not been performed, unless in cases of the greatest deformity of the pelvis; in which, the embryotomy could not afford relief: in France and Germany, it has been performed on subjects who afterwards bore

living children by the vagina. In this country, the women invariably laboured under mollities ossium, and were bad constitutions, except Mr. Barlow's case; whereas, those on the Continent were healthy. This accounts for the difference of success, together with the early performance of the operation.

Osborne maintained, that if the brim of the pelvis was one inch and a half at the superior strait, as in Elizabeth Sherwood's case, the operation of embryotomy was practicable. The practicability of the operation in this case is denied by Hamilton, Burns, Dewees, and many others. The patient died in the country, so that the exact dimensions of the pelvis were not ascertained. Any man, who has performed embryotomy must admit, that he could not do so, in a pelvis of such contracted dimensions. Osborne has not stated how he extracted the base of the skull or body of the infant. Dewees most truly observes that embryotomy, even in a case less deformed, is as fatal to the woman as the Cæsarean operation. This must appear obvious, when we consider the pressure which is made on the soft parts in the pelvis, during the operation. The vagina, bladder, rectum, and muscles lining the pelvis, become inflamed and gangrenous, in consequence of the pressure of instruments; and these states have been often observed after death.

It is also a strong objection that we have no certain and positive signs indicative of the death of the child; and hence the European and American authors hold that the sacrifice of the infant is murder; and that in case of extreme deformity, its mutilation will not save the mother. On the whole, the most respectable and eminent of the foreign writers are unanimous in preferring gastro-hysterotomy to embryotomy. They contend, that if the former operation was performed at an early period, the woman's life would not be so much endangered as by the latter. Mr. Lizars, the eminent surgeon of Edinburgh, has frequently performed gastro-tomy with success, and the wound in the abdomen healed by the first intention (see p. 339.) Hull informs us, in a note in his translation of Baudelocque's work, that out of two hundred and thirty-one women, operated on by gastro-hysterotomy in this and foreign countries, one hundred and thirty-nine recovered; and the recent reports of the German practitioners are still more favourable. Denman observed, that in cases where the infant should be invariably destroyed, a question ought to arise, whether a woman

who was warned of this, again becoming pregnant, ought to be relieved by embryotomy. He, as well as Burns, Hull, and Dewees, are advocates for gastro-hysterotomy, while others despise the "silly theological discussions, concerning the question of saving the life of the mother or infant," and agree as to the destruction of the latter. Henry the Eighth was asked this question before the birth of his son Edward; and with that barbarity and cruelty, for which he was so remarkably distinguished, he exclaimed in a rage, "save the infant, for it is easier to get wives than children." The operation was performed on the mother, to whom it proved fatal. The same question was put to Bonaparte, by Dubois, before the birth of his son, and he answered the terrified accoucheur, "treat the Empress as you would a shopkeeper's wife, in the Rue St. Martin; but if one life must be lost, by all means save the mother." Both were saved.—O'Meara's St. Helena.

Four methods have been proposed to relieve the women under such circumstances—Cæsarean section, or *gastro-hysterotomy*, *embryotomy*, *symphyseotomy*; the *induction of premature labour after the seventh month*, and preventing the growth of the infant, by diminishing the food of the mother. Hysterotomy, embryotomy, and the induction of premature labour, are those now employed. Hamilton had performed the last operation twenty-seven times, to the year 1819, and saved twenty-three infants. The operation is not to be performed until after the seventh month, and is a simple one. It is performed as follows, and lest the directions be improperly applied, I shall give them in one of the learned languages:—*Circa orificium uteri seperantur membranæ digitis ad pollicis spatium, ac si non accideret partus post tres dies, dein aperiantur more solito, instrumento aliquo acuto, membranæ.* The patient is to be managed as during natural parturition.

Cæsarian Operation, hysterotomy, hysterotomotomie, gastro-hysterotomy.

The injuries which arise from transverse, or unnatural presentations, or from deformities, are inflammation and its consequences. Hippocrates seems to have been aware of the evil consequences, and accordingly he advised the pelvis of the woman to be raised, that the child might fall back into the fundus uteri, where it would have room to turn itself. *De Morb. Mulier. L. I.* Since his time, the women were taken out of bed and shaken in various di-

rections, by two or more strong men ; or the presenting part was pushed back, and the operator endeavoured to bring down the head, until Parè, in the sixteenth century, introduced the operation of turning. Moschion, an early writer, left us on account of the practice in his time ; he says, "*alii ad scalas ligabant, et sic pendere jubebant, alii infinitum deambulare et salire cogeant, aliis scalas ascendere, alii autem, manibus subaxillis missis, à terra sublevabant et diutius exagitabant.*" Some tied them to ladders, and allowed them to hang thus ; others obliged them to walk and dance incessantly ; while they raised others off the ground by the hands being placed under the axillæ, and shook continually. Hippocrates was perhaps only called to cases where the head had been left in the womb, and hence he compared it to an olive in the neck of a bottle ; he speaks of instruments, however, for extracting the fœtus. He speaks of opening the head with a small sword, the bones to be broken with the pincers or forceps, and a hook passed under the clavicle, to extract the infant ; here we perceive the enumeration of the pincers or forceps, and the blunt hook. Op. Om, a Fæsiø. De Morb. Mulier, L. I. p. 618. Celsus also speaks of the hook, B. 7. c. 29. But let us advert to the more immediate consequences of difficult or laborious labours. First, of these we are to expect exhaustion, which if too long continued, will end in death. Secondly, we are to expect inflammation and its consequences, suppuration, and sloughing. These are not imaginary, but real evils ; or we may expect rupture of the womb or vagina, transversely or longitudinally ; the infant and its secundines may pass through the laceration into the abdomen, or the bowels may pass through the opening into the womb. When rupture of the uterus is about to occur, the woman exclaims : "she feels something giving away within her, or the cramp ! the cramp !" The laceration may be accompanied by a noise audible to the bystanders. The pain then usually diminishes, the uterine tumour becomes irregular, and the feet can be felt in the abdomen. Again, if the forehead be to the sacrum, and forced down in this manner, the bladder, the cervix uteri, the vagina, and the rectum will be pressed or inflamed, and sloughing the consequence. If the head is in the short diameter, the bladder and rectum will be pressed on and obstructed, and both may be ruptured, or considerably obstructed. The bladder has been ruptured at the fundus, opening into the abdomen in front, posteriorly opening into the vagina at

its neck ; and the urethra has been inflamed from pressure. The bladder may be distended with urine to a large size , and here a difficulty will be experienced in passing the common catheter. Dr. Ramsbotham proposed the flat catheter in this case, a most important suggestion. The head can be passed up a little, when the pain is off, so that the instrument can be applied ; if not, the delivery must be speedily effected. We should allow little drink in such cases ; but promote perspiration. I have known the bladder lacerated, and a piece as large as a crown come away ; yet the part healed without any treatment. In this and sloughing, the constant use of a catheter and sponge give relief, as proved by Cuming, of Glasgow, and Hobart, of Cork, and I also have used them. Mr. Holmes has proposed the introduction of a gum-elastic bottle into the vagina ; but this cannot be always employed, as appears by the relation of a case which recently fell under my care. (See p. 178.) Dr. Blundell thinks that when the bladder opens into the abdomen, the cavity might be washed out, and a ligature applied on the organ ; operations that succeed on animals. It will be perceived from these remarks, that in difficult labours, both inflammation, suppuration, sloughing, and laceration of various kinds, are to be dreaded. The whole cavities of the body may be seriously affected by difficult labours. The constant forcing down will interrupt the respiration, or breathing and circulation, so that apoplexy, convulsions, epilepsy, epistaxis, emphysema of the neck and face, copious hæmoptysis and rupture of the heart may occur ; cases of which are on record. Thus the patient is exposed to most fatal diseases. In full habits, bleeding from the arm will be often useful. A few words may be devoted to the history of this formidable operation.

It is impossible to determine the period in which the Cæsarean operation was first performed. It will appear in the course of this section, that it was performed among the Jews, A. M. 140. It is of much earlier origin, according to fabulous historians. It was said, that the son of Jupiter was extracted from the abdomen of Semele, by Mercury. The ancient Romans held that Æsculapius was extracted in this way by Apollo. Virgil states, that Lycus was born in the same manner. Pliny was, perhaps, the first writer of authority upon this point. He says, "*Auspiciatus, enecta parente, gignuntur, sicut Scipio Africanus prior natus, primusque cæsus, cæso matris utero, dictus qua de causa cæsones appel-*

lati, simili modo natus est Manlius qui Carthaginum cum exercitu intravit." (lib. xxxiv.) It was believed that one of these persons took the name of Julius Cæsar, and hence the origin of the term under consideration. In fact, the history of this operation is very obscure. It appears certain, however, that it was performed twenty-four times with success from 1750 to 1800, according to Baudelocque. It was also successfully performed by Lauerjat, twice on the same woman by Bacqua, once by Le Maistre of Aix, once by Dariste at Martinique, once by Vonderfushr, in 1823 at Daplen, in 1827 at Florence, and once each by the following persons, Bulk, Graafe, Leutez, Buren, and twice by Skenck. The operation has been frequently performed unsuccessfully in these and other countries during the last few years. Baudelocque related sixty-three cases of this operation, in forty-two of which the women perished. Sprengel detailed two hundred and thirty-one cases, forty-five of which proved fatal; Kellie and Hull narrated one hundred and thirty-one cases, one hundred and twenty-three of which terminated fatally. The only successful cases in these kingdoms are one by Barlow, and one by an illiterate midwife, which is well authenticated, as already stated. There is now the strongest reason to think that incision of the abdominal parietes is by no means so fatal as hitherto supposed, as will appear by referring to diseases of the ovary, in a former page. The experiment of Dr. Blundell on animals confirms this position. The operation is necessary when the sacro-pubic diameter of the brim is reduced to an inch and a half, and even when this strait is not so much contracted, when we cannot succeed in extracting the infant by any other mode of proceeding. It should also be performed soon after the death of the woman in other cases, as the infant has been saved at the lapse of twelve, twenty-four, and forty-eight hours after the mother had expired.

The princess of Schwartzenberg died at Paris of a burn, and next day the infant was found alive. Gardien relates a similar case, in which the operation was not performed until forty-eight hours after death, and the child was living. Cangiamila states in his *Embryologia Sacra*, that twenty-one infants were saved in this way in forty-three years; and that the operation was performed twenty times at Syracuse in eighteen months. Numa Pompilius enacted a law which still exists, in a work entitled *Lege regia Diget.* lib. xx., which commanded the medical men to open the

bodies of pregnant women after death, with the intention of preserving the citizens of the state. The same law prevailed in Venice in 1608 and 1721, which punished medical men severely unless they used the same caution in operating on the dead as on the living woman. In 1749, the king of Sicily punished medical men with death who omitted the operation on women soon after they expired. The modern practice is to perform version if possible; and if impracticable, to resort to the former. I had once the misfortune to witness the death of a woman in the eighth month of pregnancy. I thought to deliver by the feet, immediately after death; but could not force the os uteri. Examples are detailed by Van Swieten, Baudelocque, Peu, and Rigaudaux, in which the abdomen was slightly divided, after it was supposed death had happened, which roused vitality and the woman recovered. We find mention made in historical works of persons who had been extracted from the womb after the mother's death.

This operation was first recorded at Venice, in 1491, by Nicolai de Falconiis. *Obs. Chirurg.* It was performed in 1424, according to Velpeau. Many obstetric writers allege that it was performed by Jacob Niefer, a Swiss peasant, on his own wife. K. Sprengel asserts that it was not performed on the living subject before the year 1610. *Geschichte der Chirurgie*, 1 Theil. Halle 1803. Deleurye, Levert, Mauriceau, and Mendel, deny that it was known to the ancients; but Joseph Plenck, Dionis, and Gardien, refer to the thirty-fourth Book of Pliny's Natural History, already quoted. Rousset, physician to Catharine de Medicis, and contemporary of Paré, collected a history of many cases performed on the living, to the year 1581 (*Traté de l'Hysterotomakie*.) Casper Bauhin translated this work into Latin in 1591, and added several other cases. The operation was strenuously opposed by Paré, Dionis, and Sacombe, in France. Dr. Mansfield, of Brunswick has published a most learned work, "On the Antiquity of Gastrotomy and Hysterotomy on the Living. *Weber das Alter des Bauch und Gebärmutter schnitts an Lebenden zu Brunschweig*, 1824," from which I shall make a few extracts. This erudite author and learned Hebrew scholar informs us, that in the Thalmud, or account of the laws of the ancient Jews, gastrotomy during life is mentioned, under the article on hereditary rights. He asserts that, in an earlier work called *Mischnajoth*, published about the

year 140, there is this passage: "In a twin-birth, neither the first child, which by the section of the belly is brought into the world, nor the one coming after, can attain the rights of heirship or the priestly office." In the Nidda, an appendix to the Thalmud, written in the fourth century, we have these words: "After the opening of the side, it is not necessary for women to observe the days of purification." Dr. M. has given several other passages, equally valuable which, confirm the performance of gastrotomy on the living. The operation has been performed in four different ways: 1. the lateral incision; 2. the incision in the linea alba; 3. the transverse; and, 4. the diagonal incision. Rousset first accurately described the lateral incision, which was to commence under the umbilicus, and continued downwards and outwards, parallel to the outer edge of the rectus, until the lower part of the incision is at the distance of three fingers breadth from the linea alba. Levert, Stein, and Millet, recommend that the incision should be made on the side on which the uterus projects, midway between a line drawn from the end of the last rib, where it joins its cartilage to the anterior superior spinous process of the ilium; so that the incision may be two inches in breadth from the linea alba. This was adopted on the Continent, during the greater part of the eighteenth century.

In 1721, Mauriceau recommended the linea alba to be divided, and was followed by Guenin and Platner; the former first performed the operation in France in 1750. Deleurye further supported this mode of operation in 1779. Henkel, a German, cut from the navel to the pubis, in 1769; a plan adopted at present. Osiander recommends the lower two thirds of the uterus to be divided. In 1788, Lauverjat cut transversely at either side, towards the spine; an operation also performed by Mr. Wood, of Manchester. (See London Medical and Physical Journal, vol. vi.)

Stein, professor of Midwifery at Morburg, and now at Bonn, made an incision, diagonally from the last false rib of one side, to the body of the pubis at the other; a plan which is not adopted at present. (See the account of it in his *Geburtshulfe*, Abtrondlung Moburg. 1803.) The operation in the linea alba is preferred in this country and on the Continents of Europe and America. It is a curious and unaccountable fact, that the operation was more successful formerly than of late years; even during the pe-

ried when it was performed laterally, having the disadvantage of situation, the danger of wounding the epigastric artery, and the unskilfulness of the operators. Klein collected an account of eighty-two cases, performed from 1500 to 1769, when the lateral operation was adopted, and six only proved fatal. Dr. Kellie published an account of the mortality of the operation in the *Edinburgh Medical and Surgical Journal*, 1809, vol. v., when out of two hundred and thirty-one cases one hundred and thirty-nine recovered. During 1825, it had been performed three times with success in Germany, by Schenck, Graafe, and Mende; and during the same year, three unfavourable cases are recorded in Siebold's *Journal*, and three in Mende's *Obstetric Journal*. A case is recorded in which the operation was twice performed successfully on the patient, in the *Russian Repertory of Natural Sciences and the Healing Art*, also in Siebold's *Journal*; and another, in which the operation was performed three times, by Osiander, in the *Commentations of the Royal Society of Sciences*, at *Gottingen*, 1813. Lounius, a French accoucheur, is said to have performed it seven times on the same person, and all the children lived. This is scarcely credible.

After all that has been said against the continental surgeons for performing the operation on women, who previously had borne children in the natural manner, there are but four such cases on record: one by Nægele, in his *Erfahrungen und Abhandlungen aus dem Gebiete des Krankheiten des weiblichen Geschlechts*; another, by Henderson, in the *Edinburgh Medical and Surgical Journal*, No. 66; a third, by Meier, in Siebold's *Journal*; and the fourth, in the same *Journal*, by Berger. Morand says, that the abdomen has been laid open by the Lydians. Barbette, of Amsterdam, cut through the abdomen, and disengaged a twisted intestine, in a case of volvulus. Bonetus and Schacht record similar cases. L'Aumonier, the chief surgeon at the hospital at Rouen, extracted a diseased ovary, about the year 1774. Smith, of Connecticut, lately extirpated another. Dr. Macdowal, of Kentucky, operated in three such cases, from 1809 to 1816; and Lizars, of Edinburgh, in 1823: the woman sat up fourteen days after the operation (*Edinburgh Medical and Surgical Journal*, 1824.)—"It appears to me," says Mr. L. "that there is little danger to apprehend in laying open the abdominal cavity, and that in diseased ovarium, extra-uterine conceptions, foetus in utero, with deformity

of the pelvis, preventing embryulcia (embryotomy), aneurism of the common iliac arteries, or of the aorta, volvulus, internal hernia, cancer of the uterus, and foreign bodies in the stomach threatening death; we should have recourse early to gastrotomy. The delay, in such cases, is more dangerous than the operation." (See p. 240.)—The most extraordinary case of Cæsarean operation on record, is one performed by a young negress on herself. This person, a servant, aged fourteen, went some distance from her residence, and was observed by her master covering something with snow, which proved to be a naked child; on being discovered, she ran towards the house, with something hanging from the abdomen. This was the body of an infant, the head being retained by the contraction of the womb, and also a large portion of intestines. Drs. Basset and M'Clellan were called on, and found a diagonal wound, as to the abdomen, two inches above the navel, and another towards the sternum. The lower part of the abdomen was found filled with blood, which was removed by change of position, the wounds stitched, and a bandage applied. The girl recovered. (New York Med. and Phys. Journ. March 1823.)—Dr. Mosely relates the case of a negro woman at Jamaica, who opened her side with a butcher's knife, and extracted a child, which died of a lock jaw. The woman recovered. Surely the result of these cases proves the operation not so unsuccessful or impracticable as the profession in this country have hitherto imagined. Two other successful cases, in which both women and children were saved, were operated on at the hospital at Maestricht, by M. Bosch. Both women were young, or in the prime of life. (Biblioth. Med. 1823.)

The operation was performed at Saltzburgh, but delayed a day, because it was doubtful whether the child was alive or not; a decision which made all the difference between the Cæsarean section and embryotomy. The motions of the child were perceived next day, when the former was determined on. The child was alive, but died after half an hour, and the woman recovered. Dr. Johnson, the able editor of the *Medico-Chirurgical Review*, remarks on this case, "we consider the above procedure on the part of the surgeon as well deserving of condign punishment, whether the woman survived or not. To perform the Cæsarean operation, in preference to embryotomy (where the latter is practicable) is most unwarrantable, and evinces a lamentable, not to

say a culpable want of judgment, as to the proper estimate of the value of human life." The French are deserving "of this condign punishment," as well as the Germans; for M. Duges, the last writer in 1830, asserts that the crotchet aigu, which is the same as the perforator, should not be employed until after the death of the infant, "nous avons dit, qu'on ne pouvait l'appliquer qu'après la mort certaine du fœtus; neu peut être appliqué que sur un enfant indubitablement mort." He asserts that the Cæsarean section is the only resource in the excessive deformities of the pelvis. The Americans, also, deserve this condign punishment. Dewees observes, "from an attentive consideration of both operations, the crotchet and Cæsarean section, we are free to confess ourselves in favour of the latter, and for the following reasons:—First, because the child must be destroyed by the crotchet; second, because the risks are very great to the woman; third, because there are cases in which it is impossible to deliver with the crotchet; fourth, because where this instrument is employed, there is a great risk to the mother, without a chance of benefit to the child. These remarks refer to cases where it is ascertained, or presumed that the child is living; if it be dead, then the crotchet may be used under a sufficient diameter of the pelvis. But if the child be dead, and the delivery impossible by the crotchet, the Cæsarean operation should be proposed." Par. 1472, p. 594. He further observes, "for what reprehension, what punishment would be sufficiently severe for that practitioner, who after having destroyed the child, should find it impossible to deliver it; and then, for its accomplishment, subject the poor woman to the Cæsarean section? He would scarcely merit the plea of *quo animo* in his favour." Par. 1479. As the English Law now stands, the destruction of the infant is a felony, even to save the life of the mother, (see p. 204); yet Dr. Johnson's opinion is the prevailing one in this country. "In this country and in France, however painful it may be to destroy the life of the child, the mischief is considered less serious in its consequences, than the destruction (or we ought, perhaps, rather to say) the probable destruction of the mother." *Lancet*, 1828, p. 328. Dr. Kind asserts, that in Germany, the expediency, as in this country, of destroying the child, is always left to the judgment of the medical attendant. *Op. Cit.* p. 415. The report of the Salzburg case cited above, is somewhat opposed to this assertion.

Gastro-hysterotomy—Cæsarean Operation.

Definition.—The Cæsarean section is an incision made in the parietes of the abdomen and uterus, to extract the infant. *Abdominal gastro-hysterotomy* is the proper Cæsarean operation; *vaginal hysterotomy* has also been performed with success.

The ancient obstetricians made the incision in the left side, and divided the epigastric artery or its branches, and the woman died of hæmorrhage. Lauverjat preferred the right side, and made a transverse incision towards the spine, a plan as dangerous as the other. Ritzen proposed to make an incision above the crest of the ilium, to separate the peritoneum, to incise the summit of the uterus, and extract the fœtus. The proceeding was proposed in order to avoid wounding the peritoneum; but the operator forgot that he divided the peritoneal coat of the uterus. Baudelocque, the nephew, considers the great danger of the operation arises from the double incision of the peritoneum, and regards wounds of the uterus essentially mortal; he therefore proposes a new operation, which consists in an incision from the spine of the pubis, parallel to Poupart's ligament, and extending to the superior-anterior spinous process of the ilium. He selects the left side on account of the inclination of the neck, when the uterus is inclined to the right; and the right side in the contrary case. After making his incision, he detaches the peritoneum of the iliac fossa, opens the superior part of the vagina, and hooks down the uterine orifice to the wound in the abdomen, he now leaves the labour to the contractions of the womb, and extracts the fœtus, if necessary, with the hand or the forceps. He calls this operation *elytrotomy*, and has repeatedly performed it upon the dead subject. It is very doubtful if this operation is less dangerous than abdominal hysterotomy. Even the author of it, on a recent occasion, after having tried it, was obliged to have recourse to the ordinary operation through the abdomen. Dr. Physick proposed to make an incision above the pubis, as the peritoneum was easily separable from the bladder; but I am not aware whether he had operated in this way. The general mode of operating is through the linea alba.

Some say that it is an advantage to have the amniotic membrane perforated or ruptured, as the effusion of the amniotic fluid cannot take place in the abdomen. Others contend that when the membrane is entire, it is easier to extract the infant; that the wound in the uterus will be less extended, and much more reduced

by uterine contraction. Such is the opinion of Desormeaux and Velpeau; and it seems to be valid. The rectum and bladder should be evacuated previous to the operation.

Instruments and necessary Apparatus.—Two bistouries, a common convex one and a button-pointed one, an artery forceps, and some needles threaded are sufficient for this operation. The remaining apparatus that will be required comprises a fine sponge, some lint, long and square compresses, the body and scapulary bandages, and basins of cold water, with a little vinegar.

The linea alba is the situation now selected for the operation. The selection of the side was liable to serious objections. 1. The inconvenience of dividing three sets of muscles, whose different directions would be a great obstacle to cicatrization. 2. The epigastric and principal arteries of the uterus would be divided. 3. the fibres of the womb being divided obliquely or transversely, they could not contract without rendering the wound gaping, and consequently causing an effusion of lochia into the abdomen.

The uterine orifice must be dilated to some extent before the Cæsarean operation is resorted to, in order to afford a passage to the blood, to clots, and to the lochia.

If the woman is at all plethoric, it would be advisable to take away some blood; and at all events to open the bowels by a clyster, evacuate the bladder, and shave the pubes.

Position of the Woman.—The patient ought to be placed on her back near the edge of the bed, the head and chest slightly raised; the inferior extremities extended during the time of making the incisions; and half bent during the extraction of the foetus.

In order to render the abdomen more prominent, a pillow is placed under the loins.

Position of the Assistants.—Two assistants are to fix the uterus by steady pressure with their hands, and others are to keep the patient in the proper position, and to prevent her flexing the limbs during the incisions.

Operation.—The obstetrician, with the convex bistoury, makes an incision in the direction of the linea alba, from the umbilicus, or even a little above it, to within an inch and a half of the pubis, according to Baudelocque, in order to avoid wounding the bladder, and also as the abdominal parietes are thick near the pubes. If the incision is commenced above the umbilicus, it should be car-

ried at the left side of this part, to avoid the umbilical vein, and the anastomosis between it and the epigastric vein, as recently described by Mesnière, Clément, and Martin.

When the incision is made high up, it is impossible to incise the uterus in its most elevated part, and thus to prevent the effusion of the lochia into the abdomen. The first incision ought to be made through the skin and subcutaneous cellular tissue. The *linea alba* is next to be divided, some say from below upwards. The peritoneum should now be opened with the sharp-pointed bistoury, and the opening is to be enlarged with the blunt-pointed instrument. The uterus is next to be depressed by an assistant, and incised from the superior to the inferior angle of the abdominal wound, which is an extent of about six inches. This incision is commenced with the sharp, and terminated with the blunt-pointed bistoury, which is used from within outwards, and from above downwards. We then pierce the amniotic membrane with great caution; though, according to Planchon, we should rupture it in the vagina, to prevent the escape of the liquor amnii into the abdomen.

When the uterus is divided, the *fœtus* is to be extracted by the feet, head, or breech, as each of these parts presents.

It is said we ought to avoid wounding the placenta in dividing the uterus; but the position of it can only be determined previously by the stethoscope. The placenta is to be extracted through the wound, the womb is to be cleared of all clots, a finger is to be passed through the vagina and neck to facilitate the escape of any that may be there; and the finger should be occasionally introduced through the *os uteri* for that purpose. If any large vessels are divided during the operation, they are to be pressed on by the assistants, and secured by ligatures. When the uterus does not contract, we should make gradual pressure, and exhibit the ergot of rye in the manner already mentioned. Sutures are to be passed through the abdominal wound, except at the inferior part, which must be left open to favour the escape of fluids from the uterus. Before applying sutures we must remove all fluids from the abdomen, whether blood or amniotic liquor, by changing the position of the patient, using tepid injections, and pressing upon the sides of the abdomen. Capuron objects to sutures, as they may be displaced by tension of the abdomen when peritonitis occurs. The sutures are, however, in general preferred to agglutinating bandages.

The wound is to be covered with lint, and the body and scapular bandages applied. Some prefer adhesive plaster. The dressing is to be changed frequently the first twenty hours, then morning and evening, if we suspect effusion. We should prevent adhesion between the uterus and abdomen, according to Bacqua, Capuron, Gardien, &c., as it would expose the woman to dragging sensations, hæmorrhage, &c.

The woman should be carefully watched, lest peritonitis supervene; and the antiphlogistic regimen must be strictly employed, if the symptoms of inflammation come on. In cases of rupture of the uterus, Dr. Collins of Dublin very judiciously prevents inflammation by active antiphlogistic measures. (Dublin Med. Trans. 1830, v. i. New Series.)

Immediately after the operation, the woman should have an opiate to tranquilize nervous agitation, and the shock inflicted on the system by the operation.

Vaginal Hysterotomy.—Many cases, according to authors, require vaginal hysterotomy, as a fibro-cartilaginous state of the os uteri (Simeon, Van Swieten, Hamilton); violent convulsions, without dilatation of the uterine orifice (Dubosque and Lambron); obliquity of the uterus (Hamilton, Dewees, &c.); the head of the infant pushing the uterus to the vulva (Lauverjat, Hamilton, Monro, and Farquharson); and when the uterus escapes through the pelvis and its orifice cannot be dilated by the fingers (Thénance, Jacomet); and in extra uterine foetation (see p. 308—313). Some recommend several incisions in these cases; others, a simple incision; and Duges advises us to remove the scirrhus parts. This operation is seldom performed, though it is evidently less dangerous than gastro-hysterotomy (see p. 313).

Gastrotomy is required in extra-uterine foetation, and rupture of the uterus; and the circumstances which demand it, have been already related (see p. 310). The instruments and apparatus are the same as in gastro-hysterotomy, or the Cæsarean operation. The situation of the foetus, in these cases, must determine the place for the incision. The foetus is often encysted in different parts of the abdomen. For an accurate account of this subject I refer the reader to pages 308—313.

Symphysiotomy—Division of Symphysis Pubis—Sigaultian Operation.—This operation is performed by the French, though never in these kingdoms, when the infant is alive, and the pelvis

contracted from two and a-half to three inches ; when the head of the infant is large, and in cases of monstrosity. The pubes are shaved, and the symphysis completely divided with a scalpel ; the infant being extracted by version or by the forceps. The unanswerable objections to this highly dangerous and unwarrantable operation are, 1. the pubic joint may be ossified, and must be divided with a saw ; 2. In cases of deformity, the pubis may be more to one side than the other ; 3. the separation of the symphysis to the extent of two inches as advised, must inevitably separate and lacerate the sacro-iliac joints, produce incurable lameness, or abscesses that may prove fatal, or the unfortunate woman may be confined to bed with horrible pain for one or two years, as the separated joints, if ever restored, can only be united by anchylosis, which is a slow and tedious process (see pp. 7, 307).

In forty-one operations of this kind, says Baudelocque, fourteen women died, and twenty eight infants were destroyed by the violence of the proceeding, which is farther evidence against the adoption of this fatal operation. Gardien, Giraud, and Ansiaux assert that the pubic bones may be separated to the extent of four inches, without any lesion of the sacro-iliac joints ; but any one who will try the experiment on the dead subject will at once observe the falseness of this assertion.

Pelvic Contraction.—Induction of Premature Labour.—When the deformity of the pelvis is such as to prevent the passage of the infant at the full time, it is usual, in order to save the infant, to induce labour after the seventh month, after which time all admit the fœtus to be capable of living or to be viable. This humane operation, however, is homicide according to our laws, as will appear by a reference to my Manual of Medical Jurisprudence, and also in the section on *Prolicide, Fœticide, and Infanticide* in this work, p. 153. Medical men, ever conscious of rectitude, have always interfered in the cause of humanity ; and we find that the reputed father of obstetrics in this empire, Dr. Hamilton of Edinburgh, has saved twenty-three out of twenty-seven infants, by the induction of premature labour. This was the number he stated in his invaluable Lectures in 1818. It is necessary, in these cases, that the obstetrician should duly estimate the capacity of the pelvis, and accurately remember its axes and diameters as described in p. 11. In these malformations, it has been recommended to diminish the volume of the infant by keeping the mother on

low diet ; but this barbarous and unnatural plan has not succeeded. About the middle of the last century, our countryman Macaulay first proposed the induction of premature labour, to obviate the necessity of craniotomy, gastro-hysterotomy, and symphyseotomy ; and since that time, Barlow, Hamilton, Ramsbotham, D. Davis, Wigand, Baring, Blundell, and many others, have performed the operation with success. Velpeau, with great candour and credit to himself, prefers this operation to the more dangerous proceedings, which his countrymen still advocate, and very justly considers it more safe for the mother and infant. He thinks that a thousand social relations compel us to save the mother, so that in cases of deformity, which render delivery impossible at the full time, he would not hesitate to advise abortion in the first months of gestation. He says, however, that when the sacro-pubic diameter of the brim is only two inches and a-half, a living fœtus may be expelled without the aid of art. He thinks the induction of premature labour warrantable in such cases at the seventh month, as the bi-parietal diameter at that time is generally three inches, and of course capable of diminution by compression. He argues, however, that this resource is not so advantageous as is generally imagined ; because it may be followed by hæmorrhage, convulsions, or peritonitis, the uterus may be wounded, the infant may be feeble, there may be slight uterine contraction, and delivery may not happen for five days. These objections are invalid, as they may be urgent in cases of natural labour, and may be obviated by judicious management and the use of the ergot of rye. Besides the usual success of the operation is an answer to all objections.

Section 6.—Operations which require a Solution of Continuity of some part of the Infant.—Embryotomy, Craniotomy, Cephalotomy.

When the brim or outlet of the pelvis is so deformed, that the head of the infant cannot be extracted by the forceps or lever, it has been the practice, especially in this country, to pass a sharp instrument, called the perforator through the cranium by a boring motion, then open its blades, next close them and make a crucial incision, break down the brain, extract it by the blunt hook or crotchet, then fracture the bones of the skull with the craniotomy forceps, extract them cautiously, leaving the scalp to cover the ragged edges ; and next perforate the thorax and abdomen, evis-

cerate these cavities, and extract the body by the blunt-hook or crotchet. Such is the operation of *embryotomy*. Most men feel the greatest reluctance and horror at performing this operation on a living infant, and naturally wish to delay, until there are certain signs of its death. The signs of its death are want of pulsation at the fontanel, cessation of its motion, its falling like an inanimate mass to the side on which the woman may lie; shivering fits of the mother, flaccidity of her breasts, foetor of the uterine discharges, and looseness of the bones of the cranium. There are no positive and infallible signs as to the certainty of the infant's death. Many lamentable instances are recorded of infants, who have been craniotomised, and yet born alive by the natural passages. This can be easily accounted for, if we recollect that all the cerebral nerves originate in the base of the brain, and consequently may retain their functions, though the greater part of that organ be broken down, or extracted. The records of military surgery confirm this fact, as they afford ample proof that a considerable portion of the brain may be removed by a grape shot and life continue, nay recovery happen.

The instruments employed in this operation are the *perforator*, to open the head and break down its contents; the *crotchet* or *sharp hook*, to extract the brain; and the *craniotomy forceps*, the latter invented by Dr. D. Davis, is now generally preferred to the crotchet. Every midwifery lecturer has a peculiar craniotomy forceps; but it may be here worthy of notice, that nearly all of them now in use are both too clumsy and ponderous. Dr. Heigh-ton used a modified lithotomy forceps, and with success. Mr. Holmes has invented a forceps, which is decidedly the best hitherto produced.

Operation.—The perforator is to be passed along two fingers of the practitioner to the head, and the greatest care taken not to wound the mother. Pressure should be made by an assistant on the abdomen, so as to keep the uterus fixed, and the head steady, during the perforation. Some hours should be allowed to elapse after the skull has been opened, as the labour pains may expel the brain, and complete the delivery. When the child is expelled this way, the mutilated head ought to be shaped as nearly the natural form as possible. Sometimes the entire bones of the head and body must be broken in fragments to admit of extraction. When the lower extremities and body are expelled, and the head

retained, it should be extracted by the forceps or lever; but if these fail, it is to be perforated behind the ear. The cases which require this operation are extremely rare, in the opinion of Duges, who also contends that the operation should never be performed until after the death of the infant. There can be little doubt, from the recent histories of the success of gastrotomy and gastro-hysterotomy, but the operation under consideration will ere long be discarded; by far the greatest majority of obstetricians, taken collectively in all nations, are opposed to it. The preference given to craniotomy in this country, arose from the plausible essay of Osborne, elicited by a single case, namely, Sherwood's; the reality of which is now denied by Hamilton, Burns, Dewees, and every well educated practitioner. The metaphysical reasoning and sophistical deductions, that an infant in the womb possesses no feeling, and therefore the operation ought to be performed in every case in which the dimensions of the pelvis were like that of Sherwood's, are exposed and ridiculed by Dewees, whose reasoning and refutation of this advice prove its fallacy and impracticability. The destruction of a living infant is inhuman, unnatural, barbarous, and contrary to the laws of God and man. Nor is craniotomy practicable in cases of extreme deformity; and from mature consideration of the history of the Cæsarean section, it is obvious that the extraction of the infant by craniotomy is as fatal an operation to the mother, and there is often much more injury inflicted on her, than by timely removing the infant through the abdomen. I would venture to predict, that embryotomy will be nearly discarded in a few years, in the majority of cases under consideration; and I might add in the numerous others in which it is now so frequently and unjustifiably performed in this country. I know these are unpalatable assertions; but truth is great and will prevail.

The absence of a religious motive is a cause of the comparatively frequent performance of embryotomy in this empire. The necessity of its too frequent performance in all Protestant countries, is almost exclusively founded on the impracticability of delivery, by the natural passages.

Perforation of the head and dismemberment of the fœtus are generally preferred, in these kingdoms and in Germany, to the Cæsarean operation. In France, cephalotomy is never performed until after the death of the infant, or at least until it is probable, or when delivery is altogether impossible by the natural passages.

(Velpeau, Duges, &c.) When the pelvis is less than fifteen lines, and the hand cannot be introduced into the womb, the French prefer gastro-hysterotomy, though the infant should be dead. It is however, too cruel to perform the Cæsarean operation to extract a dead infant, or one so feeble as not to survive for more than a few minutes or hours; but it is equally cruel to open the head of a strong vigorous infant, when the mother is of a good constitution, and when there is every probability the abdominal section, however dangerous, would save both mother and infant. The Cæsarian operation is too often performed in France to the exclusion of craniotomy; and the latter is too indiscriminately performed to almost complete exclusion of the former in these countries. The rule in this kingdom is, that if the sacro-pubic diameter is only two inches and a half, and the transverse or bis-iliac three inches, craniotomy is justifiable. It is indicated, 1. when the fœtus is dead, and the passages so contracted as not to permit extraction with the forceps, or by version; 2. when the fœtus has probably ceased to live, or is on the point of death, and to extract it entire, without abdominal hysterotomy; 3. when the head remains in the pelvis, and the hand, forceps, or blunt hook, is not sufficient for its extraction. It is to be considered useless and highly dangerous, when the sacro-pubic or short diameter of the brim is only of an extent of an inch and a half. This operation was performed only in three cases in over twenty thousand in France, according to La Chapelle, though so very frequently employed in this empire.

Instruments to be employed.—The instruments employed in craniotomy have varied at different periods, and are even now dissimilar. Various perforators were proposed by Hippocrates, Avicenna, Mauriceau, Levret, Freid, Oulde, Simson, De la Motte, Smellie, and the Hamiltons; but the scissors perforator of Smellie improved by Denman is generally preferred. In France a scalpel, bistoury, or trocar is employed.

Position of the Woman.—The position usually selected by British obstetricians is the left lateral, while foreigners prefer the dorsal, which I believe to be the most convenient. When the head presents, we should introduce two fingers into the vagina, and place them on the anterior fontanel, or in the course of the sagittal suture; and then introduce the perforator along the palm of the left hand and fingers, taking great care not to wound the soft parts

of the mother. When the base of the skull presents after the expulsion of the body, we must pass the perforator in the occipital region, or in the lambdoidal, or coronal sutures if possible. In either case, the head should be fixed, as it often recedes when the instrument is applied, more especially if we cannot pass it through some of the sutures. We employ a rotary or boring motion, and pass the perforator to the "stops or rests," open it to the extent of an inch or two, then close it, next re-open it transversely, so as to make a crucial incision. The instrument should now be pushed through the dura mater and brain, and the cerebral mass broken up, and finally the perforator should be closed and carefully withdrawn from the genitals. The brain now generally escapes, more especially should uterine action be present; the bulk of the head will be considerably reduced; all pressure on the soft parts of the woman will be removed; and nature in a longer or shorter period will complete delivery. In this case the operation is called *simple*.

Craniotomy is chiefly applicable in cases of impacted head in first labours, occurring at an early or late period of life, when there is no pelvic contraction. The labour is generally tedious in these cases, and all uterine action ceases in the majority of instances, in consequence of the fear impressed on the patient by the necessity or performance of the operation.

When labour ceases after craniotomy, the usual practice in these countries among scientific obstetricians is, to exhibit a cordial with an opiate, and leave the conclusion of the case to nature. In a few hours, uterine action re-commences and effects delivery. This is much safer practice than to extract the infant by the crotchet in the absence of uterine action, which exposes the woman to unnecessary suffering and to hæmorrhage. When the pelvis is natural, the passages tumefied, and the pressure of the foetal head removed by the escape of the brain after craniotomy, there is no scientific reason to extract the body of the infant during the absence of pain. After allaying agitation and fear by a mild cordial and an opiate, and allowing the patient to recruit her strength by rest and sleep, uterine action in general returns and expels the infant. But should this not happen, the ergot of rye must be administered, and will, if genuine, most unquestionably induce uterine action. It is to be recollected, that the presence of a dead infant in the womb for a few hours, can be productive of no bad

consequences; as dead and putrid infants are often retained in utero for weeks without producing any bad effect. I throw out these hints for the consideration of those, who advise the immediate extraction of the body after simple craniotomy; a practice that I have frequently known destructive to the woman by the induction of hæmorrhage, and the utter impossibility to excite uterine action by any means. Many eminent writers are against delivery when there is no uterine action after craniotomy, and among these are, Simson, Osborne, Kelly, Denman, Boer, Asdrubali, Burns, Blundell, Velpeau, Duges, &c.

Sometimes we cannot succeed with the common perforator, as when some of the ossified parts of the skull present. In such cases M. Duges has proposed a kind of screw perforator, which he has designated a terebellum, and the operation is called by the French *craniotomie terebrante*. This instrument may also fail, and to obviate the use of all perforators, Baudelocque, the nephew, has introduced a strong forceps without any fenestra, exactly similar to that used by Dr. Holmes, which is capable of reducing the volume of the infant's head to almost any size which the operator may desire. Professor Davis, of the London University, has likewise invented many valuable instruments for extracting the head and trunk, which are delineated in his valuable work on Operative Midwifery.

These instruments are highly valuable when the brim of the pelvis is much deformed, and when it is extremely difficult to extract the base of the skull or the trunk, either by his craniotomy forceps, or by the old crotchet or blunt hook. If there is much deformity, it is a great matter to leave the body of the infant undisturbed for some time after craniotomy, and after breaking down the skull; as the heat and moisture to which it is exposed favours putrefaction and facilitates extraction. I have lately witnessed an excellent illustration of this point, in a case with my friend Mr. Appleton. In extracting the base of the skull through a contracted brim, we should bring it down edgeways, and first reduce it to the smallest extent with the craniotomy forceps. The perforator is next to be driven through the thorax between the ribs, and the viscera lacerated in different directions, the crotchet or craniotomy forceps applied, and the ribs and trunk dismembered in the best and easiest manner practicable. The spine, extremities, and pelvis are also to be brought down with the crotchet or craniotomy forceps, when the deformity admits, or reduced to the smallest size

as the case may require. When the breech presents, the inferior extremities are to be separated; as also the pelvis in bad cases of deformity.

When the trunk remains in the womb after cephalotomy which is named *decollement* by the French, we can extract it by different methods; 1. by applying the blunt hooks in the axillæ or armpits; 2. by disengaging the arms and drawing them down; 3. by fixing the crotchet on the upper part of the spine, or between two ribs. Desormeaux and Hamilton prefer the spinal column as the ribs are apt to break, and the hook may slip, and 4. by turning or bringing down the feet.

In whatever way we operate, we must take care to adapt the greatest diameters of the fœtus in relation with those of the mother, and extract in the axis of the pelvis.

Hydrocephalus.—When a hydrocephalic head presents by the vertex or base after the body is expelled, it is to be discovered by a careful examination. The perforator must be applied to permit the escape of the fluid; the head closes, and the labour is terminated by uterine action, by the forceps, or by craniotomy.

Hydrothorax and Ascites are discoverable by fluctuation alone, and are seldom recognized. A trocar must be introduced, the fluid evacuated, and the labour terminated by nature, or by manual or instrumental aid.

Hydrorachitis, when large, must be punctured in the same manner, and the labour completed, according to some of the methods already described.

Detruncation.—When the head only remains in the uterus, we must endeavor to adapt it to the proper diameters of the pelvis with the hand, having pressed on the abdomen with the other. If we cannot succeed by this manœuvre, we must apply the forceps or craniotomical instruments.

Extraction of Monsters.—Living twins may be united, at some parts, by simple integuments. We must separate them by incision when this can be done with safety, and deliver according to the rules of art. Twins may be united by the top of the head, as mentioned by Paré, and cited by Baudelocque and Capuron. In such a case, we should bring one down by the feet; the other will necessarily present by the head; and if it remains too long in the pelvis, we extract it with the forceps. Two heads belonging to the same trunk may present at once at the brim. In this

case, we must reduce the volume of one or both, and dismember as much of the trunk as is necessary to admit of the passage of the remainder. Two trunks with one head have presented at the superior strait. Here we should separate them, and extract each successively. Voluminous tumours may exist on any part of the surface of the fœtus. The practice is to remove them, if they impede delivery. I have already described the management of a case in which the body of one infant is expelled to the neck, and the head of another infant descends into the pelvis; an example of which was lately described by Dr. Fergusson, of Dublin. (See p. 135.)

Section 7.—Retention of the Placenta or Afterbirth.—Artificial Deliverance.—Extraction of the Placenta.

The natural expulsion of the placenta has been already described, p. 129. I may remind the young practitioner, however, that the mechanism of deliverance, as our Gallic contemporaries term the expulsion of the placenta, presents three periods: 1. the detachment of the placenta from the internal surface of the uterus; 2. its passage into the vagina; and 3. its expulsion from the genitals.

In natural cases, as the contractions of the uterus, or “after-pains,” detach the placenta, it becomes rolled upon itself, and presents the extremity of the cone which it represents at the os uteri, and pressed by the uterine contractions it passes in the axis of the superior strait into the vagina, and thence in the axis of the outlet through the genital fissure or vulva. The membranes attached to its edges in general, but not always, escape last. Sometimes it presents an edge, and sometimes the maternal or uterine surface, and often the fœtal surface, which renders the expulsion more difficult, and in general embarrasses young obstetricians. In the last case its edge should be hooked on the finger, and gradually brought through the vulva, the practitioner twirling it round to extract the membranes, which after he has the whole placenta between his hands, will require traction with the index finger and thumb.

Artificial Extraction of the Placenta.—The cases which cause a necessity for artificial extraction or separation of the placenta are, hæmorrhage, convulsions, syncope, inertness of the uterus, spasmodic contraction of the womb, hour-glass contraction, pre-

ternatural adhesion, adhesion of the organ to the neck of the uterus, and abortion. Some of these require immediate extraction, as hæmorrhage, convulsions, and syncope; others, as inertness, spasmodic contraction of the womb, unless hæmorrhage is present; preternatural adhesion, and hour-glass contraction do not always require immediate extraction of the placenta.

Manner of Extraction.—If we turn the navel-string or cord round two fingers of the left hand, as recommended after natural labour, p. 129, put the remainder of the cord on the stretch, and then pass two fingers of the right hand along it, until we feel its termination; the placenta will, in general, be detached and protruded into the vagina, and is to be removed as described in a former paragraph. But if we cannot touch the placenta, or feel the end of the cord, the placenta is not detached; and according to Dr. Hamilton, should be removed after the expiration of an hour subsequent to the birth of the infant. In a vast majority of cases, the organ will be found in the vagina, after the lapse of that period. I have often waited two hours, when the uterus was firmly contracted, as no hæmorrhage can occur when this is the case. It is very rarely necessary to extract the placenta, that is, to separate it from the uterus; according to Clark, of Dublin, about twenty times in more than ten thousand cases. The mode of operating consists in putting the cord upon the stretch, and passing the right hand in a conical form along it as a guide to the placenta. When the hand is in the uterus, if part of the placenta is detached, we carefully glide the hand between this part and the internal surface of the womb, until the separation is completed. If the placenta is entirely adherent, we begin by detaching some point of its circumference, by insinuating the fingers between this point and the uterus, and then separate it as just mentioned. When it is adherent only by the circumference, its centre being detached, we should pierce the centre, according to Baudelocque and Desormeaux, and pass the fingers through the aperture, to separate the circumference more easily. When a portion or even the whole of the placenta is so adherent as not to be easily detached, it is better to remove as much as possible in the former case, and leave the whole *in situ* in the latter, than forcibly endeavour to extract it. The latter case is one of extremely rare occurrence. It may not be met with in the course of a long professional life. All portions of it which are detached, with all clots of blood, are to be

extracted. For further information on this subject, I refer the reader to pages 126—344. I may observe, however, in this place, that, in general, the placenta is partially protruded through the os uteri, or lodged in the vagina, and only requires *removal*, and not *extraction*. I wish students and young practitioners could recollect this fact, which would prevent them from calling for the aid of their seniors unnecessarily. How often is the obstetric lecturer called at an unseasonable hour, and in inclement weather, to remove the placenta, or a harmless piece of membrane, from the vagina. When the placenta is retained from inertness of the uterus, Mojon and other Italian physicians have recently injected about six or eight ounces of cold water, or vinegar and water, into the umbilical vein; colic, uterine pains, &c. were excited, and by these means detachment of the afterbirth was effected. This plan has not been tried as yet in this country. It is a received axiom in obstetrics, that the placenta should be removed or extracted previous to the departure of the practitioner. This is a general rule to which there is but one exception, and that is in the very rare case, in which the placenta is so firmly adherent as not to be removable. The bad effects of leaving it in the uterus in ordinary cases, are the danger of hæmorrhage, uterine phlebitis, which is attended with great constitutional irritation, the worst symptoms of typhus, and, in general, death. I cannot assent to the opinion of my distinguished friend, Dr. Blundell, that it is possible no bad consequence might result from the presence of the placenta in the uterus if left unattended to. No doubt, when it is ossified, scirrhus, or hydatid, or immoveably adherent in part, some portion must be left undetached; but this circumstance will not justify us in ordinary cases to leave the woman without removing or extracting the placenta. Dr. B. merely offered this assertion as an exception to the general opinion, which he forcibly inculcated.

Gentle friction on the abdomen with the hand, with proper doses of the ergot of rye, will, in general, succeed in effecting the expulsion of the placenta. Some mild cordial often produces the same effect. Midwives advise the woman "to bear down," "to cough," which can seldom be accomplished unless pressure is made on the abdomen with the hand, "to laugh," or "take snuff," to induce sneezing, "to blow on the back of the hand, or into an empty bottle;" all which efforts threw the abdominal muscles into

action, and thereby cause pressure on the uterus, and induce its contraction. Gentle traction of the cord may enable us to remove the placenta from the vagina, and this should be made in the axis of the inferior strait. Excessive volume or size of the placenta will cause its retention in the vagina, and in this case we hook an edge of it on the finger.

Spasmodic contraction of the cervix uteri may prevent its descent. The French advise depletion in this case; but such a plan is seldom necessary. The application of the finger as a hook is sufficient.

Hour-glass Contraction of the Uterus. Chatonnement-enchatonnement of the French.—This affection consists in a spasmodic contraction of the uterus, generally about the middle of the organ, the superior portion containing the placenta, and the part inferior to the contraction near the os uteri, being dilated. Various causes have been assigned for this condition; but it generally occurs in consequence of the male or female obstetrician pulling down the shoulders and body of the infant, in the absence of uterine action, after the expulsion of the head. The patient may also induce it, by forcing down the body under the same circumstance, by the action of the abdominal muscles only. The practice in this case is, to introduce the hand along the cord, and gradually pass the fingers successively through the contracted portion of the womb, which may require the lapse of an hour or two for the accomplishment, and the hand having passed into the upper cavity, the placenta is to be detached in the manner already mentioned, and pressure is to be made on the uterus with the knuckles to excite contraction, until the action is such as to expel the hand and placenta. In some of these cases, the placenta may partially pass through the contraction, and then there is reason to think it is entirely detached, and that the introduction of the hand beyond the stricture is unnecessary. In some cases there are several contractions of the uterus above the strictured part. In all these cases we should apply friction on the hypogastrium, and make moderate traction on the cord before we have recourse to the introduction of the hand. Rupture of the cord is seldom seen at present; but should such a case occur, it will be highly embarrassing to the young practitioner, as it requires a nice sense of touch to enable him to distinguish the placenta from the uterus. Examples are not wanting to shew that the uterus has been lacerated in such cases.

When there is strong adhesion of the placenta to the uterus, if we persevere in forcible attempts to extract it, we may induce hæmorrhage, convulsions, inflammation of the uterus or uterine veins (phlebitis), and also peritonitis. The uterus has been found inflamed and gangrenous after such efforts. The adherent placenta has remained for days, weeks, and months without producing any bad effect; but when it becomes putrid we must use tepid injections, and thereby prevent the danger of absorption. M. Dance contends, that absorption of this substance when putrid, or of morbid lochia, is the cause of phlebitis of that portion of the uterus to which the placenta is attached, and that this disease is the real cause of puerperal fever. Tonnelle is of the same opinion. Nevertheless, it is the more general practice to leave an adherent placenta than to extract it forcibly. Should copious hæmorrhage occur during partial separation, we are to treat it as already mentioned, p. 343, and press the aorta above the sacro-vertebral angle when the hand is in the uterus, or even by compression of the abdomen. This practice is recommended by Boer, Lachapelle, Duges, &c.; but I have not found it at all successful. If convulsions or syncope occur after the expulsion of the infant, the placenta must be extracted in the manner above mentioned.

ARTICLE VI.—LOCHIANOSLOGY—PUERPERAL DISEASES.

After the expulsion of the placenta, we should apply the hand on the abdomen to ascertain the state of the uterus, which may be contracted in the form of a round tumour, aptly compared to a child's head, which is generally the case; or it may be uncontracted and inert: a frequent condition after tedious or instrumental labour, and one that exposes the woman to hæmorrhage. (See p. 337.)—The uterus may be distended with blood, clots, pieces of placenta or membranes, all which should be removed, and contraction of the organ excited by friction on the abdomen, or by the ergot of rye. A warm napkin is to be applied to the genital fissure after the expulsion of the placenta, if the uterus is properly contracted; a cordial, such as a glass of wine and water, or a table-spoonful of brandy with some water, is usually exhibited, and a roller or bandage is placed round the abdomen, for the purpose of making gentle pressure, and of preventing syncope on motion. Some persons have the roller applied loosely during labour, and gradually tightened as the process advances; but this is an antiqua-

ted and useless practice, as the greatest majority of women are delivered without it. The bandage is useful after delivery, and ought to be five or six yards in length, and a quarter of a yard in breadth ; so that it may be brought several times round the lower part of the abdomen, and once between the limbs, so as to keep properly applied over the hypogastrium. Unless this precaution is observed, it usually slips above the uterus, and becomes a ligature, serving no useful purpose, but the contrary. It must not be applied too tightly, as cases are on record in which it produced apoplexy. When the abdomen is flaccid and prominent, a soft pad or cushion, or two folded napkins, will be placed with advantage over the hypogastrium, and under the first turn of the roller.

The soiled cloths are to be removed, and a dry napkin, if necessary, applied under the patient's hips, and as she generally feels cold, an additional quantity of bed-clothes is necessary.

The patient should not be "put to bed," as it is termed, sooner than half an hour or an hour if much debilitated ; and should be shifted on a sofa, or raised between two females in the horizontal position, while the bed is adjusting. It is highly injurious to permit a puerperal woman to assume the erect or sitting posture soon after delivery, as she may be attacked with syncope, followed by flooding, or the enlarged uterus may descend into the pelvis, and be partially or totally prolapsed and protruded beyond the external genitals. There is nothing to prevent the descent of the uterus at this time, in the erect or sitting positions ; and I have repeatedly known hæmorrhage induced by this cause, and in some cases continued for five and six weeks before the practitioner in attendance became acquainted with its origin. A woman applied to me at the Central Infirmary, who was delivered six weeks previously, and was never free from hæmorrhage during that period. On enquiry, I learned that she was turned out of one of the Lying-in Hospitals the *fourth day after delivery*. On examination, I found the uterus enlarged, its orifice dilated, and it considerably prolapsed. It was restored to its proper situation, a plug applied, acetate of lead and opium administered, the recumbent posture adopted, and in a few days a cure was effected. I believe that "sitting up too soon" is, in general, the cause of prolapsus uteri of the lower classes ; and hence the necessity of bearing this observation in recollection. I have taught this doctrine in my Lectures for some years ; and it is now confirmed by Professor Velpeau, who holds

that those "who rise too soon in the puerperal state are liable to complete prolapsus (renversement), to antiflexion and retroflexion, to the descent of the uterus, and to a thousand other dangers."

The chamber should be kept cool and quiet, the bed-clothes light, visitors excluded, and no cordials exhibited, unless advised by the obstetrician. The visits of friends, neighbors, and acquaintances, to a recently delivered female, are productive of the worst consequences, headache, agitation, peritonitis, &c. Velpeau attests this fact, when he says, that in numerous cases of peritonitis, observed in the hospital under his care, there were few which did not originate without connection with moral commotion. Every observant practitioner is aware of the high degree of sensibility, and the accelerated state of the vascular system of puerperal females; and hence the judicious practice of tranquillizing these states by an opiate. A draught composed of Liq. opii sed. mxx, Aq. Puleg. ℥ iss, is usually given after delivery. This allays after-pains, procures sleep, and calms the excited state of the system. Some practitioners order a draught composed of Tinc. opii mx. Aq. Menth. P. ℥ j., liq. am. ac. ℥ ij. 4tis horis; but this practice is chiefly to increase the medicine bill. I have known three six-ounce mixtures of spermacei emulsion, with a few drops of laudanum, ordered a patient daily, for the same purpose. A single sedative draught, as recommended above, is, in general, sufficient for every useful purpose. Great attention must be paid to diet and regimen; for it is well ascertained that by far the greatest number of women are destroyed after delivery, by diseases caused by the nurse, advisers, or female herself. The fact is, that many fatal diseases may supervene some weeks after delivery; and hence the great caution necessary in the management of puerperal women. I have known ephemera become violent, and terminate in typhus phlegmasia, dolens, supervene, and prove fatal, seven week after delivery.

In a former part of this work, I have described the diet regimen of mother and infant, p. 131.

The most common diseases incidental to women after delivery, are those arising from *intestinal irritation*, and which are constantly mistaken for peritonitis. This irritative disease is slightly glanced at by Drs. Burns and Granville, under the term intestinal fever; and was first noticed by Dr. Marshall Hall, under the title of intestinal irritation. The diagnosis of this affection from inflam-

matory disease in the brain, chest, and abdomen, is ably delineated by the author last named.

The second class of puerperal diseases in order of frequency, is that of inflammations; and they may be divided into the more diffuse inflammations of the peritoneum, and the more confined inflammation of the substance and veins of the uterus, and its appendages, and of their peritoneal covering. These are followed by all the symptoms of the malignant or real puerperal fever. This was placed beyond all doubt, by the report of the Maternité of Paris, for 1829, published with the sanction of Desormeaux, by his pupil Tonnelle. I published this able report in the London Medical and Surgical Journal, 1830, vol. v. A third class of diseases is that arising from loss of blood, either by hæmorrhage or blood-letting, and entirely undescribed by authors until the work of Dr. Hall appeared. The fourth class is that arising from mixed cases, and is one highly embarrassing to the practitioner. Lastly, we have to consider the epidemic puerperal fever, or peritonitis as it has been erroneously called; and cases of a sporadic and different nature may occur during such epidemic.

All the symptoms of phrenitis may occur from intestinal irritation, or from loss of blood; and besides, there is the peculiar puerperal delirium. We also may have to treat convulsions and apoplexy, either arising from pressure of the gravid uterus or loaded intestines, during the last months of pregnancy, or from the parturient efforts during delivery.

From what has been already stated in the course of this work it is obvious that all the female organs of generation, both internal and external, may be attacked with irritation and inflammation, abscess or sloughing, in consequence of difficult, tedious and dystocial labours. Such affections and diseases are to be treated on the established principles of medical science. I shall now proceed to consider these diseases in detail.

Lochia—Discharge after Delivery.

In consequence of the further contraction of the womb, a serous discharge takes place; usually for *one*, or two, three or four weeks. It gradually becomes browner, paler, greenish, and ultimately of a dirty colour, or sanguineous, serous, lacteous or purulent. It may be too profuse, or entirely suppressed. It is named the "cleansings," by nurses. If profuse, we are to use equal parts of

the saturated solution of alum and water, to be injected into the vagina three or four times daily, as already described. We should also employ the treatment recommended for menorrhagia, and administer tonics—such as sulphate of quinine, the *mistura*, and *pilula ferri*. The diet should be very nourishing, for the excessive discharge greatly debilitates the woman. The suppression of the lochia is the effect and not the cause of disease; it is usually the precursor of hysteritis, uterine phlebitis, and peritonitis. When suddenly suppressed we should use tepid injections of decoction of poppies into the uterus.

After Pains are best relieved by opiates—as a draught of twenty-five drops of *liq. opii*, in an ounce of any of the distilled waters. The medicine should be given a short time after delivery, and repeated in three hours if necessary. The preparations of morphine, acetous solution of opium, or black drop, should be used if common opium cannot be given. I must take this opportunity of stating, that Battley's sedative liquor of opium does not possess the properties of black drop as to strength, for I find it is not four times as strong as laudanum. I have used it in a variety of cases in proper doses, presuming it to possess the strength and properties of black drop, but without success. I have been informed of the same result by others; and I regret much that I have recommended it so often in these pages. I have been greatly mortified and disappointed with the failure of this medicine in several instances. The acetous solution of opium of the Dublin Pharmacopœia is to be preferred.

Dewees describes a peculiar kind of severe after pains, principally felt in the coccyx, for which large doses of camphor are the best remedy. His formula is nearly as follows:—

R. Camphoræ ℥ij;
 Sp. Vini rect. q. s. ut fiat pulvis;
 Acaciæ Pulveris, ℥iij;
 Aceti Opii, Pharm. Eblan., ℥j;
 Olei Juniperi, guttas xx;
 Sacchari purificati, ℥j;

m sit. *mistura* ex quâ sumatur semuncia omni quadrante horæ.

When pains are troublesome in a day or two after delivery, and do not yield to opiates or camphor, we should examine the pulse, lest irritation or inflammation be about to commence. If the pulse be under one hundred there is no danger; if over that number,

we are to dread disease. Such is the excellent rule of Dr. Hamilton.

The womb may be *inverted*, partially or completely, and should be cautiously restored to its natural situation. This organ may be inverted, its fundus passing through the orifice—in fact, turned inside out, or as the French call it, *renversement*. The os uteri is at the most superior part of the tumour; whereas in inversion, it is at the most dependent part. This is caused by pulling the cord, in order to extract the placenta, instead of allowing uterine contraction to expel it. The fundus uteri may be pulled down a little; and of course there is every variety between this and the state under consideration. Instances are on record, in which midwives cut off the uterus when protruded. Violent pains, hæmorrhage, and loss of vital power, are the effects of *renversion*, and consequently the woman seldom recovers.

The organ is to be reduced like a strangulated hernia, as soon as possible, by gradually compressing the neck of the tumour, and forcing it up into the vagina. When the whole is returned, cold water ought to be applied to the abdomen to induce contraction; or if the hand can be easily introduced in the same manner as to extract the placenta, it is to be passed, and such pressure made on the womb as will promote contraction. If the disease has existed for a few hours, warm fomentations and pressure must be applied previous to attempting its reduction. This disease may become chronic, and continue for years, when the surface of the womb will become partially covered with cuticle or skin, or be ulcerated. A case of this description was seen by Dr. Hamilton, in 1793. I was lately consulted in a case in which the uterus protruded beyond the vulva, and had been in this state for some years, by my ingenious pupil Mr. M'Donnell. The tumour was reduced, and a proper pessary applied. The patient experienced great relief from the instrument. The organ has been removed by ligature in such cases, as already mentioned.

The womb, vagina, ovary, and Fallopian tube may be ruptured, the labia infiltrated with blood, the perineum ruptured, and the uterus attacked with pain or spasm; forming the disease called *hysteralgia* by Burns, and *eclampsie* by the French. Hæmorrhage is a frequent occurrence to puerperal women, and has been already described. (See p. 337. Hysterical and irritable females are subject to spasm of the stomach, bowels, and uterus after deliv-

ery, attended with severe pain, and often confounded with inflammation. The pulse is generally regular in such cases, or if accelerated during the paroxysm, will soon become natural; the pains become slighter and soon disappear, and recurring during the fit. These symptoms enable us readily to distinguish the disease from inflammation. In order more clearly to understand the difference between irritation and inflammation, I shall add a few extracts from Dr. M. Hall's excellent Commentaries, which are the best I have seen on this subject:—

Intestinal irritation is represented by Dr. Hall as a disease hitherto undescribed in medical writings, and by no means understood in practice, or distinguished from other morbid affections of a very different nature. In many instances it appears with symptoms of the most acute *phrenitis*; in others, with those of intestinal or peritoneal inflammation; occasionally it assumes the symptoms of pleurisy; and accompanied with palpitation, it may suggest the idea of disease or acute inflammation of the heart. The general symptoms are said to be,—shivering more distinct than in cases of inflammation; afterwards heat of surface, with disorder of the head, chest, or belly, or of all together. There is headache, giddiness, and some morbid impression on the mind; panting and fluttering about the heart, with general hurry, irritability, and restlessness; the tongue is white and furred; the alvine evacuations are dark coloured, foetid, and scybalous, or yellow like the yolk of egg, or of the appearance of yeast; and the urine is said to be turbid, and frequently to deposit a copious sediment.

The more particular assemblage and distribution of symptoms may be stated in the words of the author.

“The affection of the *Head* consists of the most acute pain, the greatest intolerance of light and sound, and the severest form of vertigo, wakefulness, and distress, and sometimes even delirium, and the pupils of the eyes are often extremely contracted.

“The affection of the *Chest* is denoted by severe and acute pain of some part, which is apt to vary its situation, passing from one side to the other, or to the *back*, or occupying a situation higher up or lower down; this pain checks a deep inspiration, and even the ordinary breathing, to which it imparts a character of difficulty and anxiety.

“When the abdomen is affected, there is acute pain, and great tenderness under pressure, in some part, or more or less generally

diffused. The attack and situation of the pain is such, in some instances, that the case is with difficulty distinguished from gall-stones, though it more generally resembles enteritis.

“When the heart is the seat of this affection, there are violent and terrific attacks of palpitation—and the course of the carotids, and even of the abdominal aorta, is sometimes the seat of violent pulsation or throbbing.”

The foregoing description is however insufficient to establish a well-marked difference between the symptoms which arise from inflammation or congestion in the head, chest or abdomen, and the effects to which Dr. Hall alleges intestinal irritation gives rise in these several regions of the body; and it is manifest, that it would be extremely difficult to draw the line of distinction in any given case between an attack of phrensy, or pneumonic, pleuritic, or cardiac inflammation, and of peritoneal or enteric inflammation, and this disorder, alleged to be of a very opposite nature, and ascribed by the author to intestinal disorder. With the view of removing this difficulty, he draws a very elaborate diagnosis, the following extracts from which it is absolutely necessary that the reader should study with attention.

“The affection of the head from intestinal irritation comes on suddenly, is formed all at once, and is attended with great restlessness, suffering, and distress. In phrenitis, the disease is usually formed somewhat more gradually; the patient has been subject to pain of the head perhaps for some days or even longer; he complains less; or at least there is less urgent distress,—less distress of a general kind; the pain may be very severe, although it is more frequently rather obscure; the intolerance of light and sound are less urgent; the rigor, and subsequent heat, and the attack in general are less marked; the patient is not so soon relieved by remedies, and the tongue and alvine evacuations are less morbid. In the attack of affection of the head from intestinal irritation, the patient is relieved, perhaps completely, if the lancet be employed, but the attack soon recurs with equal or greater violence; in phrenitis, the relief is seldom so complete, the interval of ease so long, or the return so marked; the pain is diminished, perhaps, but gradually resumes its former violence, unless active measures be interposed.

“When the chest is affected from intestinal irritation, the pain is severe and acute, increased by a full inspiration. If the inspi-

ration be repeated, however, a second and a third time, the increase of the pain is less and less; the situation of the pain varies; there is no cough, and no crepitus on making a full expiration. In all these respects the case differs from inflammation. The remarks already made respecting the relief from remedies, the tendency to a sudden recurrence of the pain, &c. in cases of affection of the head, apply equally here.

“I had long remarked that there might be both acute pain and tenderness under pressure of the abdomen, without inflammation. This state of things is frequently the result of intestinal irritation. It is distinguished from inflammation by the general symptoms of this affection—the mode of attack—the effects of remedies. In inflammation, the surface is usually cool, the head unaffected, the patient remarkably quiet. In the case of intestinal irritation, on the contrary, there is generally much heat after rigor, the head is much affected, and the patient is restless, and generally distressed, the tongue is loaded and perhaps swollen, the alvine evacuations are extremely morbid, and great relief is obtained by the free operation of medicine.

This disorder is often confounded with arachnitis, pleuritis, and peritonitis, and may resemble each in succession, and be treated with copious depletion, with only partial benefit. The patient has lost blood to an incredible amount, without effect, and was only relieved by improving the condition of the alvine evacuations. A singular illustration of this statement is given in Dr. Hall's invaluable work on the Morbid and Curative Effects of Blood-letting. Another feature in this disorder is, that depletion to a few ounces causes syncope; whereas in the inflammations above specified, forty or fifty ounces of blood must be abstracted to produce such an effect. The paroxysmal recurrence of pain, and its urgency in despite of the lancet and its sympathetic effects on other organs, enable us to distinguish irritation from inflammation. Dr. Hall cites several authorities to prove that the expected traces of morbid anatomy, the effects of inflammation within the head, chest and abdomen, have been absent altogether. Intestinal irritation is in general supposed to be peritonitis by a great majority of practitioners. In fact the slightest pain in the abdomen of a puerperal woman is pronounced peritonitis by three-fourths of the ordinary practitioners. The *treatment*, however, is widely different. The full and free evacuation of the bowels,

followed by anodynes, with light and fluid nutriment, will effect a cure. The local remedies are cold to the head, a liniment to the chest, and a fomentation and liniment to the abdomen when affected. A combination of ol. Ricin and ol. Terebinth, for example, ℥vi of the first, and ℥iv of the second, followed by a full dose of the acetum opii of the Dublin Pharm., and fomentations, completely remove the disease in many cases. But as it occurs in constipated habits, and as the alvine evacuations are depraved, we must give mercury until these become healthy; depletion is not the remedy in this disorder.

The next class of puerperal diseases is that of fever and inflammations.

Some of the fevers arise from the general irritability of the whole nervous system; and others from local affections of the bowels, breasts, or uterus. Sometimes fevers are easily recognized, at other times they are extremely insidious.

Ephemera, Intermittent Fever, or Weed.—This disease proceeds from a susceptibility of the nervous system, by which slight exposure to cold, mental agitation, improper diet, or abuse of ardent or fermented liquors, which excites a general disorder of the system. This fever consists of a cold, hot, and sweating stage, which may terminate in health, intermittent, or common fever. It mostly commences during the first week after delivery; its symptoms are violent, and yet it may disappear after the first paroxysm, or be continued for several weeks. If there be no local disease, and the fits slight, the case is favourable; but if the patient be delicate, the breasts are likely to become inflamed. Those who have suffered much during labour are most liable to it; and yet it may follow the most easy delivery. If it depend on local causes, these are to be removed, when the disease will at once disappear. Speaking generally, it is not dangerous; but if coma, or coffee-coloured fluid be vomited, it may prove fatal. When violent, it produces great debility, and may end in typhus, and prove fatal.

I have attended a case of this kind with Mr. Drysdale of Kennington; the disease terminated in the worst form of typhus, was followed by phlegmasia dolens, and proved mortal.

During the cold stage, heat is to be applied to the stomach, back, and parts which are coldest, and this is to be increased during the hot fit, by putting on more clothes, so as to induce perspiration. After the sweating fit, the patient is to be cautiously shifted,

the clothes being previously warmed, and she may have if weak, some warm wine and water. We can often arrest the disease by exhibiting a large opiate before the third stage. The bowels are to be well regulated, the diet nutritious, and sulphate of quinine and other tonics are to be given, if the disease become protracted. If any local disease is present, it is to be treated on the usual principles. Ephemera is to be treated as an intermittent fever.

Milk Fever.

The secretion of milk is usually ushered in with sharp fever, and tumefaction of the breasts, which seldom continue for twenty-four hours. A smart purgative generally cures the disease. The breasts should be fomented with decoctions of poppy or camomile; the nipple should be drawn by a strong infant, or by an adult; or artificial means may be employed.

Miliary Fever.

Miliary fever is caused by crowding the patient with bed-clothes and giving warm drinks. It is never met with, if the patient be properly treated after delivery. An eruption of vesicles, aptly compared to millet-seeds, appears, and hence its name. It may be an idiopathic disease. Gentle purgatives soon remove it. The chamber should be kept cool, and all exciting causes removed. Formerly mineral acids were given to arrest the profuse perspiration, which discharge possesses a peculiar odour. Musk, cordials, &c. were given where the eruption receded, lest convulsions should supervene; but this is a rare occurrence. Dr. Burns never saw it terminate in this manner.

Typhus sometimes attacks puerperal women, and is to be treated in the usual manner.

Inflammation incidental to Puerperal Women.

Hysteritis, Metritis, or Inflammation of the Womb, generally occurs from the second to the fifth day after delivery. The pain in the affected organ is continued and violent, and is subject to occasional aggravation. The region of the uterus is very painful on pressure; but no pain in the abdomen, unless the inflammation extend to the peritoneum. The milk and locia are suppressed at an early period. There is a severe fever present. The disease may terminate by perspiration, diarrhœa, or hæmorrhage; which

last is the most frequent and complete crisis. Sometimes the disease proves fatal at an early period, or pus is discharged from the vagina or rectum. Mortification is a rare occurrence.

Blood-letting should be employed vigorously during the first three days; but if throbbing set in, the lancet is injurious, as suppuration is about to occur. Leeches should also be applied freely; laxatives, fomentations and blisters are also useful.

Saline effervescing mixture, with antimonials and opiates, are of great service. The pain should be allayed by anodynes, both internally and externally. When a discharge of pus takes place, the recovery will soon follow; and the convalescence should be promoted by nutritious diet, tonics, country air, &c.

Sometimes a slighter form of this disease occurs about the ninth day after delivery, and is generally mistaken by the nurse for weed, or ephemeral fever. The pain is very slight in the uterus, and the milk and lochial discharge continue; the disease may continue for days or weeks, when suppuration and discharge of pus will take place. If pus is not formed, the disease is more tedious, so that on the woman rising from bed, she experiences all the unpleasant symptoms of prolapsus of the womb. These symptoms may continue for weeks. If they are slight in the commencement, saline purgatives, sudorifics, and fomentations, give relief; but if more violent, blood-letting, and blisters must be employed.

There is a great diversity of opinion among writers and teachers, as to the question, whether inflammation of the peritoneum, and the disease called puerperal fever, are the same. From a good deal of consideration on the subject, I agree with those who think puerperal fever a peculiar disease. The morbid appearances found on dissection are widely different, in many particulars, from those observed in peritonitis; and besides, puerperal fever will not be arrested by the most timely and copious blood-letting, as the works of Gordon, Hey, Campbell, Mackintosh, and the reports of Velpeau, Hamilton, Burns, Roux, Matoscheck, Hartman, and Raimann, fully prove. I shall therefore describe the diseases separately.

Peritonitis, or Inflammation of the Peritoneum, usually comes on in a day or two after delivery, though sometimes not before the third week. The pain is confined to a single spot, but soon diffused over the abdomen, which soon becomes tense and swelled. The pulse is frequent, small and sharp, skin hot, and all symptom

of fever are present. These symptoms may come on slowly and insidiously; a fact that must never be forgotten. The pain becomes so acute, that the weight of the bed-clothes cannot be endured; and is much aggravated when the patient turns in bed. The disease usually proves fatal within five days, although it may go on for eight or ten. On dissection the peritoneum is found highly inflamed, but rarely mortified. A considerable effusion of the serous fluid, mixed with curdy substance, is sometimes found in the abdomen.

Blood-letting is our chief remedy; if it lowers the pulse, it is to be repeated; but if the pulse becomes worse by it, then we are to suspect puerperal fever. Leeches are to be applied in considerable number, according to the extent of the inflammation. The bowels are to be opened by ten grain doses of calomel, which have more purgative effect than half drachm doses recommended by Dr. Armstrong; infusion of sena with salts is to be given next morning. A blister should be applied to the abdomen after the leeches. If effusion takes place, blisters, sinapisms, and irritating ointments are to be resorted to.

If colicky pains, or spasms of the bowels set in, independently of inflammation the state of the pulse, apyrexia, and intermission of the pain, enable us to distinguish them from inflammation. Laxatives, anti-spasmodics, anodyne clysters, frictions with camphorated spirits and opium, in general afford relief; but if these fail, we must resort to the lancet and blisters.

Armstrong and Bates speak in the most laudatory terms of large doses of opium after venesection in enteritis, peritonitis and hysteritis. The former exhibited three grains of opium after venesection to tranquillize the system, and arrest the action of the pulse, allay pain, produce sleep and perspiration; and in six hours he repeated the bleeding if pain returned or was present, and gave two grains of the medicine; and in other six hours he repeated the remedies if necessary, giving one grain of opium. He went so far as to state, that he preferred opium to the lancet. Bates advises one bleeding to the amount of a pint, and a clyster of \mathfrak{z} xj of starch mucilage, and \mathfrak{z} ij tinc. opii. The instantaneous good effect of this remedy in relieving the agonizing pain is said to be truly astonishing. If there is no return of the pain after twelve hours, the same enema with half the quantity of the opium is to be employed to prevent a recurrence of the disease. But should the

pain be violent after the first twelve hours, the former clyster must be repeated. Some tenderness of the abdomen will continue for a day or two, but generally subsides. The clysters may be used without any depletion, and with equal success. Warm fomentations and leeches to the abdomen are also to be employed, followed by opiate frictions. Our author states confidently, that opium alone will cure the inflammations of the abdominal and pelvic viscera. He orders a grain of opium and a grain of antimonial powder in a bolus, to be repeated to the tenth or twelfth time, and then if no relief is obtained, the employment of the opiate clysters is necessary. The patient awakes refreshed; but low diet, absolute rest with quietness, and an occasional laxative, must be employed during the convalescence. In an exceedingly well marked case of puerperal hysteritis, to which I was called by an industrious pupil of mine, Mr. Heath, the free use of opium and calomel effected a cure, after antiphlogistic measures had been tried in vain. So acute was the patient's sufferings after depletion, general and local, blisters, turpentine, &c., that she was incessantly screaming from agony; when she was ordered ten grains of opium and a scruple of calomel, which she took in one night with great relief, but without producing sleep. The next day she was mercurialized, and her symptoms much abated; she continued the opium in smaller doses, and ultimately had a purulent discharge from the vagina. Though I am convinced of the efficacy of opium when preceded by depletion, I cannot agree with the authors just quoted, that it is an infallible remedy alone. It is also liable to another serious objection, that though it narcotises the patient, and renders her insensible to pain, the inflammation may prove fatal. This was the fact in a case I attended with my talented pupil, Mr. Waterson. The patient was so powerfully narcotised, that the usual remedies were tried in vain for twenty-four hours; and yet, on dissection, there was the most extensive inflammation of the bowels, they being agglutinated by a layer of lymph, three lines thick in some parts, and the cavity of the peritoneum containing a large quantity of greenish yellow fluid, exactly like pus.

Puerperal Fever—Fatal Child-bed Fever.

It has become fashionable of late years to question the opinions of our predecessors, and in no instance more remarkably so than on the nature of the disease under consideration. There is no dis-

ease about which there is so much dissonance of sentiment as puerperal fever; many of the most eminent obstetricians in Europe and America entertain discordant opinions as to the pathology of the disease. Some contend that "it is excessively absurd to speak of puerperal fever, except as a symptom of a local disease. (Conquest, Blundell, Duges,) while others, as Hamilton, Burns, Joseph and John Clarke, Roux, Velpeau, Mastoscheck, Raimann, Hartman, Boer, Schiffner, Festi, Belletzky, and Editors of the *Edinburgh Medical and Surgical Journal*, 1824, entertain a different opinion.

The first accurate account of puerperal fever appeared in the *Mem. de l'Acad. Roy. de Soc.* 1746, for a full detail of which I refer the reader to my *Essay* in the *Lond. Med. and Surg. Journ.* 1829, vol. iii. p. 18.

Dr. Gooch has given an imperfect history of this disease, and absolutely contradicts himself. At one time he strenuously maintains that it is peritonitis, or as he unfortunately designated it, peritoneal fever; and in future pages he tells us, that depletion is not the remedy in some cases; so that he is and is not a monopathologist. Subsequent experience has proved, beyond all doubt, that the disease under notice is not peritonitis. This will appear by a reference to the essays of Dr. Conquest and M. Tonnellé, which I have inserted in full in the *London Med. and Surg. Journ.* 1830, vol. v. No. 25.

Dr. Conquest objects to the vague term puerperal fever, under which is confounded the most opposite diseases, of the brain, chest, abdomen, and pelvis. He informs us that in many cases the morbid appearances are not sufficient to account for death. He has only found a fallopian tube, or ovary inflamed. In other cases there are hysteritis, uterine phlebitis, gangrene of the uterus, and agglutination of all the pelvic viscera. The type of the inflammation will be so modified by circumstances as scarcely to be recognised as the same disease in different women, in different districts, and during peculiar constitutions of the atmosphere. He thinks the disease communicable by medical men and nurses, that gestation and parturition produce a change in the physical condition of the female, which so modifies disease as to give it a specific character. This is decidedly the general opinion of medical practitioners. He is certain that the disease may commence during gestation, from mental depression, impure air, bodily fatigue, low liv-

ing, improper food, &c. It may commence as hysteritis, or peritonitis. The approach of the disease is often so obscure as to elude detection.

When the disease is inflammatory, copious depletion is the remedy: when epidemic, it defies all treatment. The greatest caution must be observed in using the lancet. Leeches and cupping are often valuable adjuvants; hot turpentine applied to the abdomen is of great use, it should be used with flannel every six hours for ten minutes at each time, until high erythematous efflorescence takes place. In my own practice I used it freely at once, until the erythema appears. Oil of turpentine alone, or combined with castor-oil and laudanum, is a valuable purgative in all cases, not admitting of much reduction of power. Opium and mercurials, in large doses, are invaluable after bleeding and purging. The reader will find further observations on the efficacy of these remedies on referring to the article Peritonitis in a former page. Camphor in scruple doses, combined with opium, is a valuable anodyne in cases of great restlessness. Digitalis, nitrate of potass, ipecacuanha, and antimony, are valuable adjuvants, but must not be relied on exclusively. Such are the leading facts detailed by Dr. Conquest in his *Observations on Puerperal Inflammation*, commonly called Puerperal Fever, read before the Hunterian Society of London, February 1830. M. Tonnellé prefers the term puerperal fever to peritonitis or metro-peritonitis, because it is more comprehensive than the others; it expresses nothing by itself, and does not prejudice the nature of the disease. He informs us, that the disease raged at the Maternité during the year 1829, with more violence than at any period since the establishment of that hospital. He gives the following account of the Pathology. "It is in the most violent cases that the integrity of the peritoneum is most constantly preserved; it is mostly inflamed in the hypogastric region. The internal surface of the uterus is almost always covered with a putrilaginous matter of a red brown colour, and of an insupportable fetidity. The proper tissue of the uterus is rarely changed, except by ramollissement or putrescence. Suppuration of the veins and lymphatics of the uterus, is seen in three out of five cases of puerperal fever, and is nearly as constant as peritonitis. It may extend to the ovarian, hypogastric, and abdominal veins. This phlebitis exists generally on the sides of the uterus. M. Dance held that it existed more frequently near the

insertion of the placenta. The lymphatics may take up fetid fluids after delivery, and become inflamed. *The presence of pus in the vessels, and its necessary transmission through the circulation, causes rapidly a palpable infection of the blood, and a certain number of phenomena which impress on puerperal fever an especial character, a characteristic physiognomy.* In two hundred and twenty-two cases, the uterus was affected in one hundred and ninety-seven, and the peritoneum in one hundred and ninety-three; there was pus in the uterine veins, and lymphatics in one hundred and thirty-four cases. The terms peritonitis or metro-peritonitis cannot be applied to many of the alterations described, but the term puerperal fever may be applied to all—it prejudices none of them.” (Des Fièvres Puerperales observées à la Maternité de Paris, pendant l’Année 1829, &c. Par M. Tonnellé Arch. Gen. de Med. Mars et Avril, 1830; Lond. Med. and Surg. Journ., July 1830.)

Symptoms of Puerperal Fever.

This disease commences from one to eight days after delivery, the patient complains loudly of the severity of the after-pains, and refers all her suffering to the region of the pubis and uterus. The disease is ushered in with much shivering or rigors, the pulse varying from 120 to 160. There is great prostration of mind and body, and a sense of undescribable oppression about the præcordia, and often an utter carelessness about the infant. There is always intense pain in the head. Sometimes the skin is hot and dry, face flushed, and indicative of great distress of mind. Respiration anxious and profound, as if performed with a sigh. Pain in the uterine region aggravated by pressure (metro-peritonitis,) which is first confined, but soon extends to the whole abdomen. There is much restlessness and jactitation, the abdomen rapidly becomes distended as large as before delivery, the pain sometimes diminishes or ceases. Nausea, or vomiting, at first of bilious, and at length of a coffee-coloured matter occurs; sometimes there is diarrhœa or constipation, the face is peculiarly ghastly, and becomes pale, circle about the eyes livid, lips dry, headache, tinnitus aurium, tongue pallid or red, secretion of milk suppressed lochia continued, but may be suppressed, according to Dr. John Clarke; urine sparing and high coloured, bowels confined. The eyes become dull, the pupils dilated; the nose sharpened, the

cheeks hectic or pale, the lips purple, or the face livid, as in the last stage of typhus, the forehead and chest are covered with cold perspiration. The patient lies on her back, with the lower limbs drawn up, to relieve her respiration, which is much impeded by the tumefaction of the abdomen from gas or effusion; the tongue becomes black, the mouth aphthous, teeth covered with sordes, the breath cadaverous, vomiting of a brown pitchy fetid matter, involuntary alvine evacuations of black colour, with fetid odour; the abdomen becomes less swelled, the countenance is inanimate, the alæ nasi are tremulous, the respiration becoming more and more panting. The patient speaks incoherently, mutters to herself, or is delirious and attempts to get out of bed. The pulse is so rapid as not to be reckoned, the perspiration is cold and clammy; there is subsultus tendinum, and death soon closes the scene. Dr. W. Hunter stated in his Lectures, "treat the disease as you will, three out of four will die."

This disease attacks every temperament and constitution, the strong and weak, the young and middle aged, the poor and rich; but is more common among the poor and middle classes, and from the age of puberty to thirty-five, than at any other period. It occurs most frequently within the first eight days after delivery. It is one of the most fatal diseases. Lowder considered the inflammation of the peritoneum was erysipelatous, and the fever typhoid. He said that all patients who were bled, died; and that two were cured by taking a gallon of decoction of bark daily. It is most rapid in its fatal career, often terminating in forty-eight or thirty-six hours—nearly as rapid as the plague. It attacks single women after delivery as well as the married. Dr. John Clarke was of opinion, that a succession of warm damp seasons and mild winters would induce the disease. This is also the opinion in Dublin (Lawder de Febre Puerperal. Edin. 1821.); yet why does not the disease prevail in private life, which is not always the case, if the constitution of the season be the cause of it?

During the autumn of 1819, fifty-six women died of puerperal fever, at Vienna; the patients were mostly between twenty and thirty, were of a full habit of body, and three only were emaciated. Seven patients had the disease in the Hospice d'Perfectionnement at Paris, during the autumn of 1824, and all of them were under thirty years of age. (Rev. Med. Janvier, 1827.) Three

of these patients recovered by the use of mercurial frictions, the rest died; and in all the uterus was inflamed, and gangrenous in some parts. Velpeau, Bourgon, and Roux, tried the mercury, as recommended by the surgeon at the Hospital at Antwerp. I shall detail their opinions in this most formidable disease, as soon as I shall have described the report of the Vienna Professors of 1819. These eminent men were appointed as commissioners by the government to inquire into the cause of the epidemic; and report that "the fever was preceded by marked changes in the whole system, and particularly in the uterus, indicating clearly an inflammatory state. The lochia disappeared immediately, or in a few hours. The breasts were found empty of milk, loose and flabby. The mouth of the womb was found gangrenous, when the inflammation was most recent. In the last stage of the disease, symptoms of effusion into the chest and abdomen, extreme debility of the powers of life, and gradual dissolution, were apparent. Effusions of a brownish serum, mixed with coagulable lymph, were found in these cavities. The rapid putrefaction of the body in a few hours after death—the dissolved state of the blood, the strikingly soft state of the whole bowels, heart, lungs, liver, spleen, kidneys, and particularly of the womb, indicated a colliquative putrescent condition of the whole system induced by disease. The uterus was gangrenous in every instance, especially at its orifice, and it appeared to spread from this point as from a focus. This was seen in all the bodies, fifty-six in number, all the patients having died, from the 26th of July to the 31st of August. The *treatment* of the disease had from the first been antiphlogistic; blood-letting, leeches to the abdomen, with emollient cataplasms and clysters, blisters, calomel, and emetics were used. On the commencement of the debility, they had recourse to diffusible stimulants, but with the same unfortunate results. Most of the women experienced, previous to admission, a burning heat in the abdomen, near the pubes; slight shiverings and distressing pains in the shoulders; and the greater number had erythematic spots on one of the hands and feet, and chiefly on the joints. Forty of them had laboured under privations before delivery." During the last puerperal epidemic fever of Edinburgh, "the disease spared neither high nor low, rich nor poor, those delivered in the Hospitals, in the city, nor in the environs, neither the gay and dissipated, nor the most retired and domestic." (Edin. Med. and

Surg. Journ. July 1824.)—"But," continue the editors of the last work, "shall not disease, which in every individual seized with it terminates in gangrene, and in the destruction of the whole organization, which appears as highly malignant, we may say, as pestilential fever, not also at least generate contagious matter, since it is universally allowed, that gangrenous and putrid fever very readily produce contagious matter? Has not the disease a striking analogy to hospital gangrene, typhus, and even the exotic pestilential diseases?" For a more detailed account of the subject, I must refer the reader to the Edinburgh Med. and Surg. Journ., and to the Med. Chirur. Review, 1825, vol. ii. The German Reporters advise a separation of the patient from the healthy, though no contagious property could be traced; a recommendation made by Clarke of Dublin, Clarke of London, Young, and Hamilton of Edinburgh, and Velpeau, Bourgon, and Roux, of Paris. The three last named practitioners, in their report above alluded to, had tried the various modes of treatment recommended by Denman, Leake, Gordon, Hey, Butter, Manning, Walshe, Hulme, Clarkes, Hull, Hamilton, Armstrong, Brenan, Sutton, and Broussais, and all without success.

From fifty to two hundred leeches were applied to the abdomen, as recommended by Broussais and Labatt, with all other means "to boot," in fifty cases; and without success. Even blood-letting from the arm had been freely tried at the same time. The reporters then had recourse to mercury, and ordered inunctions on the abdomen, two drachms of the ointment every two hours, which saved three patients out of seven; the disease being advanced and hopeless in the fatal cases. Two grains of calomel were given every two hours, at the same time. They think themselves warranted to draw the following conclusions from the facts they observed:—

1st. That puerperal peritonitis once completely established, and abandoned to itself, is almost invariably mortal.

2d. That it remains yet to be proved that sanguineous depletion *alone* is adequate to the cure of the disease.

3d. That the writings of Hamilton, Gordon and Vandenzande, incontestibly prove that, by means of calomel in large doses, many cases of puerperal peritonitis of the most severe kind have been saved.

4th. That mercurial frictions over the abdomen, made at short

intervals, promise considerable success, and that this ought to draw the attention of the profession to the said point of practice.

5th. That, by means of mercurial frictions, patients have been rescued, as it were, from the brink of the grave; and consequently that this remedy should be tried, however late in the disease.

6th. That the friction should be continued without fear, until the mouth becomes affected—and in most cases, for some time after all the symptoms have subsided.

7th. That it would probably be advantageous to conjoin the internal administration of calomel, warm baths, and warm temperature.

8th. That the facts observed by the authors, without being sufficiently numerous or conclusive, are yet such as may encourage, authorise, nay, compel practitioners to prosecute the enquiry.

From much consideration on all the opinions on this subject, I think it is obvious that the disease under consideration is a peculiar one, and widely different from common inflammation of the peritoneum, that it commences in the uterus, and is best relieved, perhaps cured by the free use of mercury. Dr. Blundell recommends copious blood-letting as early as possible, and repeated two or three times: but this has failed with the majority of domestic and foreign practitioners. It is rather surprising, that local bleeding has not been more generally employed. Thus leeching and cupping might be applied to the groins, hypogastric region, and the former to the labia and vagina. Again, why not apply cold to these parts, and also to the vagina and uterus. Cold injection, or pounded ice might be introduced into the vagina, and applied to the orifice of the uterus; to that part which is first affected. The only objection to the use of cold would be the presence of the lochia; but this should not prevail, for the application of cold, both externally and internally to the uterine region, would lessen vascular action, increase uterine contraction, and so far from suppressing the lochial discharge, most probably increase it. General bleeding should precede the use of mercury, which will ensure its effects as on all other occasions.

I conceive great improvement might be made in the application of the mercury. It ought to be given in large doses, as recommended by Boyle in syphilis; by Cartwright in the same disease, in fever, liver complaint, and acute and chronic dysentery (*Medico Chir. Rev.* 1826, p. 339); and by Musgrave, in the fevers of the

West-Indies. (Edin. Med. and Surg. Journal, 1827, v. 28.)—Musgrave's plan is most applicable to the rapidly fatal disease under consideration, which is the exhibition of calomel, every three or four hours in the following doses, until some effect is produced. He divides two scruples of calomel and one scruple of camphor into twelve papers, and he has exhibited from three to five hundred grains of the former, in fevers of the West-Indies, with success. He informs us, that the camphor promotes the mercurial action.

Again, the mercurial ointment should not only be applied to the abdomen, as recommended by the French, but also to the axillæ, a mode that will often suddenly produce its effects.

Before concluding this article, I should mention the use of the oil of turpentine, as recommended by Dr. Brennan, of Dublin. That gentleman published an Essay on the use of this medicine in puerperal fever; and records six cases, four of which it completely cured, and relieved the others. The work, from which I quote, was published in 1814. The four successful cases occurred in the Dublin Lying-in Hospital, and were witnessed by the assistant-physician of that period. The cases occurred in 1812, when the disease destroyed a great number in the hospital. The patients on whom it was tried, were despaired of when the turpentine was exhibited. The quantity of the remedy did not exceed two ounces in any case, and was given in the proportion of half an ounce, or a table spoonful. It was applied to the surface of the abdomen, and with the effect of relieving the tension of that part. The patients declared themselves suddenly relieved by the medicine. It was exhibited by Hamilton in a few cases, but without success. Blundell and Copland also tried it in this country, but without producing any marked benefit. They tried it, however, only in a few cases. The profession in Dublin also have ceased to employ it. If an ounce or two of oil of turpentine could cure the real puerperal fever, the discovery would justly entitle its author to the especial notice of the government, and to the thanks of posterity. The talented author has not explained the mode of operation of the remedy, nor has he given that minute history of the symptoms of the case which he has related, that is necessary to establish them as real instances of the disease under consideration. It does not follow, that as puerperal fever ravaged the hospital at the period, every woman "who vomited

green and yellow bile, and had pain and tension in the abdomen," laboured under the disease; for it has happened in the same hospital, that a woman lying between the beds of two others, labouring under the disease, was not affected. This is asserted by Lawder and Raymond, in their inaugural dissertation on the disease published at Edinburgh, 1821. The remedy, however, has not been tried fairly by the profession, for I have been unable to find a single practitioner who has employed it in ten cases. All who used it assert it does no injury, and therefore it should be tried with the other remedies, as already described.

Blundell has known the disease to prove fatal in twenty-four hours; and Joseph Clarke was of opinion, it might set in before delivery; a fact that was proved in the German epidemic. Haighton described a case that occurred ten or twelve days after delivery, and proved fatal. It may commence insidiously, and has been mistaken for ephemera, milk fever, after-pains, colic, spasm of the stomach, bowels and uterus; in fact, most of these diseases are styled puerperal fever, by the majority of practitioners.

In milk fever, the abdomen is soft, and not pained on pressure, the rigors are slight, and the pulse seldom exceeds ninety. The countenance is natural, the breasts are swelled, hot, and tender, and all these symptoms disappear in twenty-four or thirty six hours.

It can be distinguished from after-pains, they being always periodical, and rather relieved by pressure, and generally removed in twenty hours, the countenance is natural, the pulse is only quick during the severity of the pains, and the lochial discharge is natural; but soon fetid in puerperal fever. Again, in colic, spasm of the stomach, duodenum, and uterus, the pains are periodical, and the pulse scarcely affected, except during the fit.

Blundell asserts that the disease may be cured, if the patient be bled within six hours of the chill; and that she will usually die of the disease, if continued for twenty-four hours. The efficacy of bleeding is not confirmed by the reports of the French and German physicians, nor by the statements of many British practitioners. Blundell recommended blood-letting from twenty-five, to thirty-five ounces, if the pulse range from one hundred and twenty to one hundred and sixty, and there be pain on pressing the abdomen; the operation to be repeated from four to eight hours, if the symptoms be unchanged. If the pulse is lowered, and the pain

less, then the operation should not be repeated. He is rather inclined to recommend the bleeding a third time in six hours after the second, if the pulse and tenderness are as urgent as before, "though from the use of venesection, he fears much benefit is not to be expected. Beware of bleeding, if collapse has begun, or if the two first bleedings have exceeded fifty ounces or more." An average quantity for a third bleeding is from ten to twelve ounces. The rapidity of the pulse alone, or the tenderness of the abdomen, will not justify the second or third bleeding. The bleeding should be performed in the first twenty four hours after the chill, and not exceed fifty ounces. Opium, to the amount of ten grains, may be given after the bleedings, watching the effects. Calomel was given to the amount of two scruples after the first bleeding, and the mouth was soon affected, but the patient died. Blisters are objectionable in the worst forms of the disease, as they render it impossible to decide whether the tenderness be relieved. Leeches in great number are objectionable after the second bleeding; the oil of turpentine, as recommended by Brennan, is an excellent rubefacient, and may be applied to the abdomen, until redness is produced. There is great danger from too much depletion, collapse may be hastened by it. Doulcet of Paris, in 1782, recommended ipecacuan emetics, which are now never tried. The pressure caused by the abdominal muscles during vomiting would aggravate the disease. For a full account of the pathology and treatment of this disease, from the earliest period to the present, I refer to my observations in the *Lond. Med. and Surgical Journ.*

Tonnellé places most reliance on mercurial frictions, which saved three patients. Dr. Isaac A. Johnson has published six cases, in each of which he exhibited half an ounce of turpentine and the same quantity of castor oil every hour, until the bowels were freely purged, and then continued the medicine at longer intervals, and all terminated successfully. (*Philadelphia Med. Journal.*)—Dr. Payne of Nottingham, most strongly recommends the oil of turpentine, and has always found it successful. (*Edinb. Med. and Surg.* 1822. vol. xviii. p. 538.) He never used depletion of late years. In a subsequent essay he informs us that the disease was epidemic in the winter of 1822. "Not any of those who were ill of the disease, to whom I was called, were bled, either generally or locally, and every one of them recovered. Augmenting the intestinal secretion, appeared very speedily to put a stop to the

complaint in every instance." (Op. Cit. 1824, vol. xxii. p. 59.) Dr. Dewees, the eminent American obstetric writer, has lately recorded a case of real puerperal fever which was observed by two other practitioners. The antiphlogistic plan was strenuously pursued but without success. The case was considered hopeless, when thirty minims of oil of turpentine were exhibited every hour, sinapisms applied to the legs, and an ounce of mercurial ointment rubbed on the abdomen every night, with an enema, containing one drachm of laudanum. This practice was continued for three successive days—the patient recovered. (Amer. Journ. of Med. Sciences, August, 1828.)

Phlegmasia Dolens.—Milk Leg.

The pressure on the sciatic, crural, and pubic nerves during labour, induces inflammation along the injured nerves, and may give rise to one or several phlegmonous inflammations, which may terminate in gangrene, and prove fatal. (Martinet and Duges; Rev. Med. Aout. 1824.) This is often the cause of phlegmasia dolens, and is called neuralgia and neuritis by the French.

The crural veins and inferior cava may be inflamed, called phlebitis (Rev. Med. Sep. 1824); and uterine and ovarian veins may be similarly affected accompanying neuritis (Wilson, Chaussier, Schwilgue, Dance, &c.); and this state is said to be the cause of phlegmasia dolens, by Conquest, Hull, D. Davis, Bouillaud, Meckel, Sasse, Lee, &c. The majority of the profession think phlebitis and phlegmasia dolens distinct diseases. See my essay on the latter. (Lond. Med. and Surg. Journ., 1830, vol. iv.)

Alard, White and Casper, think inflammation of the lymphatics in the groin, the cause of phlegmasia dolens; the two last include the nerves and veins. This disease consists in a white swelling of the thigh and leg, the skin, white, tense excessively sensible and shining; but the œdema is not anasarcaous, and will not retain the impression of the finger. The disease may continue for weeks or months, may end in suppuration, abscess, paralysis, or very rarely in death.

Mauriceau asserted, that the disease arose from a translation of the lochia. Puzos attributed it to a translation of milk; Mr. White, to a disease of the lymphatics; Dr. Hull, to an inflammation of all the soft parts; and Drs. Conquest and D. Davis, to inflammation in the crural veins. Schwilgue gives a most interesting ac-

count of an inflammation of the crural veins and nerves, the veins in parts being reduced to the consistence of an artery, and in some places filled with pus and blood in a woman after delivery, yet there was no phlegmasia dolens (*Dict. des Sciences, Med.*)—Meckel has recorded a similar case in the dissertation of Sasse. Dr. Davis's cases were different from phlegmasia dolens, as the infiltration in the limb was declared anasarca by no less an authority than Mr. Lawrence (*Med. Ch. Rev.* 1824, p. 386.) All obstetric authors agree that the puerperal swelled leg does not pit on pressure. But the Americans assert that the disease may commence in the calf of the leg, and proceed upwards, and even appear in both sexes, and in the superior extremities. (*Francis's Memoir, New York, Med. Jour., No 1.*)

Dr. Beck saw it attack a woman fifty-two years of age, *op. cit.* No. 2. Dr. Hossack arrives at the following conclusions on the disease, which he calls *cruritis*;

1st. That *cruritis* is an inflammatory disease, not only affecting the limb, but the whole system.

2d. That it proceeds from a suppression of the natural excretions, the effect of cold stimulating drinks, and other means of excitement. It is a peculiar disease.

3d. That it is not connected with the lochia.

4th. That the first irritations frequently appear in the leg, and not in the groin or pelvis.

5th. That it succeeds easy labours, and cannot proceed from pressure of the child's head on the edge of the pelvis, rupturing the lymphatics, as maintained by Mr. White.

6th. That it appears in every part of the limb; nor is it confined to females, as proved by Hull, Ferriar, Thomas, Davis, Dewees, Chapman, S. Cooper, Hossack, Heermans, Beck, Denmark, Duncan, Graves, Stokes, and others, who state that it attacks males.

7th. That it sometimes appears in both limbs at the same time.

8th. That the usual means of subduing inflammatory action, are most effectual in removing the active stage of the disease.

9th. That in the second stage, when it is chronic, in addition to the use of general stimuli and tonics, stimulating spirituous liniments, friction, and the roller, are most useful in restoring the circulation, exciting the absorbents, and in removing the disease.

10th. That it may prove fatal by abscess, or by exhausting the strength of the sufferer.

The disease occurs from the second to the seventh week after delivery. It is of rare occurrence, Hamilton, Burns, Blundell, Clark, of Dublin, Dewees, &c. (see my essay *ut supra*, and Edinb. Med. and Surg. Journ. 1829, v. 32); it does not retain the impression of the finger, or pit on pressure (Callisen and all obstetricians). It seldom terminates in suppuration, if judiciously managed, though abscesses, paralysis, and mortification may supervene. It is thus defined by Callisen: "the œdema of puerperal women, called lacteous by some, is an elastic white, shining, hot and painful swelling, not retaining the impression of the finger on pressure, not infrequently attacking puerperal, but rarely pregnant women." It proceeds from above downwards, though sometimes from the foot or calf of the leg upwards. The whole extremity is excessively swollen and painful, but not red, and hence the designation, phlegmasia alba dolens. The patient cannot bear the slightest touch, and the extremity is double the usual size. The lochia and milk may, or may not be suppressed. The parts within the pelvis are highly irritable, and pained on the slightest pressure; there is difficulty in evacuating the bladder. The swelling arrives at its full extent in twenty-four or forty-eight hours. There is now great constitutional disturbance with fever. The disease may disappear in six or eight days, then recur, disappear, and return. It may attack each limb successively, and return to the first effected. It occurs after easy as well as difficult labours, and attacks women of all constitutions. All agree that it is seldom fatal. (Hamilton, Burns, Blundell, Dewees, &c.) It becomes chronic when judiciously treated, or may be entirely removed. It is supposed that it may attack the male sex and the superior extremities (Good's Study of Medicine, by Professor S. Cooper). Its pathology is undetermined. The appearance of the disease several weeks after delivery in aged females, and in the male sex, is inexplicable according to the proposed etiology of writers. Mason Good, Hamilton, Dewees, &c. do not think it is caused by phlebitis of the uterine or crural veins.

Dr. Dickson advises the application of leeches freely, one or two dozen to the effected part of the groin or the thigh, evaporating lotions, saline and antimonial medicines, quietude, and the horizontal posture, and the comp. powder of ipecacuan, or some

other opiate to allay pain, and bleeding in full habits, if fever be present. Warm anodyne fomentations of acetate of lead, or warm vinegar, sometimes procure great relief. Opium should be given to allay pain and procure rest; though Dewees thinks it injurious, Burns and Blundell recommend it.

The chronic form is often relieved by bandaging, stimulating liniments, and moxas. Tonics are often extremely necessary in this stage of the disease. Mercurial frictions and blisters have been resorted to with success, and acupuncture might also be used with advantage.

The disease is most common from the second to the fifth week after delivery, and is usually preceded by marks of uterine irritation within the pelvis, ulceration of the vulva or intestinal tube.

Uterine Phlebitis, says M. Dance, appears soon after parturition and commences in the sinuses of the uterus, is propagated along the innumerable veins in the parietes of the organ, and may be said to be parenchymatous. It is generally complicated with metritis, or may be secondary to it; and though the veins may be affected, it is not correct to say, that the pus does not infiltrate itself into the substance of the uterus. I have afforded many facts in my inaugural thesis to justify this opinion. In one case half the uterus was infiltrated, and contained many small abscesses. Metritis and phlebitis often exist at the same time, though one may precede the other. Phlebitis runs along the hypogastric veins to those of the ovary, and hence to the vena cava and other veins of the abdomen: the ovarian veins, round ligaments, and tubes may be affected, and inflammation and suppuration of these parts occur. Phlebitis is generally unilateral, or confined to one side of the uterus, especially near the attachment of the placenta, as the veins over which that body was attached may become inflamed and extend the disease to the side of the uterus, but this isolation of the inflammation was not observed so well marked in the veins in the parietes of the organ. The right side of the uterus was most commonly affected, and the narrator states, that he has discovered by auscultation the placenta most commonly attached to this side. In eight cases, the ovaric veins of both sides were affected at the same time in three instances, the left ovaric in one case, and the right in four. The right hypogastriacs were most frequently affected. The causes of phlebitis are said to be laborious labours, acrid lochia, decomposed clots of blood and putrified portions of placenta: causes which bear a close resemblance to those that give

rise to phlebitis after amputation, when absorption of unhealthy matter takes place. It may occur after the easiest labour or the most innocent operation, as venesection.

It is difficult, if not impossible, to discover the commencement of the disease immediately after parturition, the symptoms are so obscure. Sometimes the patient makes no complaint, and the pain on pressure may be mistaken for the usual sensibility of the uterus after delivery. The organ enlarges, however, and can be easily felt above the pubes. The lochia may be diminished or suppressed; and very often a thick, purulent, white, or sanious foetid matter, escapes from the genital fissure. The os uteri is dilated, is painful and hot; the urine is scalding and passed with difficulty, especially if the inflammation extend to the parietes of the vagina and urethra. There is no vomiting, the fever is slight, and the general state presents nothing irregular. But when the disease extends to the ovarian and abdominal veins, then the symptoms are violent and indicate a terrible complication, change of countenance, indicative of great feebleness, great prostration, delirium or insensibility, respiration difficult, icterus or inflammation of many articulations take place; the pulse is rapid and compressible, and death soon closes the scene. Mr. Dance thinks Mr. White was probably warranted in concluding that puerperal fever was a putrid disease from the constitutional irritation produced by absorption of pus.

Autopsy.—The uterus is enlarged, and contains a fatty substance resembling the remains of decidua, bathed in a foetid, ichorous sanies; its parietes are thickened and softened, and are of a brown or black colour. The softening is most remarkable over the site of the placenta, and readily allows the finger to pass through it like hepatized lung. The veins are filled with a whitish or yellow pus, which is squeezed out by pressure, and it is necessary to introduce a probe or sound to discover their tortuosity. There is purulent engorgement of the lungs with pleuritis, sometimes abscess in the spleen, liver, or brain; the mucous coat of the digestive tube is red or softened, and extensive suppuration of the joints is more common in this than in any other species of phlebitis.

Diagnosis.—It is difficult to distinguish phlebitis from metritis, but the pain and engorgement of the ovarian veins, the œdema of the lower extremities, and of the lower part of the abdomen, which pits on pressure (*empatement*,) announce that the inflammation

has penetrated into the vessels of the abdomen, and opposes itself to the free circulation of the blood ; but of all the local symptoms, that which merits most attention, is an indolent abscess in some part of the subcutaneous cellular tissue. The delirium may be so acute as to lead to the supposition that the chief disease is in the head, especially if the history of the case cannot be learned ; the redness of the tongue would indicate enteritis, and the rigors might be mistaken for intermittent fever or ephemera. The due consideration of the various bearings of the case can alone lead to a just diagnosis. The *prognosis*, is unfavourable ; the disease is much more serious than metritis, it occasions much more extensive disorder, and is more inevitably fatal. In all cases, with one exception, the disease proved fatal towards the end of the third week. The *treatment* ought to be antiplogistic, leeches to the course of the inflamed vessels, warm fomentations, and low diet. He terminates his interesting memoir, by observing that women ought to be cautious in assuming their ordinary avocations after the ninth day, for a great deal depends on the contraction of the uterus ; and if the organ can be felt in the hypogastrium, the least imprudence may be followed by the most unfortunate consequences. In two preceding essays he gives a luminous account of phlebitis in different parts of the body, from wounds ligatures and injuries of veins, and concludes that abscess in the lungs, liver, spleen, brain, or articulations, is the most common effect of the disease. He has described phlebitis of the left renal vein, but no œdema of the lower extremities, and in the whole course of his remarks on uterine phlebitis, he makes no mention of phlegmasia dolens. From what has been now stated, these diseases are manifestly different. It is necessary to compare the conclusions of a writer of the same period with those now detailed. Dr. Robert Lee published a paper in the *Medico-Chir. Trans.* in which he concluded that phlebitis of the crural veins was the cause of phlegmasia dolens ; which opinion was denied by the majority of his reviewers. It appears the reviewers were justified in their animadversions, for the author has abandoned his hypothesis, and in the succeeding volume of the same work, just published, he maintains that phlebitis of the spermatic veins of the uterus, extending to the crural vessels, is not only the cause of phlegmasia dolens, but of many of the fatal disorders of the puerperal state, which have been usually comprehended under the vague designation of

puerperal fever or peritonitis, and according as the serous, muscular, or venous tissue of the uterus is affected, the fever will be inflammatory, congestive, or typhoid. He is at issue with M. Dance, for we are informed that "generally the spermatic veins alone are affected, for the most part only of that side of the uterus to which the placenta has been attached; and the inflammation being once induced, it is liable to spread continuously to the veins of the whole uterine system, of the ovaria, fallopian tubes, and broad ligaments. The vena cava itself may become affected, but this occurrence is not frequent, the disease being usually arrested at the entrance of the spermatic into the vena cava on the right side, and of the emulgent into the same vessel on the left. If, as sometimes happens, it pursues the direction of the kidneys, the substance of these organs as well as their veins may be involved in the mischief. The hypogastric veins are seldom affected on both sides, and rarely inflamed in comparison with the spermatics." He thinks phlegmasia dolens must now be considered as merely one of the remote consequences of uterine phlebitis. The obvious meaning of Dr. Lee, is that uterine phlebitis is the cause of phlegmasia dolens. Against this conclusion we have the testimony of a host of writers, as well as the author whose account of the disease is already detailed, among whom are Dr. John Clarke, Burns, Wilson, Arnott, Sasse, Meckel, Schwilgue, we have seen suppurative inflammation of the uterus unaccompanied by phlegmasia dolens. Mr. Wilson described three cases of uterine phlebitis extending to the cava, but no swelling of the inferior extremities. Schwilgue relates a case of phlebitis of the crural vessels after delivery, in which there was no phlegmasia dolens, though the vein was filled with pus, and in one part reduced to the consistence of an artery. Mr. Arnott has described two cases of uterine phlebitis, the veins full of pus, but no affection of the inferior extremity. How often have I seen purulent discharge from the uterus, which the dissection had shewn to depend upon destructive ulceration of that organ and the vicinal tissues, but no phlegmasia dolens was present. Here then are the veins in contact with acrid fluid, but none of the effects of uterine phlebitis. Again, phlegmasia dolens occurs several weeks after delivery, when the uterus is restored to its ordinary condition; and according to Dr. Dewees, most frequently occurs after uterine hæmorrhage which ought to be unfavorable to phlebitis. In phlebitis of the superior and infe-

rior extremities there is redness and common œdema, symptoms always absent in phlegmasia dolens. In Dr. Davis's first case, Mr. Lawrence pronounced the œdema "the result of ordinary anasarcaous effusion, the inguinal glands a little enlarged, as they usually are in a dropsical limb, but without any sign of inflammation. The femoral, external iliac, and common iliac veins, firmly plugged by a coagulum of blood." The second case related by Dr. Davis, cannot be called phlegmasia dolens. A lady was seized with peritonitis the day after delivery, which was removed by active measures. Ten days afterwards she complained of deep-seated pain in the groin and along the great vessels; the limb was swelled and very painful; but by leeches and blisters it was speedily reduced, and in a week the swelling had entirely subsided, and the patient recovered the perfect use of her limb. From this time she convalesced rapidly and satisfactorily, but died in the midst of perfect health six weeks after her confinement. Surely this woman cannot be said to have died of a disease and no symptom of it present. The third and fourth cases related by the same writer are good examples of phlebitis, but the ordinary symptoms of phlegmasia dolens were absent. The fatality of these cases proves them to be different from the latter disease. Professor Velpeau's cases, published about the same time, 1824, were not the disease in question. In one, the limb was œdematous; in the other swollen and red, and in the third, "beginning to shew œdema." Dr. Bouillaud's description of phlebitis of the inferior extremity is very different from that of the puerperal swelled leg. He says, "the symptoms of inflammation in the trunk of a superficial vein are easily recognized. The member swells, becomes hot, painful, and is even the seat of phlegmonous erysipelas. The vessel itself is tense, hard, and knotty like a cord. Œdema of the limb is a very common attendant on phlebitis of one or more of the principal veins, and evidently arises from the mechanical obstruction to the return of the blood. The fever is putrid, adynamic or typhoid." M. Ribes gives a similar description of phlebitis, and pronounces it quickly mortal. From a due consideration of the symptoms, termination of phlebitis and phlegmasia dolens, it is obvious that they are different diseases, and this is the opinion of a large majority of the profession in every country, at the present period.

Abscesses may form in the pelvic joints, and in different parts

of the body of puerperal women ; in the superior or inferior extremities, in the *psoæ* and iliac muscles, in the lumbar and inguinal region (*Dict. des Sc. Med.*) Sometimes they open in the groins, loins, uterus, bladder and rectum. They are to be treated on ordinary principles. They are of rare occurrence.

Paralysis.

Some women, after the easiest, as well as instrumental delivery, are attacked with paralysis of the lower extremities, which is generally attended with retention of urine. The disease usually disappears in a few weeks. Frictions, tonics, and gentle exercise are the means of cure. The water must be drawn off night and morning with the catheter ; and this I have known necessary for three months.

Laceration of the Perineum.—Sloughing of the vagina and contiguous parts, effusion of blood into the labium, and retention of urine, have already been described.

Puerperal Mania.—This disease may occur the third day after delivery ; sometimes not for a fortnight ; and again, not for several weeks, after parturition. It generally appears after the patient awakes, when she speaks rapidly and incessantly, supposing some mischief has befallen her, but most generally to her child, which she thinks is lost, stolen, or killed. The lochia and secretion of milk are not suppressed. The disease usually disappears in a few days, though it may continue for weeks, but seldom proves fatal. Leeches should be applied to the head, the bowels regulated by calomel ; camphor and hyosciamus, or the acetous tincture of opium, given to allay irritation. Blisters are considered injurious in puerperal insanity. The strait-waistcoat must be resorted to in some cases, though the milder the patient is treated the better. If the disease become protracted, change of air and scenery are of great advantage. The disease is not apt to recur in subsequent confinements, and may be prevented by attention to the mind, and general state of the health. It may continue for six years, and the woman have children ; and in one case it continued for eleven years with lucid intervals twice a week. In such case gestation, parturition, or lactation, must have lost all effect.

Phrenitis or Inflammation of the Brain.

This disease comes on about the third day after delivery.

The patient complains of pain or throbbing within the head, or in the temples, experiences intolerance of light and sound, and soon becomes furiously delirious. The pulse is rapid, the eye vivid, the lochia continue, but the milk ceases. Care must be taken to distinguish the disease from mania. General and local blood-letting, shaving the head, and applying cold, and a blister to the scalp, and opening the bowels, are the best remedies.

Puerperal *convulsions* are to be treated as already described p. 305. Another disease, which is often met in obstetric practice, and hitherto undescribed minutely by authors, is excessive reaction consequent on profuse loss of blood, by uterine hæmorrhage. I have briefly alluded to it in the article on abortion, p. 342; but shall now more particularly describe this disease.

Excessive Reaction from the Loss of Blood.—The best description of this disease is given by Dr. Hall, in his valuable essays, from which I shall extract its history. He states:

“The phenomena are very different, if instead of one full bleeding to syncope, or of a profuse hæmorrhagy and even protracted syncope, the person be subjected to repeated blood-lettings, or to a continued drain. In this case, within certain limits, the pulse, instead of being slow and feeble, acquires a morbid frequency and a throbbing beat, and there are, in some instances, all the symptoms of excessive reaction of the system, which it is my object now to describe.

“The state of excessive reaction is formed gradually, and consists, at first, in forcible beating of the pulse, of the carotids, and of the heart, accompanied by a sense of throbbing in the head, of palpitation of the heart, and eventually perhaps of beating or throbbing in the scrobiculus cordis, and in the course of the aorta. This state of reaction is augmented occasionally by a turbulent dream, mental agitation, or bodily exertion; at other times it is modified by a temporary faintness or syncope.

“In the more exquisite cases of excessive reaction the symptoms are still more strongly marked, and demand a fuller description.

“The beating of the temples is at length accompanied by a throbbing pain of the head, and the energies and sensibilities of the brain are morbidly augmented; sometimes there is intolerance of light; but still more frequently intolerance of noise and of disturbance of any kind, requiring stillness to be strictly enjoined, the knockers to be tied, and straw to be strewed along the pavement,

the sleep is agitated and disturbed by fearful dreams, and the patient is liable to awake or be awoke in a state of great hurry of mind, sometimes almost approaching to delirium; sometimes there is slight delirium, and occasionally even continued delirium; more frequently there are great noises in the head, as of singing—of crackers—of a storm—or of a cataract; in some instances there are flashes of light; sometimes there is a sense of great pressure tightness in one part, or round the head, as if the skull were pressed by an iron nail, or bound by an iron hoop.

“The action of the heart and arteries is morbidly increased, and there is great palpitation, and visible throbbing of the carotids, and sometimes even of the abdominal aorta—augmented to a still greater degree by every cause of hurry of mind or exertion of the body, by sudden noises or hurried dreams or wakings; the patient is often greatly alarmed and impressed with the feeling of approaching dissolution; the state of palpitation and throbbing is apt to be changed, at different times, to a feeling of syncope; the effect of sleep is in some instances very extraordinary—sometimes palpitation, at other times a degree of syncope, or an overwhelming feeling of dissolution; the pulse varies from one hundred to one hundred and twenty or one hundred and thirty, and is attended with a forcible jerk or bounding of the artery.

“The respiration is apt to be frequent and hurried, and attended with alternate panting and sighing; the movement of expiration is sometimes obviously and singularly blended with a movement communicated by the beat of the heart; the patient requires the smelling bottle, the fan, and fresh air.

“The skin is sometimes hot; and there are frequently general hurry and restlessness.

“In this state of exhaustion, sudden dissolution has sometimes been the immediate consequence of muscular effort on the part of the patient.” pp. 30—31.

This morbid condition is to be relieved by stimuli, and not by depletion. See p. 342 of this work.

Bronchocle.—Enlargement of the thyroid gland is an occasional occurrence after delivery; the tumour may inflame and suppurate, or become a chronic tumour.

Leeching, purgatives, and cold applications, should be resorted to in the inflammatory state; and if these fail, suppuration is to be promoted by warm fomentations and cataplasms. Should the

disease assume a chronic form, it is best treated by the internal and external use of hydriodate of potass. Ten drops of the tincture or the solution of the Dublin Pharmacopœia 1826, may be given twice a day, and the ointment applied externally. I am in the habit of adding a few grains of tartarized antimony to the latter, which considerably increases its effects. The internal use of iodine is not free of danger, and consequently the closest attention should be paid to the patient.

Mastitis, Inflammation of the Breasts.—This is a frequent disease at any time after delivery, and may be caused by cold, sudden secretion of milk, or by retention of that fluid, in consequence of excoriated nipples. The great object is to prevent suppuration; but here we have much prejudice to contend with, as most women prefer that termination. The breast becomes tense, and excessively sensible, so that cold applications cannot be borne. Warm fomentations, as those of poppies and chamomile, or warm solutions of acetate of lead, will often prevent suppuration, by inducing a free perspiration on the part. The bowels should be well opened, and sudorifics exhibited. In France, leeches are freely applied; but Burns thinks them of little use, and I am of the same opinion. The milk should be extracted, if no pain be produced, either by glasses, the syringe, a clean tobacco-pipe, or by the suction of a strong child or adult. The disease rapidly terminates in suppuration. When throbbing is experienced, warm poultices should be applied, as bread and milk, linseed-meal, &c.; and the abscess generally bursts, when the matter should be evacuated, spermaceti ointment applied, and over this a warm poultice. In some instances the milk soon returns, or most commonly it ceases: the breast healing, and remaining swelled. in this case gentle friction with camphorated spirit is to be applied, or camphorated mercurial ointment. The part should be kept warm by means of flannel, as there is a great tendency to relapse, or to an indolent scirrhus. In irritable subjects the abscess may slough, and become very troublesome and dangerous. It is to be treated on the ordinary principles of surgery.

The breast is subject to *superficial inflammation, suppuration, and ulceration about the nipple*. Various applications are made in this case, as palm oil, mucilage of gum arabic, white of eggs, olive oil, spermaceti ointment, fresh butter, melted marrow, or suet, &c. &c. To these may be added weak solutions of sul-

phates of zinc, alumine, copper ; acetate of lead, or nitrate of silver ; care being taken to wash them off with milk and water before the application of the child. The vulgar apply tobacco ointment in these cases, which I have observed in one instance nearly to destroy the child. The infant should be taught to suckle through an artificial nipple, otherwise severe inflammation of the whole breast may be induced. Dr. Sibergundi, of Derston, has strongly advised the following remedy for excoriated nipples :

R. Ext. Opii gr. j,
 Liquor. Calcis, } an ʒiij.
 Olei omygdal. }

Sometimes *aphthæ* or *venereal ulceration of the child's mouth*, will cause the disease. If the latter, mercury must be exhibited to the mother. If the female is delicate and irritable, and suffer severe pain on applying the infant, it is necessary she should no longer nurse ; but this must be decided by the history and circumstances of the case. If she wean the infant, it will be necessary to exhibit smart purgatives, to prevent the secretion of milk, or to draw the breast if the secretion prove troublesome.

Diseases of Nurses.

Agalacty.—This name is given to the absence or suppression of the secretion of milk. In some cases it depends on vivid emotion and then disappears ; in others on a delicate state of the constitution. In the former instances, fomentations and stimulating liniments applied to the breasts, cause determination of blood to these organs, and induce the desired secretion. Artificial or natural suction produces the same effect. The disease is often symptomatic of metritis, peritonitis, and simple fever. Menstruation may occur during lactation, and diminishes and deteriorates the quality and quantity of the milk. All chronic diseases, as phthisis, hepatitis, &c. produce the same effects ; and hence the infant should be committed to another nurse in all these cases. When the milk is secreted sparingly, we should order nutritious aliments, and caution the woman against the use of crude fruits, vegetables, or acids. It is very evident that the diet of the nurse affects the infant. In illustration of this point we must remember, that mercury taken by the mother will cure an infant who labours under syphilis. In some cases the milk is rich and creamy in one breast and thin in the other, and this difference cannot be account-

ed for, or removed. Among the other species of mammalia, we find the diet affect the milk. We observe that cows fed on brewer's grains produce thin and aqueous milk.

It is supposed by many that nurses may communicate syphilis, scrofula, gout, rheumatism and cancer; but further evidence is wanting to confirm the validity of this point. We know that mental agitation, passions, chagrin, &c. of the mother, affect the milk, and produce colic and convulsions in infants; and that salt food, spices, leguminous substances, render it clear and abundant; while strong drinks, brandy, coffee, spirituous liquors, long watching, and too much sleep, render it too thin and watery. It is generally supposed in this country, that the use of fermented liquors, more especially of porter, increases the quantity and improves the quality of the milk: hence women of the middle and lower classes indulge in the use of this beverage. There is no objection to the moderate use of porter or ale, but an excess is highly injurious. A pint of either in the twenty-four hours is sufficient. From the preceding statements, we must admit, the existence of substances which increase the human milk or *galacto-poietics*. When the secretion of milk is too abundant it is termed *galactirrhæa*. Some women have a profuse secretion of milk for the first three or four months, and have their dress wetted, and in this way are rendered uncomfortable and liable to take cold. This condition is followed by pains in the back and loins, dry cough, and much debility. When the milk is too copious the patient should live upon a spare vegetable diet, use purgatives and diaphoretics; she should cease to apply the infant too frequently. Astringents, such as vinegar and water are applied to the breasts by nurses, and by some practitioners. Dr. Ranque, of Orleans, recommends low diet, and cloths moistened with the following mixture, to be applied three or four times daily to suppress the lacteous secretion, which he says will prove effectual in three or four days:

R. Aquæ Lauri Ceras ℥ ij;
Spts. Ætheris Sulphur, ℥ j;
Extract Belladonnæ, ʒij. m

Nurses should take nutritious diet, and avoid the abuse of ardent or fermented liquors, depressing and violent passions which injure the quality of the milk; and according to some they should not expose themselves to the development of a new pregnancy. Should conception happen, the child ought to be weaned, as the

milk will be deteriorated. When the period of ablactation or weaning arrives, the woman should have some aperients and moderate diet.

Though the finest infants are those reared solely on the mother's milk, yet about the fourth month, if the nurse is feeble, it is necessary to allow the infant arrow-root, sago, tapioca, gruel made with milk, beef tea, soups, &c.; a milk diet is also valuable. When dentition commences, the food ought to be diminished, irritation allayed by mild purgatives with opiates, and the gums should be incised when tumefied. Many children are necessarily brought up on spoon diet, and thrive very well. Beef tea, gravy with bread, sago, &c, should be exhibited, for unless the child is well nourished, scrofula and rickets will appear.

CHAPTER IV.

MANAGEMENT AND DISEASES OF INFANTS AND CHILDREN.

ARTICLE 1.—*Section 1. Management of Infants.*—The management of new-born infants, which is necessary immediately after parturition, has been described in p. 126; we shall now consider their treatment during the first months of existence.

It is a fact that not one young mother in a thousand knows how to manage a new-born infant; and few nurses are better informed. The ignorance and opposition of nurses and young mothers to medical advice, are almost the whole cause of diseases and mortality of infants. The clothing of the infant should be ready before delivery. The infant should be washed and dressed in an adjoining apartment, in order to avoid noise and bustle in the sick chamber, as the woman requires rest and quietness. The infant should be enveloped in flannel; its head washed with tepid water and milk soap, care being taken not to allow the lather to get into the eyes. Nurses use a piece of soft flannel in performing the ablution. The head is to be wiped with a soft napkin, and a flannel cap is usually applied. This is not necessary, and is mention-

ed as a useless custom. The body should be washed thoroughly, and dried perfectly. In performing this task, all hasty and violent motion or turning of the infant should be avoided. The navel-string is to be enveloped in a piece of rag, and a flannel roller ~~applied~~ over it and round the abdomen, which is now fastened with tapes. There is a great improvement made in the dress of infants, by substituting tapes and buttons for pins. When dressed, the infant should be placed on its left side, in a piece of flannel, in its own cot, or with the mother. If we place it with the mother, she should be cautious not to have it too warm, as generally happens, and gives rise to a susceptibility of cold. The exposure of the eyes to a strong light or the blaze of a fire is highly injurious, and produces ophthalmia, strabismus, and convulsions. The infant should not be removed from the apartment, in cold weather, sooner than a month. Nurses generally remove it while the mother is asleep, and by exposing it to cold, often cause its death.

Food and medicine.—In a state of nature no medicine is necessary for a new-born infant. It is a general practice, however, to purge off the meconium, or contents of the bowels, and for this purpose various purgatives were employed by our predecessors. The best is half a tea-spoonful of castor oil. The nurses give syrup of buckthorn, syrup of rue, butter and sugar, almond oil, and syrup of violets, &c. &c. I have known a nurse apply a blister between an infant's shoulders, to clear its complexion." The first milk of the mother purges the infant. When she has none, castor oil is the safest purgative. The first milk is called *colostrum*. Of all things we should caution women against the dangerous practice of overfeeding infants: this is the cause of almost all the diseases of the first month, more especially of those of the digestive organs. The stomach of a new-born infant does not contain more than three table-spoonful of fluid, and long and repeated suction of the nipple must be made before this quantity can be obtained. During the first month the infant should be applied to the breast every two hours. The longer it sleeps the better. It should be kept clean, quiet, and warm; and should have fresh air without exposure to cold. Washing and dressing are to be performed as mildly as possible, to prevent that continual screaming which is caused by rough usage. When the child cries and screams while dressing, it is a sure sign of mismanagement on the part of the nurse. If the ablution and dressing are properly

and quietly performed, the infant will never scream. It should be spoken to kindly, and soothed, whenever it evinces signs of fear. It should never have cordials or opiates, unless ordered by the medical attendant.

The derangements of the organs of infants produce a change of temper, and consequently of the moral powers. Besides the inhumanity and cruelty of rendering infants prone to peevishness and passion, they become more liable to disease and to a diminution of vital power, and consequently their growth is impeded, and their lives shortened. The infant should never be frightened nor treated harshly. Attention to this point will prevent the habitual screaming during the time of washing and dressing, which is distressing to every sensitive mind. An infant who is roughly handled, will shew every sign of fear when the operation commences; but it scarcely ever dislikes to be dressed or washed when gently and carefully handled; indeed it generally enjoys the application of water. It is right to mention that tepid water is to be preferred to cold in winter and spring, more especially if the infant is delicate. The shock of cold water on a delicate infant is highly injurious; I am certain that I have known infants destroyed by this cause. The shock given the nervous system, and the abstraction of heat, will soon destroy delicate and sickly infants or children; hence the indiscriminate use of sea-bathing is now very properly condemned. Mothers should be cautioned against the use of soothing syrups, syrups for facilitating the appearance of the teeth, in a word all quack nostrums advertised in the public papers. It is really surprising how much these useless nostrums are sanctioned by families as if their ignorant and illiterate discoveries could possibly have more knowledge of human diseases than the regular medical practitioners, who devote their lives to reflection upon the subject. All rocking in cots or cradles, or jogging on the knee, should be prevented. The infant should not be spoken to or permitted to look on a light during the night, or to be carried in arms round the room, which answers no useful purpose; but on the contrary, exposes it and the nurse to taking cold. It should not be removed from bed at night, unless for the purpose of feeding or cleaning; and it should not be allowed to remain in a soiled dress, even when asleep. During the first two months it should be carried in a horizontal position, and be neither shaken nor allowed to sit up. The bones of the back are not able to bear the weight of

the head, and hence the back will bend when the infant is placed in the sitting posture, and "grow out;" the head falls on the chest or back, just as the child is inclined forward or backward. It should be placed on the back and on the abdomen on the mother's knees; and the best exercise for it is gentle friction all over the body twice or thrice a day. It is a most erroneous idea that an infant cannot have proper exercise unless it is tossed about. High and violent "tossings" are injurious. The infant should be spoken to when awake. It throws its limbs about, which is the best exercise it can have.

Early attention should be paid to cleanliness; soiled napkins irritate the skin, and produce cold. If the infant is accustomed to be "held out" at regular times, it will soon learn to make its wants known, and will express uneasiness even in its sleep. Its dress should be changed as often as soiled; it should be washed with a sponge and warm water, and afterwards "powdered," even though there is no sign of excoriation. When the mother cannot suckle or employ a wet-nurse, the food should be as like her milk as possible. One part of fresh cream, with four or six of water, with a little sugar, is the best substitute for the mother's milk. The suckling bottle, with a teat, is to be used in these cases. The superiority of cream over milk arises from its being destitute of coagulum or curd, which a young infant can seldom digest. The mother's milk at first chiefly consists of cream and water. A moderate tea-cupfull of milk is a sufficient meal for a child six months old; and it is of great importance that it should be administered by suction, as in this way the salivary glands stimulated. Pouring the food down the throat by means of a boat or spoon, is a most unnatural and injurious proceeding. It is a great error to suppose a child derives nourishment from the quantity of food that is given, as the stomach can only act on a small quantity. It is highly improper to give solid food to a toothless child, as it will disorder the stomach and bowels, induce acidity, colic, griping, and bowel complaint. Many mothers err on this point, in giving minced animal food, which is not sufficiently comminuted or divided for the weak stomach of an infant or child. Bread and milk given in this way is also objectionable. Liquid food alone, and that by suction, should be given for the first eight months. The child should be in the open air as much as possible when the weather permits; but no risk is to be run under the idea of hardening it by exposure

to cold. Fatal inflammation of the lungs frequently follows this practice. When the child begins to walk, it should be raised by placing the hands on the sides under the arms. It is injurious to raise it by the arms, or to allow it to stand too soon. The rule upon this point is, to be guided by the natural efforts of the child. During infancy, when the woman has no milk, we may advise, in addition to the articles of food already mentioned, veal or mutton broth, beef tea deprived of fat, and slightly thickened with oatmeal; the preparation of wheat, called farinaceous powder, biscuit powder, rice, sago, &c. These must be changed according as they affect the infant. Sometimes every form of diet fails, the child becomes weaker, and a wet-nurse must be provided. The rule as to the *selection of a nurse* is, that the woman should be healthy, and the period of her delivery should be as near that of the female whose child she is to nurse, as possible. The milk of a woman six months after delivery, is not fit for a new-born infant. The quantity of food taken by nurses should be increased, and the diet should be nutritious.

Weaning.—The period at which an infant should be removed from the breast must be determined by the strength and size of the child; it will vary from fifteen to eighteen months. Some women in high life wean their children at the end of six months; but the lower classes not before the second or third year. The poor adopt the latter plan upon the grounds of avoiding pregnancy; a condition that seldom happens during suckling. Weaning ought to be a gradual process, and should never be commenced until after the first teeth have appeared. The breast should be gradually withdrawn, and the artificial food already mentioned, given during the day. It is a bad plan to allow the breast and food at the same time. The child should be weaned, if the pregnancy or menstruation occur during suckling.

Dress of Children.—It is highly important that there should be an equal distribution of heat over the whole body, and to secure this, the infant ought always to wear a long flannel dress for the first four or five months. Short clothes are worn after the third month, when the child shews an ability to exert its limbs. Woollen socks or stockings are to be worn at this time, and care must be taken to remove them when wetted or soiled. There is no greater error than exposing children to cold, in order to harden them, as it is termed. There is no doubt that a greater number

of the children of the poor die under seven years of age than of the rich, and this arises principally from exposure to cold. At all times, exposure of infants to sudden changes of temperature is dangerous. It therefore follows, that the child should be kept sufficiently warm at all times, and its dress increased even in summer, if the weather is inclement. The dress should be loose and wide, and secured by tapes instead of pins. The limbs must be left as free as possible. The head must not be kept too warm; while the chest and abdomen cannot be kept too much so.

Exercise.—Every encouragement should be given to the voluntary exertions of an infant; but no force is to be employed to make it walk. It should be allowed to roll on the bed or floor, and in this way will make exertions adequate to its strength. The effect of placing infants upon the feet too soon, is irremediable deformity. The child should be in the open air as much as possible, provided the weather admits; as we often observe sickly infants restored to health by country air, after all medicines had been tried in vain.

Section 2.—Rules for the Administration of Therapeutics in Early Life.

Blood-letting.—The best rule as to the use of this remedy is that laid down by Dr. M. Hall, to watch the appearance of the countenance, and if signs of collapse appear, we must arrest the flow of blood. The abstraction of blood in cases of infants and children until fainting occurs is the worst practice that can be imagined, as convulsions or death may be produced. The greatest prostration, nay, death itself, may follow the application of a few leeches. Sometimes the hæmorrhage cannot be arrested, unless by pressure or caustic. Hence leeches should be applied over those parts under which bony surfaces exist, in order to admit of compression, which should be made with lint and bandages. It is to be recollected, that the loss of blood from a single leech bite has caused the death of an infant. No discretionary power should be left to nurses. We are always to bear in mind the rapidity with which infants or delicate children sink from exhaustion, and the difficulty of restoring them. Bleeding can only be effected in young infants by leeching; and we must carefully watch the countenance, examine the temperature of the extremities, and the state of the respiration. Some writers are of opinion, that blood may

be taken in the following proportions from infants and children ; but I am convinced we must be guided more by the effects than by the quantity. During the first month, it is said that an ounce may be taken ; from the second to the fourth month, two ounces ; from the fourth to the eighth month, from two to three ounces ; from the eighth to the twelfth month, from three to four ounces ; from the twelfth to the eighteenth, from four to five ounces ; from the second to the third year, from eight to ten ounces ; and about the sixth year, from eight to twelve ounces. The veins on the back of the hand or instep are usually opened in young children, and the limb immersed in a basin of warm water.

Blisters and Irritants.—It is well known that the skin of an infant is peculiarly irritable, and therefore great caution must be observed in the use of blisters, sinapisms, stimulating liniments, or the antimonial ointment, now so much applied. It often happens that inflammation, mortification, and death, are induced by blisters and external irritants. The surface of a blister should be covered with thin muslin ; and it need never be applied longer than three hours ; in fact, until the skin is reddened. It is unnecessary to cause vesication. Blistering ointments is often adulterated with various acrid substances, and hence its deleterious effects on infants. I have seen a blister on the chest followed by sloughing, and an aperture from over the epigastrium, which exposed the subjacent viscera. A mustard fomentation should not be applied longer than five or ten minutes, and a sinapism from a quarter to half an hour. These remedies are applied in inflammations of the brain, chest, and abdomen. They should be removed as soon as they produce pain.

Cathartics.—From the natural irritability of the stomach and bowels of infants and children, great care must be taken in using purgatives. Diarrhœa is much more easily excited than controlled ; and if it becomes excessive, may induce great exhaustion, stupor, and hydrocephaloid affection. In such cases the powers of life must be supported with arrow-root and a few drops of brandy, aromatic spirit of ammonia, beef tea, &c.

There is now a most injurious practice prevailing in the profession, that of administering continual doses of calomel, or hydrargyrum cum creta to infants and children. In diseases of young and old, all the disciples of the intestinal school employ mercury. Every one knows that a person under the influence of mercury is more

susceptible of cold than at any other time, and hence the diseases excited by cold are more readily induced. Nevertheless, we exhibit mercury to infants, and thereby expose them to inflammations of the brain, chest, and abdomen. It is therefore evident that this practice is injurious, and that we should combine some aperient with calomel or other mercurial preparations, to prevent their specific action on the system. Ptyalism of infants is often followed by sloughing of the gums and cheeks ; and this I have known to occur after the use of mercury in hydrocephalus. Mercury is only useful when we wish to excite the liver or mesenteric glands, and even then it should be given in alterative doses, as one-sixth or one-fourth of a grain, as we know that the best effects on the alvine secretions are caused by alterative doses of this medicine. Dr. Philip has ably proved, that the smallest doses of pil. hydrarg. produce more improvement in the alvine dejections, than the large quantities usually given. I have repeatedly observed, that a grain of calomel given every other night to children, whose intestinal evacuations were depraved, produced discharges of various colours in succession. As soon as the stools are of a rhubarb colour, the mercury may be omitted. Calomel should not be given as a purgative ; magnesia, rhubarb, senna, compound powder of jalap, or castor oil, are preferable.

Emetics are to be used with caution, from the gastro-intestinal irritation usually present, and the antimonial medicines may do much mischief.

Opiates.—The preparations of opium should be used with the greatest caution in cases of infants and children. I have known one drop of the liq. opii sedativ. narcotise an infant. Mothers and nurses should be informed of the dangerous properties of all “soothing syrups,” and cordials, such as Dalby’s Carminative, the Vegetable Soothing Syrup for Cutting the Teeth, Godfrey’s Cordial, diacodium, syrup of poppies, &c. These things should never be administered, except by medical practitioners ; and if proper attention is paid to diet, and judicious treatment employed during dentition, opiates will be rarely necessary. There is scarcely a day in which I do not point out to my pupils, infants labouring under the influence of opium ; and experience enables me to aver, that thousands of them in this metropolis are destroyed annually by the improper use of this medicine. Where an infant is narcotised it cannot take food ; absorption goes on, emaciation and death

soon follow. During the first month, two drops of tincture of opium, or half a drachm of genuine syrup of poppies, is the largest dose that can be given with safety.

Section 3.—Diseases of Infants.

It is much to be regretted, that there is no complete treatise in our language on diseases of infants and children. Every writer since the days of Underwood has implicitly followed the arrangement of that writer; and hence it is that we have not a standard work in this country; one that is not a century behind those of other nations. The truth of this position will appear after the perusal of the succeeding pages, which merely contain a catalogue of the diseases under consideration; but suggest an outline for a perfect work.

The diseases of infants may be divided into, 1. Intra-uterine; 2. Extra-uterine. The *first class* comprises hereditary diseases, as syphilis, scrofula, rachitis, mollities ossium, pertussis, variola, and according to some, gout and phthisis; lesions of continuity, of situation, of volume, of number, of coloration, and of functions. The *second class* comprises diseases dependent on parturition; 1. *internal*, as asphyxia, apoplexy, cerebral congestion, debility; 2. *external*, as elongation of the head, livid tumours on the scalp, contusions, luxations, fractures, and wounds; 3. *congenital*, as occlusions of natural openings; of the eyes, ears, nose, lips, anus, vulva, vagina, prepuce, and urethra; 4. *union of certain organs*; of the tongue to the gums or lips, tongue-tie, of the fingers and toes, penis and scrotum; 5. *disunion of organs*, hare-lip, cleft palate, cleft uvula; epispasdias, or opening of the urethra on the dorsum penis; and hypospasdias, or opening of the urethra on the inferior surface of the penis, between the natural orifice and the scrotum; 6. *excess, or redundancy of parts*, as of fingers, toes, excrescences, &c.; 7. *defect of organs*, of fingers, toes, head, eyes, ears, arms, &c.; 8. *dropsies*, as hydrocephalus, hydrorachitis or spina bifida, ascites, hydrocele, infiltration of the genitals; 9. *herniæ*, encephalocele, omphalocele, bubonocoele, oscheocoele, &c.; 10. *irregularity of parts*, as obliquity of the head, high shoulders, claudication, club feet, vari, valgi, pes equinus, distortion of the extremities, strabismus, cataract; 11. *various marks on the skin*, secondary syphilis, discoloration of the skin, desquamation of the cuticle, various diseases of the skin, in-

cluding inflammation and absence of that tissue. The whole of the diseases assigned to both classes are further divided into *medical* and *surgical*.

The medical diseases should be considered in the natural order of functions.

Digestive Organs.—The diseases of this system are retention of the meconium, constipation, colic, flatus, acidity of the gastrointestinal tube, hiccup, diarrhœa, lenteria, prolapsus ani, vomiting, tormina, dentition and its accidents, worms, malformations, congestion or inflammation of the mucous membrane of the cheeks, stomatitis, aphthæ, glossitis, diseases of the salivary glands, throat, œsophagus and stomach, indigestion, erythema, follicular disease and softening of the stomach; malformation, inflammation, ulceration, gangrene, hæmorrhage, invagination of the intestinal tube, enteritis, spasm of the colon, ramollissement, excoriation of the anus, cholera, peritonitis, and tabes, diseases of the liver and urinary organs; calculus, incontinence, and retention of urine.

Diseases of the Heart and Blood Vessels.—Pericarditis.

Diseases of the Respiratory Organs, are of the nose, nasal fossæ, coryza, laryngitis, tracheitis, croup, œdema of the glottis, bronchitis, pulmonary apoplexy, pneumonia, chronic catarrh, pleuritis, œdema of the lungs, pertussis, intra-uterine and extra-uterine asphyxia.

Diseases of the Cerebro-Spinal System, are malformations, hydrocephalus, hernia cerebri, acephalous cases, congestion of the brain and medulla spinalis, arachnitis, convulsions, chorea, tetanus, epilepsy, spasmodic constriction of the chest and larynx, cerebro-bronchitis or pertussis, typhus, risus sardonicus, agrypnia or insomnolence, panophobia, or night-fear.

Diseases of the Skin, are Icterus, erysipelas, cutaneous efflorescence, redness of genitals, excoriations, suppuration behind the ears, hæmorrhage, inflammation or fungus of the navel, pernio, pediculi, porrigo, crusta lactea, tinea, strophulus, lichen, psoriasis, ichthyosis, and the numerous other cutaneous diseases described by authors.

Diseases of the Senses, are blindness, cataract, amaurosis, strabismus, dumbness, and deafness. Many other diseases of infants might be enumerated, especially those included in the class *locales* by Dr. Cullen.

It would be impossible to describe the treatment of infantine

diseases in a work of this kind ; and I am therefore restrained to a few comments upon those of frequent occurrence. We shall consider them in the physiological order of functions.

Lesions of Circulation. Intra-uterine asphyxia.—The treatment of asphyxiated infants has been described in the article on the Management of New-born Infants, p. 172

Anemia.—Infants may be born anemic from separation of the placenta or rupture of the umbilical cord, or from the ligature having slipped off the cord. The pallidity of the infant, the coldness of its body, and the presence of syncope, shew the existence of this condition. The *treatment* consists in the application of warmth, by baths, blankets, &c., by friction of the spine, limbs, and trunk, with ammoniated liniments ; and in extreme cases, of insufflation or artificial respiration, at the same time administering brandy, arrow-root, beef-tea, &c. When every thing fails, transfusion has been proposed by Héroldt. The syrup of sulphate of quinine, with brandy in arrow-root, nutrient clysters and baths, are advised by foreign writers.

Cynopathy, or Blue Disease, is a bluish colour of the skin, which may continue to the adult age. There is no remedy for this singular malady.

Fever.—New-born infants are liable to symptomatic fever from a variety of diseases, which is to be cured by removing the primary complaint.

Phlegmasiæ—Inflammations.—The capillary circulation may be accelerated, and inflammation in the various tissues produced. The *treatment* in all inflammations is that usually employed, with the exception of general bleeding. The remedies must not be urged too far. Under this head we are to include the various cutaneous diseases. These may be divided into the exanthematous (measles, scarlatina, small-pox), such as are attended with fever ; and into the chronic, including all the classes of writers on diseases of the skin. In treating the exanthemata, we are to reduce fever by purgation and diaphoretics, which are generally successful ; but should there be signs of cerebral congestion or pulmonic inflammation, either from the non-appearance of the eruption at the usual period, or from its repression, we must apply leeches to the head or chest, then sinapisms to the feet and warm bathing, with cold to the head at the same time. The eruption will in general appear under this treatment. In a case of small-pox, which I at-

tended with Mr. Appleton, in Baldwin's Gardens, the child appeared to be comatose. The parents objected to leeches to the head, cold lotion to the scalp, a blister to the neck, and sinapisms to the feet. After much reasoning, they consented. In a few hours the little patient was perfectly relieved, and was covered with variolous eruption. Another child in the family had the same disease without proper maturation. It had suppuration of the elbow, wrist, knee, and ankle joints, without the slightest mark of antecedent inflammation. It was kept alive for a fortnight by quinine and nutriment. Cerebral congestion will appear when the eruption of scarlatina is suppressed. Two children died so suddenly from this cause near White-Conduit Fields, that a coroner's inquest was held to determine whether they had not been poisoned. Mr. Whitmore and myself examined the bodies. Scarlatina anginosa, or maligna, is a most dangerous and fatal disease. This is contrary to what is stated in books; but any physician of observation will confirm my statement. We often see the simple, cynanchical, and malignant species in the same family, some having it very slightly, and scarcely indisposed, and two or more destroyed very suddenly. I have seen numerous cases of this kind. It is astonishing how suddenly anasarca supervenes after scarlatina. I was called to a case in Gray's-Inn Road, the patient having been convalescent for more than a month, who after a hearty dinner, went out to walk on a cold spring day, at two o'clock; he returned in a short time, and was completely anasarcoous; convulsions set in, and in despite of copious depletion, local and general, abrasion of the scalp, cold applications, blister to the head, sinapisms to the feet, and free purgation, he was dead at two o'clock next morning. His brother, also an adult, became anasarcoous and ascitic under similar circumstances; but the following remedies cured him in a few days:

R. Pulv. Jalap. Comp., ℥vj;
 Pulveris Digitalis,
 ——— Scillæ, } sing. gr xij;
 Hydrargyri Subm.,
 Pulveris Antimonialis, gr. vj;
 ——— Aromatici, ℥j:

in chartulas xij. divide, ex quibus capiat unam mane nocteque nisi alvus nimis soluta sit.

Friceter superficies abdominis Ung. Antim. Tart drachmâ, mane vespereque, donec erumpant pustulæ.

Imperial should be the ordinary drink, and some mild diuretic mixture employed, unless the urinary secretion be sufficiently copious. I have found this combination of the greatest benefit in all forms of dropsy, which are generally removed by it, unless there is some extensive disorganization in the system. It acts upon the bowels, kidneys, and skin, increases the functions of all these parts, diverts the circulation from cellular and serous membranes, and thus enables the absorbents to remove the effused fluid. In old persons, tonics will be used at the same time with benefit, and the diet should be nutritious. When children are the subjects of anasarca, the same combination in proper doses will in general remove the disease. During convalescence after the eruptive fevers, the alvine secretions should be carefully attended to, and mild purgatives with mercurials employed. In scarlatina anginosa there is intense inflammation of the fauces often extending into the trachea, which in addition to antiphlogistic treatment, imperiously requires leeches to the throat, followed by blisters, ammoniated oil, or a light sinapism, according to the urgency of symptoms. When there is cerebral congestion, it is to be treated on ordinary principles. As soon as ulceration of the throat, with difficult deglutition and respiration appears, some recommend gargles with muriatic acid and myrrh as the best. I have found chloride of soda in solution, properly sweetened, produce the best effects, when the fœtor of the breath was intolerable to the bystanders. It can be applied in infants by securing a piece of lint on the shank of a spoon, or on a piece of wood, and if any of the gargle is swallowed it can do no injury. When typhoid symptoms appear, the sulphate of quinine, ammonia, diffusible stimuli, in a word, the usual treatment must be employed.

In eruptive diseases unaccompanied by fever, I have found a mild purgative, with alternate doses of calomel and antimonial, powder, remove nine-tenths of the cases which came before me. Proper attention to the digestive organs is of the utmost importance in treating chronic diseases of the skin. My pupils have been often surprised at the disappearance of cutaneous eruptions which had resisted a host of external remedies, by the plan I have mentioned. The hydragrym c. creta with rhubarb, is strongly recommended in disorders of the digestive organs in children ; but

I have seen much better effects from alternate doses of calomel with rhubarb, antimonial, and aromatic powders. This combination is generally efficacious, in correcting depraved secretions, as when the alvine dejections are of a green, brown, white, or black colour. The following formula may be given to a child between a year and a half and three years old, the quantities increased according to the strength and constitution.

R. Hydragryri Subm., gr. vj;

Pulveris Rhei, ℥j;

———— Aromat., ℥ss;

Sacchari Pur., ℥i;

in chartulas vj. divide, quarum sumatur una, singulis vel alternis noctibus.

Syphilitic Eruptions, of various kinds, appear on new born infants of a copper colour, and especially about the nates and genitals. The infant is emaciated, and its skin shrivelled, as in the last stage of *tabes mesenterica*. The exhibition of mercury to the mother will remove the disease, and in a short time the eruption declines, and the infant improves in health and strength. It is seldom necessary to administer mercury to the latter. It is astonishing how rapidly improvement takes place in these cases. The milk of a nurse affected with syphilis will not infect a healthy infant. A case in point is related by Mr. Lawrence in his lectures. The nurse was infected with syphilis by the mouth of an infant which was committed to her care. She kept one breast for this infant, and the other for her own; but though she had well-marked secondary symptoms, her own child remained free from the disease.

It is scarcely necessary to mention, that the lips of an infant may be exposed to the matter of chancre in passing the portal of life, and may consequently infect every woman to whose breast they are applied.

Erythema and Erysipelas may appear on different parts of infants. The latter is highly dangerous where it attacks the genitals, as stated in a former article, p. 78. It appears about the umbilicus genitals and head. It is highly dangerous in the latter cases, and often proves fatal. The treatment should consist of aperients, diaphoretics, fomentations, &c. as in ordinary cases.

Coryza—Inflammation of the mucous membrane of the nose is exceedingly frequent from exposure to cold. The infant is said

to have taken cold, and has frequent fits of sneezing. It cannot breathe through the nose, and has been suffocated. It is obliged to respire through the mouth. The nose and throat are often inflamed.

Leeches have been applied to the nostrils, and even slight scarifications made as in cases of adults. In general, however, an equal moderate temperature, with the application of oil of almonds to the inside of the nostrils, removes the disease. Nurses call this disease the "snuffles," and perform the disgusting operation of suction of the nose to clear the nostrils.

Ophthalmia neonatorum.—Infants are generally seized with slight inflammation of one or both eyes, which usually disappears in two or three days by ablution with tepid milk and water. When the inflammation is severe, and does not yield to this plan, and there is a muco-purulent discharge, a leech should be applied to each temple, and an aperient administered. The best lotion for washing the eye is composed of one grain of oxymuriate of mercury and eight ounces of water, and after removing the discharge, the conjunctiva should be touched with a camel-hair pencil, moistened in a solution of four grains of nitras argenti, or six grains of sulphas cupri dissolved in an ounce of distilled water. The ointment of red precipitate is to be applied to the eye-lids at night to prevent them from adhering to each other. Such is the mode of cure proposed by Mr. Mackenzie of Glasgow. This plan effects a cure in a few days, and is assisted by a blister to the neck in bad cases; but sometimes the disease continues for weeks in despite of all remedies. When the disease is diminished, and becoming chronic, a lotion of alum and rose-water will remove it. The following formula is very effectual—six grains of alum and two ounces of rose-water. The vinum opii is an excellent remedy.

When the inflammation is intense, with tumefaction of the lid and purulent discharge from the eye we have *purulent ophthalmia* of authors. This form of disease arises from the application of gonorrhœal or leucorrhœal matter to the eyes, and is often destructive of vision, unless properly managed. The eyelids are enormously enlarged, and spasmodically closed; and if separated, a jet of greenish-yellow purulent fluid takes place. The cornea is muddy and the conjunctiva is highly vascular. The mischief extends to the globe of the eye, and causes an effusion of pus (hypopion,) softening or ulceration of the cornea, escape of the hu-

mours and crystalline lens, or the latter becomes opaque, and the infant is deprived of vision, especially when both the eyes are affected, or deprived of life by the excessive pain and marasmus. The treatment recommended by Mr. Guthrie in purulent ophthalmia, is the application of the ung. argent. nitrat., or black ointment. His formula is as follows :

R. Argenti Nitratis, gr. x ;
Cerati Cetacei, 1 drachm ;
tere intime et adde gradatim,
Liquoris Plumbi Acet. m. xv.

The mode of application requires attention. The eye is to be washed and wiped ; the eyelids everted, and the ointment applied with a camel-hair pencil to the conjunctiva. It is said that the greatest improvement takes place next day, and that the disease is cured in a very short time. Mr. Mackenzie has found the former plan succeed, and thinks this remedy unnecessary in most cases. I have been informed by several of Mr. Guthrie's pupils who attend my lectures, that the nitrate of silver ointment is in general a most efficacious remedy. I have found it so in a few cases ; it does not produce so much pain as I expected.

Leucorrhœa.—Purulent discharge from the genitals of female infants has been already described in the article on *Female Violation*, and is analogous to the disease last described as arising from the same cause (Duges,) and in the same tissue. When the discharge is white, it disappears spontaneously in a few days ; but when greenish or yellow, the inflammation is more intense. According to Sir Astley Cooper, the preputium clitoridis is the seat of the malady ; and black wash (calomel and lime water,) with cleanliness, is the best remedy. I have repeatedly seen it on young infants, and sometimes on two or more children in the same family. It is interesting in a medico-legal point of view to determine whether it is contagious. It appears in healthy as well as diseased infants and children. According to the French writers it may be expedient to know that purulent leucorrhœa produces simple gonorrhœa in the male ; but it is difficult to suppose a female infant can come in contact with another, and communicate the disease. Dr. Darwall has seen three children, who he thinks had taken the disease from each other. The oldest was only five years of age, the second was three, and the last was an infant at the breast. He, therefore, advises that the affected child should

lie alone. (On Diseases of Children, &c. 1830.) Much more evidence is required, in my opinion to confirm the infectious nature of the disease.

Aphthæ, Thrush; Muguet, or White Millet of the French.—This disease consists of small white spots, or vesicles upon the tongue, cheeks, and throat, which may ulcerate and assume a red or black colour. It is said to arise from difficulty experienced by the infant on taking the breast, from the milk of an old nurse, from derangement of the digestive organs; and lastly, from syphilis. It may be accompanied with fever or diarrhœa, or ulceration about the anus. According to Mr. Cooke and others, there is erythema in some portion of the gastro-intestinal mucous membrane. Duges asserts that the disease is not observed below the cardiac orifice of the stomach, while others contend it extends from the mouth to the anus. Experience has convinced me that both parties are right. The examples of the disease in the stomach and intestines are rare (Billard, Lelut, Duges.) With respect to the treatment, a good nurse, plain food, and good air, are of primary importance. The mel boracis, Armenian bole and honey, applied to the mouth with moderate purgation, constitute the treatment. The hydrargyrum c. creta with rhubarb, is lauded by some; but I am convinced that calomel, rhubarb, and magnesia, with pure sugar are better remedies. When there is much debility, the syrup of quinine is of the utmost value. The chloride of soda in solution sweetened, is highly beneficial. In general the disease is mild, and may arise without any evident cause. All remedies may fail, and then change of air and a proper diet may effect a cure. Dr. Darwell thinks the diet of the nurse should be attended to. Others advise leeches, and afterwards stimulating liniments to the surface of the abdomen. The diet of the child should consist of the vegetable or animal jellies.

Gastritis, Enteritis, Peritonitis.—These inflammations may exist with or without aphthæ. There will be redness of the tongue, fever, vomiting and diarrhœa, and sometimes tympanites. These diseases are found to exist in some degree in the infantile remittent fever of children. The autopsy will shew erythema, inflammation, or ulceration in some part of the intestinal tube. It is, therefore, manifest, that leeching and counter-irritation on the abdominal surface are requisite, with warm-bath, barley-water, weak broths, beef-tea, &c. When diarrhœa is urgent, the chalk

mixture, with proper doses of the sedative preparations of opium are of infinite service; and when great prostration of the vital powers appears, we must support the strength with arrow-root, and a few drops of brandy, or aromatic spirit of ammonia, beef-tea, &c. When the disease becomes chronic, a nutritious and mild diet, with alterative doses of mercury, rhubarb, and antimony, are of essential service.

Bronchitis, Pleuro-pneumonia.—The application of cold to the mucous membrane of the lungs and air passages, induces catarrh, which is sometimes epidemic; this is called “common cold.” The first symptom is frequent sneezing, followed by a discharge of mucus from the nose. The infant sleeps with its mouth open, and cannot suck from the obstructed state of the nostrils. The respiration is sonorous, and there is strong wheezing during sleep, and at all times if we apply the ear to the chest. The difficulty of breathing is increased in proportion as the inflammation extends into the mucous membrane of the lungs. A young infant or a child of a few months old, cannot expectorate. It coughs, and gets up the mucus into the pharynx, and then swallows it. The mucus accumulates in the stomach, and is discharged by vomiting or by diarrhœa. Hence the practice of exhibiting emetics and aperients. The child dies of exhaustion, from inability to take the breast. A fatal termination may occur in three days; the respiration becomes impeded; signs of cerebral congestion appear. There is a lividity in the countenance, which led Underwood to style the disease “the malignant snuffles.” The danger of this complaint arises from the infant not taking sufficient food, the blood not being properly vivified in the lungs, or coma with effusion in the brain, and convulsions taking place.

In the treatment of this disease, we must commence by opening the bowels with castor oil, magnesia, &c.; then applying two or three leeches to the chest, under the clavicles, which produce the best effects; and should the case be urgent, a blister is necessary. The following mixture is also of great use:

R. Syrupi Simplicis, 10 drachms—12;

Oxymellis Scillæ, $\frac{1}{2}$ drachm—1;

Mucilag. Acaciæ, 2 drachms;

Acid. Hydrocyanic., m 1;

m sit mistura. Dosis coch. min. 2^{da}. vel 3^a. q. q. hora.

A few drops of vin. antim. may be substituted for the hydrocyanic acid, in mild cases.

Pneumonia, and Pleuro-pneumonia, are analogous in their symptoms and treatment with catarrh. Pneumonia attacks newborn infants more frequently than children; is generally considered "a cold," is neglected, and hence it is so often fatal. Auscultation affords the only certain diagnosis, the *crepitating rale*, whereas the *mucous rale*, is characteristic of catarrh. The respiration is more difficult, the cough less troublesome, the fever more intense, and the face more livid, in the disease under notice. The child cries when it coughs, the countenance becomes livid, the nostrils dilated during inspiration, the head becomes affected, and death takes place from the third to the seventh day. In general the posterior part of one lung is affected. On dissection the lung will be found hepatized, and the pleura covered by a false membrane.

The *treatment* consists of leeches to the chest, purgatives, diaphoretics, blisters, and mustard pediluvia. Infants and children do not bear large doses of tartarized antimony, in consequence of gastro-intestinal irritation, which is generally present; and also, from the frequency of softening of the coats of the stomach. Warm bathing is sometimes used to equalize the circulation.

Extra-uterine Asphyxia.—Infants have been destroyed by strangulation, suffocation, and submersion, as fully appears in a preceding article on *Infanticide*, p. 160. In all these cases we should free the air passages, expose the infant to fresh air, employ baths, friction, errhines, and all means as in anemia, see p. 480; sinapisms, ammoniacal frictions, vinegar clysters, &c. I have fully described the morbid appearances in my *Manual of Medical Jurisprudence*.

Cynanche Trachealis-Croup.—This is the tracheitis of foreign writers, and comes on like catarrh; but is soon followed by a crowing or croupy respiration, something similar to the crowing of a young cock. The respiration is difficult, the face becomes livid cerebral congestion appears and destroys life, or death happens from suffocation. On dissection, we find inflammation of the mucous membranes of the trachea and sometimes of the bronchi, or a false membrane is formed of considerable thickness. The disease comes on suddenly, and often proves fatal in twenty-four hours.

The indications of *treatment* are, to arrest inflammation, and

thus prevent the formation of the false membrane. To effect this purpose, we should apply three or four leeches along the trachea, open a vein in the back of the hand, or on the instep, and immerse the limb in a basin of warm water, or open the jugular vein. We next exhibit an emetic of antimonial wine, and put the patient in a warm bath, and after his removal apply a blister in the course of the trachea. Depletion is only useful in the first stage of the disease. When this has passed, our chief dependence is to be placed on large doses of calomel, as recommended by Dr. Hamilton. He states that forty cases were cured by it, and that it is effectual if given before lividity of the face appears. It should be continued in the dose of a grain and a half every hour to a child six months old, and four-grain doses every hour may be given to a child two years old, until vomiting, purging, or green dejections are produced. It was given to the amount of one hundred and eighty grains in one case with success. Its mode of influence on croup is not determined; some say it stops the effusion of lymph, as in iritis; and others, that it promotes absorption. Perhaps its excitation of the liver, and other digestive organs, diverts the circulation from the trachea. I have known it succeed when every other had failed. It sometimes causes salivation. I would not, however, trust to it solely, but employ the other remedies at the same time. I know a practitioner who never uses any remedy in croup but repeated doses of calomel and antimonial powder, and seldom loses a patient. Mackenzie recommends the application of a solution of nitrate of silver to the internal fauces, as he says fibrin is first deposited there, and then descends into the trachea. This practice is not followed. Bretonneau advises a solution of alum, which is much safer. When suffocation is threatened, bronchotomy is to be performed. The last named writer advises us to pass a piece of nitrate of silver through the opening, and apply it to the false membrane in those cases in which the latter cannot be extracted. Vomiting may cause the expulsion of the membrane, and hence the exhibition of antimonial wine by many practitioners.

Pertussis—Hooping Cough, Cerebro-bronchitis.—This disease is so well known, that I need not give its symptoms. It is important to mention, that it may induce cerebral or pulmonary congestion, and these dangerous states require active treatment. In general the patient suffers little; the disease continues for weeks

or months, in despite of all remedies, and then disappears. This disease arises from spasm, or is purely nervous, according to the majority of writers. Others maintain that some tissue in the chest is diseased. The first opinion is worth of confidence, the other is mistaking the effect for the cause.

The *treatment* consists in regulating the bowels, applying sedative or stimulating embrocations to the spine and chest, exhibiting antispasmodic cough mixtures, and leeching the chest and head when congestion or inflammation appears in either part. As vomiting very often occurs, and as the expectorated mucus is swallowed, repeated emetics are advised by some writers. A combination of camphorated oil, soap liniment, oils of turpentine and amber, rubbed on the spinal vertebræ, produce good effects. In severe cases, the antimonial ointment to the chest will be beneficial. The application of the pitch plaster with a few grains of tartarised antimony, between the scapulæ, often affords relief. The antispasmodics and narcotics are very strongly recommended by some practitioners. Great care must be observed in the use of them. I have known a practitioner who boasted of a specific for pertussis, which was a combination of camphor and opium in powder. I have found hydrocyanic acid a valuable remedy, and combine it with other sedatives in the following manner, carefully watching the effects :

R. Syrupi Simplicis, 2 $\frac{1}{2}$ ounces ;
 Oxy mellis Scillæ, $\frac{1}{2}$ drachm ;
 Mucilaginis Acaciæ, 4 drachms ;
 Extract. Conii, }
 — Hyosciami } aā gr. j;—ij ;
 Tinc. Camph. C., ʒi—ij ;
 Acid. Hydrocyan, mj—ij ;

m fiat mistura, de quâ sumatur coch. min. phialâ prius agitatâ, bis vel ter in die, nisi supervenerit somnolentia, vel nausea.

The dose must be regulated according to the age of the infant. The bowels should be well regulated. When cerebral symptoms appear, leeches are to be applied to the temples, an evaporating lotion to the head, and mustard pediluvia ; in a word, the same practice as in hydrocephalus. This last complication is often present in consequence of dentition, and unless well managed, proves fatal. The child dies in convulsions ; and we find conges-

tion, or effusion, in the brain. This leads me to describe the lesions of the *Cerebral Functions*.

Apoplexy.—Infants are born apoplectic from compression of the head during parturition. There is a violet colour of the face and whole body, injection of the conjunctival vessels, dilated pupil, stertorous respiration; asphyxia more or less complete, and flaccidity of the extremities, with immobility, insensibility, and suspension of the pulse. At other times there are convulsions, or more properly eclampsy.

The chief object *in the treatment* of this disease is to dissipate cerebral congestion, and this is best effected by allowing the navel-string to bleed to the amount of an ounce or two, according to the size of the infant. The warm bath is useful; but cold should be applied to the head during the immersion of the body. A leech to each temple, and a blister to the neck, are powerful remedies.

If asphyxia supervenes, we should resort to artificial insufflation, stimulating frictions on the spine and chest, soles of the feet, and palms of the hands; and according to Dr. Hamilton on the face. He advised the application of brandy or hartshorn to the face and chest, as the best means of resuscitating still-born infants, long before the discovery of Mr. C. Bell or M. Magendie. I have found the practice successful in numerous cases.

Convulsions, Eclampsy.—This disease may arise from a variety of causes; but in new-born infants it generally accompanies the malady just described. The treatment in both is the same. It sometimes arises from dentition, worms, or the non-appearance of the eruption in measles, small-pox, or scarlatina. During the attack, all the muscles are thrown into involuntary action, there is foaming at the mouth, protrusion of the tongue, the countenance distorted, squinting, lividity of the face, and laborious respiration. The fits may continue a few minutes, and recur frequently.

The general practice in *treating* this disease, is to immerse the infant in a warm bath, and to apply cold to the head at the same time. The water must not be too hot, or it acts as a stimulant. Temporary relief is generally obtained by this remedy; but we should cover the head with a piece of muslin, and keep this constantly wetted with cold water, or some of the evaporating lotions. This is to be accomplished by the dropping the water from a sponge, or in bad cases allowing the water to fall on the bare scalp,

from twelve to twenty inches in height. The application of ice, in folds of muslin, or a bladder of cold water, has produced the best effects. The bowels should be opened by some medicine suitable to the age of the patient.

Opiates must be carefully avoided. If there are well-marked signs of cerebral congestion, we must treat the case as one of apoplexy, in the manner described in the last article. If dentition is present, scarification of the gums will often afford immediate relief. It is to be recollected that convulsions will arise from exhaustion, as well as from plethora, or congestion, and then the treatment must be stimulant. We can easily diagnosticate by learning the history of the case; and whether any cause of exhaustion has existed. Bleeding or purging would destroy the patient. Aromatic spirit of ammonia, or a few drops of brandy in arrow root or milk, with beef-tea, chicken-broth, &c. are the best remedies.

Tetanus, trismus nascentium.—This is a rare disease in temperate climates, and only seen in warm countries. Warm baths, with opiate liniments are the best remedies. The bowels, of course, should be duly regulated.

Lesions of the Senses.—Infants are born with cataract, strabismus, and deafness; and here we can do little for sometime. I once operated on a boy seven years old who had congenital cataracts, and succeeded in affording him vision. The use of goggles, the apertures placed so as to bring the eye in the proper position, are said to relieve, and often remove, strabismus.

Lesions of Digestion. Difficult Dentition.—Dentition usually commences between the fifth and eighth months, but some delicate or rickety children have no teeth sooner than a year and a half, or two years of age. The child while teething is peevish and fretful, has its fingers continually in its mouth, starts from its sleep, cries, moans, or screams suddenly, and again dozes. The pain arises from the pressure of the teeth on the gums, and the irritation extends to the brain and digestive organs, inducing convulsions, deranged appetite, or diarrhœa. These effects can be easily explained by calling to mind the connection between the cerebral and spinal nerves. The gums become swollen and inflamed; fever, thirst, diarrhœa, erythema of the skin, ulceration behind the ears, cerebral congestion, convulsions, and coma supervene, and these may terminate in hydrocephalus. The warm-bath is the panacea

in all infantile diseases with many practitioners, and is generally recommended in difficult dentition.

The best and most efficacious remedy is lancing or scarifying the gums. It often happens, after this operation, that the convulsed infant falls into a tranquil sleep, and awakes lively, and in perfect health. Lancing the gums is by no means a painful operation; I have repeatedly performed it without the infant making the slightest moan. We should always use a clean gum-lancet, and take care to have it well sharpened, as in cutting down on the tooth, and fairly dividing the gum, the edge will be blunted. Wherever the gum is swollen or inflamed, it must be divided freely by a *simple* incision; and I find this generally successful without the crucial division, advised by some writers. In nine cases out of ten immediate relief is afforded. The practitioner who neglects this operation, does not act honestly towards those parents who employ him. The bowels should be properly regulated; and diarrhœa, when excessive, arrested by chalk mixture, catechu and sedative liquor of opium. The diet should be mild and nutritious; and as the appetite is sometimes voracious, it must not be gratified to satiety.

Should cerebral symptoms be urgent, leeches, warm baths, cold to the head must be employed. Blistering is generally injurious, as increasing the constitutional irritation. It is bad practice to endeavour to heal ulcers behind the ears. If the bowels are properly managed these will soon disappear without any local treatment, except the application of fine flour.

Vomiting, Hiccup and Colic usually arise from repletion. Mothers and nurses, in general, give too much food. If we regulate the diet, attend to the bowels, and give some mild antacid, such as the following combination we afford relief. Let us suppose the little sufferer under six months old.

R. Aquæ Menth. Virid. 2 ounces;
Magnesiæ Calcin. 1 scruple;
Sacchari Puri, 1 drachm;
Olei Anisi, m. iv;
Liq. Opii Sed. m. ij;
Confect. Aromat, $\frac{1}{2}$ drachm;

M. Dosis coch. min. bis, ter quaterve de die.

If griping is urgent, the warm bath should be employed.

Diarrhœa.—When bowel complaint does not proceed from

dentition we may take it for granted it arises from improper food, either in quality or in quantity; hence we must ascertain this point. In such cases we find after death, erythema, inflammation, or ulceration, of some portion of the intestinal canal.

In *treating* this complaint, our first object is to regulate the diet of the infant, and to direct our attention to the food of the mother, if a nurse, or to that of the infant, if nourished artificially. The chalk mixture, with mucilage, and liq. opii sedativus will generally arrest the disease, after the diet has been regulated.

The infant's strength should be supported with beef tea, chicken and mutton broths, arrow root, &c. lest collapse or depression of the vital powers set in, or that comatose affection so accurately designated hydrocephaloid by Dr. M. Hall. The following mixture is highly beneficial in diarrhœa.

R. Misturæ Cretæ, 3 ounces;
 Confect. Aromat., }
 Syrupi Papaveris, } ãã 1 drachm;
 Sacchari puri, 2 drachms;
 Olei Anisi, mv;

M. Dosis coch. parv. post singulas sedes liquidas, nisi supervenerit somnolentia.

In some cases tincture of catechu must be added.

Vitiation of Secretions.—*Icterus neophytorum*, *Jaundice*, *Yellow Gum*.—Infants often become jaundiced the third or fourth day after birth. They are drowsy and constipated. It is stated in books that this is a slight disease which can be readily removed by a dose or two of castor oil. I have, however, frequently seen it prove fatal. In obstinate cases, half a grain of calomel with magnesia should be given twice or thrice daily.

Constipation.—This is best relieved by calomel in repeated doses, castor oil, and in obstinate cases by infusion of senna with a few grains of aloes. Dr. Hamilton mentioned cases in which large doses of compound tincture of aloes were required.

Colic and Flatulence are often attendants on constipation. The infant screams and draws up its legs, the abdomen feels hard, and there is often retention of urine. Warm bath, fomentations or friction on the abdomen, give relief, and should the pain continue, a few drops of laudanum, or sedative solution of opium with oil of aniseed are highly efficacious; clysters, with a few drops of tinc-

ture of assafoetida, and suppositories, often afford relief. If the pain is obstinate we must guard against inflammation.

Hydropsies. Dropsies.—Hydrocephalus, hydrothorax, ascites, anasarca, hydrocele and hydrorachitis, hydrocephalo-rachy, or cerebro-spinal dropsy, are often congenital.

Hydrocephalus is the most common and fatal of these diseases. The only effectual remedy is tapping, as proposed by Vose, Holbrook, Callaway, Conquest, &c. Dr. Conquest has cured four cases out of six by tapping. In performing the operation, care must be taken to avoid the arteries and sinuses of the head. In all these cases the subjects were children. Compression has been proposed by Riverius, Blane, Barnard, and others. Mercurial frictions to the head, especially at the angles of the jaws, have also been employed.

Hydrocephalus is divided into acute and chronic; the former into acute inflammatory, and acute asthenic, and consists of effusion of serum, improperly called water, into the ventricles of the brain. This is called "water in the head." This effusion is the effect, and not the cause of the disease. The real cause is inflammation of the brain or its membranes, meningocephalitis. According to the testimony of Abercrombie and others, different parts of the brain and its membranes may be inflamed. The remote causes of this disease are, dentition and irritation in the digestive organs. Charpentier thinks two-thirds of the cases arise from gastro-intestinal irritation. Cheyne and A. T. Thomson maintain that the malady arises from sympathy with disease of the liver. Golis and Itard have found the abdominal viscera generally healthy. All the symptoms of hydrocephalus may exist and on dissection no fluid will be found in the brain (Quin, Cheyne, Warren, Golis, Callaway, Gooch, &c.)—In such cases, may we not fairly suspect that the disease was hydrocephaloid?

The *treatment*, when the infant is young, should consist of the application of leeches to the temples, cold lotions to the scalp, mustard pediluvia, and mercurial purgatives. Great attention should be paid to the state of the alvine secretions. The warm bath, with cold to the head at the same time, is a valuable remedy. When the symptoms do not yield to this treatment, a blister should be placed on the neck, but, according to the French, upon the lower extremities. According to Beddoes, Withering, Mills, Maxwell, Rush, and Golis, copious depletion is necessary. Maxwell

cured sixty out of ninety cases by this remedy. Golis performed arteriotomy with benefit. Percival, Mills, Cheyne, Dobson, Fisher, Itard, and Jadelot, have given repeated doses of calomel daily, and the last writer has used mercurial inunction on the head. Fisher cured a case which withstood all remedies, by mercurial salivation (Edinb. Med. and Surg. Journ. 1825.) Carmichael Smith had employed calomel and squills, and Itard squills with digitalis. Dr. H. Davies used mercurial inunction, calomel and digitalis with success. (Medical Repository, 1825.)—The constant application of ice to the head and blisters to the legs and abdomen (Golis), have proved successful with the former remedies. (Lond. Med. and Surg. Journ. 1830).

When depletion and purgation, with counter-irritation, fail to arrest the disease, and the signs of effusion advance, the patient being weaker, the pulse more frequent or extremely slow, we should endeavour to produce powerful revulsion by a seton in the neck, by applying a moxa, an issue, or the cautery to some part of the head, rubbing antimonial ointment behind the ears, and mercurial frictions to the angles of the jaws or to the scalp, so as to excite profuse salivation. It is at this stage of the disease that the digestive organs are free from irritation, that calomel may be given in large and repeated doses; for example, four grains three or four times a day, as it is extremely difficult to produce salivation. James's powder or antimonial powder is lauded by many practitioners, and nauseating doses of tartarised antimony by others. It is at this time that nutriment may be given. A warm bath may produce copious perspiration; and is often used with advantage. When hydrocephalus follows scarlatina or measles, M. Martinet has found frictions of the limbs and trunk with squills and digitalis, vapour-baths, highly beneficial. In the first stage of the disease, a long continued stream of cold water applied to the head after venesection is highly useful, and often succeeds in allaying head-ache in fever, when every other remedy fails (Abercrombie, Southwood Smith, &c.)—Mills bled to the approach of syncope, purged freely, and next exhibited calomel and opium to increase the secretions, and allay the irritation of the nervous system, and also advised the tepid bath twice or thrice daily. He also used tartarised antimony freely, and ordered blisters (Dublin Hospital Reports).—When the disease becomes *chronic*, Martinet advises frictions, with tinctures of squills, digitalis and cinchona over the trunk, to

excite the functions of the skin and kidneys. Recamier and Andrieux used a bath composed of a pail full of water and an ounce of tartarised antimony, with decided success. The antimonial ointment rubbed on the scalp and neck has been tried with benefit. P. Frank ascribed the frequency of the disease to washing children's heads with cold water. When all remedies fail, tapping may be effectual.

Acute asthenic hydrocephalus, hydrocephaloid disease. Drs. Marshall Hall, and Gooch describe a disease of delicate infants and children indicated by heaviness of the head, the child unable or unwilling to raise its head, appears half asleep, one moment opening its eyes, and next closing them, countenance expressive of languor, absence of fever, the pupils dilated. The cause of this affection is debility, produced by too much purgation, diarrhœa, or a want of sufficient nutriment. It often follows weaning and diarrhœa. It is usually mistaken for congestion in the head or hydrocephalus; but if treated by depletion, death will certainly follow. The best treatment is nutritious aliment, cow's or ass's milk with sugar, and a few drops of brandy, given as often as possible, with five drops of aromatic spirit of ammonia, every two hours. The arms and lower extremities should be kept warm with flannel. By this plan the child will be restored to health in twenty-four hours.

Dr. Darwall describes another species of acute asthenic hydrocephalus, in which the child complained of pain in the head, and restlessness, the symptoms milder than in the acute inflammatory disease. He has cured these cases with five grains of Dover's powder every three hours, or until sleep is produced. The medicine may be required twice a day for a week.

Lienteria.—When there is violent diarrhœa, with much griping and spasm of the abdominal muscles, with copious alvine dejections and expulsion of flatus, the disease is called lienteria, and by nurses "watery gripes." The *treatment* should consist of that laid down for diarrhœa, due attention being paid to the condition of the alvine evacuations. If the alvine discharges are depraved, the hyd. c. creta, in doses of three grains with one grain of the pulv. ipecac. comp. three times a day, should be given. The pain or griping will be relieved by this combination, or by the astringent mixture prescribed for diarrhœa in a former article. It may be necessary to apply fomentations or the warm bath. Exhaustion

must be obviated by the remedies mentioned for anemia, and the hydrocephaloid disease described in the preceding paragraph. The starch and opium clyster is also a valuable remedy; the quantity of opium must depend upon the age of the child, and upon the quantity already taken. An ounce of starch and two drops of laudanum are sufficient for infants and children under two years of age. These may be repeated three or four times in twenty-four hours, according to their effects. I can bear my testimony to the fact stated by Baron Dupuytren, that much smaller doses of laudanum than those usually prescribed, will act powerfully when used in clysters. The following plaster applied to the abdomen has been found serviceable by Dr. Darwall.

R. Emplast. Opii, $1\frac{1}{2}$ drachms;
 ———Plumbi, 2 ounces;
 Pulveris Opii, 1 drachm;
 Olei Menth. P., 1 drachm.

M. et super alutam extende.

Dysentery, or bloody stools, are rarely observed in infants or children, and may be removed by the remedies recommended in the last article.

Worms.—In the whole practice of medicine there is no disease in which such a variety of remedies is prescribed, as in that under consideration. This appears by reference to Good's Study of Medicine, by Professor S. Cooper. The only rational mode of treatment however is, to improve the morbid condition of the digestive organs which invariably exists in cases of worms. This is to be effected by mild mercurial aperients, with tonics. The hydrarg. c. creta, or small doses of calomel with rhubarb, quinine, carbonate of iron, powder of columbo, &c. are the best remedies. Little, if any, reliance is to be placed on the various anthelmintics.

Marasmus.—Infants and children are liable to a remittent fever from disorder of the digestive organs, which continues for days or weeks, and is attended with emaciation. There is a total loss of appetite, or it is voracious, the alvine dejections are depraved and offensive, are of a clayey, greenish, brownish, or blackish colour. The face is often flushed, then pale; the skin is very hot, as also the hands and abdomen; at other times there is no fever present for a few hours. The abdomen enlarges, the lips are covered with a brownish sordes, there is great thirst, and the little sufferer often survives on barley water, or cold water, for several days, and con-

sequently great emaciation and exhaustion ensue. This is the *Infantile Remittent Fever* of Children. It generally arises from improper diet, or from imperfect mastication; and is the sequela of exanthematous diseases, of dentition, of diseased mesenteric glands, and of scrofulous and rachitic complaints. It may be produced by worms, and hence called *Worm Fever*; and when attendant on dentition, it is denominated "*fever from the teeth*," It is symptomatic of visceral inflammation in the head, chest, or abdomen, and of scrofulous disease in the neck or joints.

The chief indication of *treatment* is to regulate the bowels by mild purgatives, such as calomel and rhubarb, or jalap, infusion of senna with some aromatic, and next improve the alvine secretions. The disease is readily cured by this plan when it is early employed. The disease will remain until the alvine dejections are restored to a healthy appearance. As there is generally erythema, muco-enteritis, or ulceration, in some portion of the intestinal tube, leeches should be applied to the abdomen, though no pain exist on pressure. When the abdomen is tumid, frictions with camphorated oil and laudanum are very useful, and a flannel roller should be applied. Mucilaginous drinks, with weak broths and farinaceous aliments, such as thin arrow-root, sago, tapioca, milk, &c. may be given. No wine should be allowed, unless when exhaustion threatens life, and then stimulation only can save it.

Scrofula.—This disease arises from debility of constitution. It is common to children whose skin is thin, and only slightly covers the minute blood vessels, and hence the cause of the rosy blush of such persons. The hair is light-coloured and fine, the eye-lashes are long, the pupils are dilated, the fingers are long with the nails arched and curved, and the upper lip is thick. This disease most commonly attacks the absorbent glands and joints, though it may attack almost all parts of the body. The glands of the neck and mesentery are most commonly affected. Sudden changes of temperature excite the disease. The change of season has great influence upon it, which is proved by the fact, that scrofulous ulceration will continue in despite of all remedies during winter and spring, disappear spontaneously in summer, and reappear the following winter.

The predisposing cause is debility; the exciting causes are those which produce or increase debility, as fevers, measles, small-pox, scarlatina. Scrofula after small-pox is now prevented by

vaccination, and this advantage alone is a strong recommendation of the Jennerian discovery. Every part of the body is debilitated in scrofulous or strumous habits, the lymphatic temperament predominates, the circulation is languid, the blood is deteriorated, the crassamentum is loosely formed and coagulates slowly, the serum is abundant, and the solids are imperfectly formed. The muscles are attenuated, the fibres are delicate, the structure of the blood vessels is defective, the stomach and intestinal canal are thin and pellucid, the absorbent glands are enlarged, and the nervous system is irritable. From this pathology it is manifest that the chief indications of *treatment* are, 1. to make better blood; 2. to strengthen the solids; and 3. to invigorate the circulation. To fulfil the first indication, we should exhibit the most nutritious aliments, and such as are easily digested. These are animal substances. Animal food should be given in small quantities at least three times a day; and vegetable matters should be avoided. The child may have some wine and water, ale or porter, at dinner, to promote digestion. Eggs and milk are highly nutritious. Air and exercise are indispensable. It is well known, that boys who exercise in the open air are much less affected by scrofula than girls, who are more confined, and kept sitting all day in schools. Exercise may be taken in wet or inclement weather in a spacious apartment. Sea air has been long preferred; but sea-bathing is now acknowledged to be injurious when children are very delicate. The disease is absolutely most common on the sea-coasts. Country air is the best remedy. Flannel should be worn next the skin in winter, and calico or cotton in summer. It is stated by able writers, that two-ninths of the children born in London and Paris die scrofulous under the age of fifteen years. The general health must also be improved by medicine. The remedies most generally employed are hydrarg. c. creta and rhubarb, calomel in alternative doses, rhubarb, magnesia with sugar, rhubarb and steel, as two grains of one and three of the carb. ferri once a week; and Sir Astley Cooper recommends the following formula:

R. Tinct. Cinchonæ, ℥ j;
Hydrarg. oxymur, gr. j;
M. Dosis drachma bis de die.

It is extremely difficult to get children to take this medicine, and hence I usually substitute the following :

R. Pulveris Rhei, ʒj—ʒss ;

Hydrarg. c. creta, ʒss—ʒj ;

Ferri carbon., gr. xv.—xx ;

Quininæ Sulph., gr. iv—vj ;

Sacchari puri, ʒj ;

Pulveris aromat. ʒj ;

in chartulas vj—x divide, ex quibus sumat unam singulis vel alternis noctibus.

The dose must be increased or diminished according to the constitution, age, and delicacy of the patient, and according to the condition of the alvine secretions. A bath at 94° should be used every other morning.

Scrofulous Inflammation of the Glands in the Neck.

When the glands in the neck are swollen and painful though not inflamed, we should apply leeches and a lotion composed of spirit of wine and water. The bowels should be opened with calomel and rhubarb. If suppuration takes place, as soon as the skin is bluish or reddish we should make an opening with a lancet transversely in the natural creases of the neck, and by this plan the deformity of a scar will be avoided. We should not wait for intense redness, for when this occurs, it is better to apply poultices than make an incision, as less deformity will be induced. It is a matter of some moment to recollect this advice in cases of females, as deformity from scars on the neck are great blemishes. The whole fluid should be pressed out, and the sac injected with a lotion composed of a scruple of S. Zinc and a ʒj of water. The best dressing is a dram of the ointment of hydriodate of potass, and an ounce of cetaceous cerate. In cases of adults we should exhibit the solution of the hydriodate of potass of the Dublin Pharmacopœia, and apply the ointment of the same remedy. I have seen the best results from these medicines in cases of ulcerated neck, the sufferers from which had been dismissed from St. Bartholomew's, and St. Thomas's Hospitals. The practice formerly was to advise the patient to take the compound decoction of sarsaparilla very freely, and to dress the ulcers with resinous ointment and red precipitate. I have known two empirics to obtain a livelihood by these remedies. They compelled the patients to take no other

drink but the decoction, and continued this plan for several months.

Enlargement of the Mesenteric Glands.—About the eighth month the enlargement of the mesenteric glands commences, the abdomen becomes tumefied, the lower extremities emaciate, and all the symptoms of marasmus, as already described, appear. This arises from improper food which irritates the mouths of the absorbents in the duodenum, the irritation extends along these vessels to the glands, and enlargement follows. The chyle cannot pass through glands when disorganized, the supply to the blood is cut off, the circulation goes on, the different parts of the body want nourishment, absorption proceeds, and general emaciation ensues. The prognosis is unfavourable, though recovery may happen very rapidly. The *treatment* is that laid down for scrofula and marasmus. Friction of the abdomen with the hand for a quarter of an hour, twice or thrice daily, is a powerful means of promoting absorption of the enlarged glands. Some liniment may be used at the same time as the ammoniated or camphorated. A flannel roller round the abdomen, warm clothing and nourishing diet, must be employed.

Scrofulous affections of the Joints.—When children are taken out for the benefit of air by nurses, they are often compelled to walk and keep pace with the woman. The child takes two steps for her one, and does not feel fatigued, as its attention is so keenly fixed on surrounding objects. Next day, however, it is ill and feverish, and cries when it is moved. On examination of its lower extremities, it will be discovered that the knee or hip joint is pained on motion. If the attendant overlook this point, he may suppose there is some derangement of the digestive organs, and content himself by ordering febrifuge remedies; inflammation and suppuration of the joint will speedily occur; the suffering will be great, and the recovery extremely tedious.

Treatment.—Cold lotions, such as Sp. vini 1 ounce Aq. Oij, or the liq. acet. plumbi dilut. should be applied the bowels regulated, the joint kept in a state of perfect rest; and if these remedies fail, leeches and blisters must be employed.

When the *knee* is affected, and the disease proceeds, a splint should be applied from the hip to the heel, to prevent curvature of the joint during the process of ankylosis; no surgeon of science could allow the leg to be permanently fixed at a right angle with the thigh. Ulceration of the knee joint in adults is a tedious

painful disease ; and may be removed by time, even after the most severe constitutional irritation.

When the *hip-joint* is inflamed from too much exercise, the same plan of treatment is to be adopted ; and should an abscess form, it ought not to be opened with a lancet, but allowed to open by ulceration, which it does at a considerable distance from the joint : whereas if opened early the joint would be exposed, and great constitutional and local irritation produced. When suppuration is established, the strength should be supported by nutriment, quinine, &c., and the child might be allowed to walk with a crutch. Repeated or perpetual blistering over the joint is advantageous ; but a very small blister should be applied as otherwise too much irritation would be produced. The antimonial ointment is also a valuable counter-irritant.

Curvature of the Spine.—The first symptom of this disease is inability to use the lower extremities. The mother observes the child unable to stand, and that it screams when moved. After a short time, some of the lower dorsal or lumbar vertebræ project and form excurvation, and the back is said “to grow out.” If the curvature is slight the child waddles or stumbles. This disease is common among poor, from bad nursing, filth, impure air, improper diet, and allowing infants to remain too long in the sitting posture.

Sir Astley Cooper recommends an instrument invented by Cal- low, which supports the spine, and is fixed to the shoulders and pelvis. He holds deformity to be inevitable, and that rest in the recumbent posture, with attention the general health, is the best remedy. He thinks that blisters, issues, and setons, do more harm than good. His observations apply to spinal curvature in young persons about the age of puberty. It appears, however, by the reports of the Orthopedic Institutions of foreign countries, that the worst forms of curvature may be remedied. The works of Dr. Harrison, Mr. Beale, and Mr. Amesbury, leave no doubt of the fact. Every observant practitioner must have met with spinal curvature, and deformities of the legs of infants and young children which may be remedied by art, and even by nature. This is often the case in the disease called rickets.

Rachitis—Rickets.—This disease arises from want of proper ossification. The habit is scrofulous, digestion and nutrition are imperfect, the blood is defective, and is deprived of solid materials, and hence all parts of the body are badly nourished, and of course

the osseous system is included. There is not a sufficient deposition of phosphate of lime, which affords the hard part of bone. Hence we find all the bones are soft and yielding, and those which sustain much weight, as the spine and the inferior extremities are bent or curved. The head is enlarged because the bones of the skull are unable to oppose the action of the arteries of the brain; and hence the enlargement, which is often a precursor of hydrocephalus. The weight of the body causes a double curvature of the spine, and the curvatures are in opposite directions; because when one commences, nature endeavours to preserve the perpendicular line of the body by producing the second, and the equilibrium is maintained in this manner. The curvatures make the spine resemble an italic *S*. The scapula is thrown outwards, the ribs are flattened, the sternum projects, and the child is said to be "chicken-breasted." During the progress of this disease the ancles become deformed, or "grow out," and the child cannot assume the erect position without support. The disease is produced by mismanagement of children during the first three years of their existence. Bad food, bad air, insufficient clothing, want of cleanliness, and all causes of debility, excite this disease. Hence it is so common among the lower classes. All children who have large joints and who are late in their dentition, are predisposed to this complaint. It occurs from the first to the eighth year. We invariably observe that the digestive organs are deranged in the commencement of rickets, the appetite is depraved, is voracious, and yet emaciation advances, and the limbs become flabby. The alvine secretions are always unnatural. There is constipation in general, though sometimes diarrhœa. No teeth appear during the first year or even later. The functions of the whole digestive and nutritive systems are defective, and healthy blood is not formed. There is generally enlarged mesenteric glands, and the irritation of teething adds to the debility.

The treatment of this disease is that laid down for scrofula; the diet should be most nutritious, the alvine secretions should be improved;—air and exercise are of the utmost importance. The child should be as much in the open air as possible, and it should not be allowed to stand or walk while the bones are soft. Friction of every part of the body should be made for at least three hours daily. A little flour to prevent chafing is all that is necessary. Friction will improve the tone of the muscles, increase the circu-

lation and produce as good effects as active exercise, which of course is impracticable. In most cases the child not only regains the natural appearance of its limbs and spine, but becomes as healthy as if no disease had ever existed. Perfect ossification takes place in every part of the body, and often after all treatment had been tried in vain. I have seen the most astonishing recoveries from rickets and numerous writers attest the fact. Some recommend mechanical means in spinal curvature and deformities of infants, but these do more harm than good. Long confinement in the recumbent posture destroys the general health, and consequently can never relieve deformity.

Deformities of the Legs.—These arise from placing delicate rickety children too soon upon their feet, before their own feeling and instinct dictate their ability to assume this position. The consequence is deformity of the knees and ancles, which occurs from the first to the third year, and generally disappears without the aid of any instrument. This information will afford great consolation to parents. Mothers are usually importunate in their request to apply some instrument or remedy in these cases. The restoration of general health by proper attention to diet, air, and exercise, are the only remedies. We find that errors in diet and clothing, weaning, dentition, and debilitating diseases, and placing children too soon in the erect position, are the exciting causes of deformities. Fat children are also subject to deformity from their weight. The best rule with regard to teaching children to walk is to place them on the floor, and allow them to assume whatever position they please. Delicate children placed in the horizontal position on the floor, will turn themselves about in different directions, and soon assume the erect position. I have only to state in conclusion, that deformities of the legs of new-born infants are easily remedied by bandaging, and the sooner attention is paid to this remedy the better. The bones, ligaments, and cartilages are soft, and can be readily moulded to almost any shape. The bandage should be assisted by pieces of strong pasteboard, and loosened every third day. Club-feet may be cured by this plan within the first or second month, but the period will depend upon the development of the infant. I have treated some cases with perfect success in this way; no deformity whatever remained. Should the case be neglected until the third or fourth year, we must employ some powerful mechanical contrivance, such as the shoe with an iron

plate proposed by Dr. Colles of Dublin. Such cases sometimes happen, as the generality of mothers consider the deformity incurable, and therefore make no application to medical practitioners for relief. Such cases occur only among the poor and ignorant.

Section 4.—Surgical Diseases of Infants.

Tumefaction of the scalp is generally removed by friction with the hand, and usually disappears in a few days. Nurses apply ardent sprits. Cold lotions are seldom necessary.

Tumefaction and Lividity of the face will be removed by nature, or simple friction.

Separation of coherent Labia may be affected by simple pressure or a slight incision; but as there is generally an aperture sufficient to admit the escape of the urine, no operation is necessary. Should separation be affected, some mild dressing must be placed to prevent re-union of the parts.

Impervious Urethra and Anus often arise from a thin membrane placed over these orifices, which may be divided with a lancet. This disease is discovered by the infant not evacuating the bowels or bladder within twenty-four hours. Sometimes the rectum is impervious by a solid growth, and then no operation can preserve life. The rectum may open into the bladder, vagina, and urethra; and then no operation is likely to succeed.

Dysury.—The infant may have difficulty in passing water without occlusion. Warm fomentations to the pubes generally afford relief.

Incontinence of urine is often a disease of children. It generally remains incurable until after puberty.

Club-feet, vari, valgi, and *pes equinus*, have been described in a former article on deformity of the legs.

Spina bifida, dropsy of the Spine, Hydro-rachitis.—In this case Sir Astley Cooper has punctured the part with a cataract needle as often as fifty times, and finally with success. He applied a truss afterwards. This operation has failed in later cases. The disease may continue until the adult age, though in general infants so affected seldom survive.

Hydrocephalus, when congenital, can only be cured by paracentesis, as already described.

Hydrocele may be removed by the application of cold water poured from a height, or by cold lotions. The operation of par-

acentesis is seldom necessary. If all remedies fail, a slight puncture should be made with a lancet.

Hydrocephalorachy, or dropsy of the brain and spine is incurable.

Fractures, Contusions, Dislocations, and Wounds are to be treated on ordinary principles.

The *Œsophagus* and *small Intestines* have been found imperious. Infants have survived for sixteen days under such circumstances.

Intussusception, or Intestinal Invagination, admits of no remedy.

Lingua Ligata, or Tongue-tie, is obviated by dividing the frœnum with a pair of scissors. This operation is necessary, as the infant cannot suck. The index finger of the left hand should be passed under the tongue, and care must be taken not to wound the lingual veins.

Harelip.—The operation should not be performed until after the appearance of the teeth.

Cleft Palate—cannot be remedied in infancy.

Hypospadias, or opening of the urethra between the natural orifice and scrotum, and *epispadias*, or urethra, opening on the dorsum, penis, or in the corona glandis or pubes, requires no operation during infancy.

Occlusions of the Eyes and Ears may be remedied when a slight membrane only exists.

Supernumerary Fingers and Toes may be removed when attached by a pedicle, but not if there is a regular joint.

Nævi Materni, or mother's marks, may be removed by vaccination on the affected part, or by the application of nitric acid. I lately applied the last remedy to a nævus on the root of the nose with success. Others pass a needle armed with a double thread under the part, and tie the threads in opposite directions.

Hæmorrhage from the Navel-string may occur from a loose ligature, or from the umbilical vein bursting between the ligature and the abdomen. Exhaustion will come on, and is to be treated as already mentioned in the articles on anæmia and hydrocephaloid affection. Sometimes the cord will bleed, however tightly the ligature is applied. Another should be put on nearer the abdomen, and care must be taken not to divide the cord by too much compression.

Fungus of the navel is to be treated with calomel, sprinkled

over it, with alum powder, moderate pressure, a ligature or nitrate of silver.

Umbilical Hernia requires compression with strips of soap plaister—a truss may be required.

Inguinal Hernia will require a truss in some cases, but is in general cured by affusion of cold water.

Prolapsus Ani.—The bowel is to be replaced and kept in situ by a compress and bandage. A weak alum injection, or five grains of acet. plumbi to ℥j aqua, may be used in troublesome cases. The finger should be oiled when applied.

Inflammation of the Mammæ of new-born infants. Mastitis. Nurses make pressure on the tumefied breasts, and aggravate the disease. No remedy is necessary. The disease disappears in a few days. Friction with olive oil, a cold lotion, and rarely the application of a leech, are necessary.

Aures excoriatiæ.—Ulceration behind the ears may be caused by chafing. Simple ablution with milk and water, and the oxide of zinc ointment effect a cure. The bowels should be regulated. The application of flour or calamine powder is also useful. An ointment of acet. plumbi or citrine ointment generally effect a cure. If the parts become livid or slough, camphorated spirit, fermenting poultice, and chloride of lime must be used. The strength must be supported. The vernacular name for this form of disease is “burnt-holes.”

Intertrigo-Chafings occur in the groins and axillæ, and are best cured by ablution with cold water and the application of flour or hair powder. It is sometimes necessary to use an ointment composed of an ounce of cetaceous cerate and a scruple of sulphate of zinc.

Erosion of the cheek.—The best remedies for this disease are chloride of lime, nitrate of silver, camphorated spirit of wine, tincture of opium, and fermenting poultice.

Noma is a disease that destroys by gangrene, and thus differs from erosion which proceeds by ulceration. The cheeks and labia pudendi are the parts affected. It begins with a livid spot without inflammation. The remedies are saturnine lotion, and when sloughing sets in, nitric acid, chloride of lime in solution, carrot poultice, and opium; wine and quinine, internally.

Sloughing of the female genitals has been noticed in the article on female violation, p. 73. It should be treated with port

wine poultice, and when sloughing takes place, pure nitric acid, chloride of lime, while nutriment, wine, quinine, must be given fully. The disease is mostly fatal.

Burns and Scalds.—The best remedy is the constant application of flour, or the immersion of the part in cold water. These diseases are in general fatal to children.

Vaccination.—The benefits conferred on humanity by the splendid discovery of vaccination are now universally admitted. No medical man should inoculate for the small-pox. Infants should be vaccinated after the age of six weeks. We should invariably advise vaccination. The health of the infant should be good, and the arm free from eruption. See p. 499.

Strophulus intertinctus “red gum,” is a papular eruption of a vivid red colour, which appears on the face, neck, and chest of young infants. It disappears in a few days, by attention to the bowels. All rashes of infants are cured by purgatives.

The reader will find a simple classification of cutaneous diseases at p. 482, which, if adopted, would enable us to practice less injuriously and empirically. There are some diseases of the skin which defy all internal and external remedies, and others which are greatly aggravated by ointments; but I have already so far exceeded my limits, that I cannot describe them in this work.

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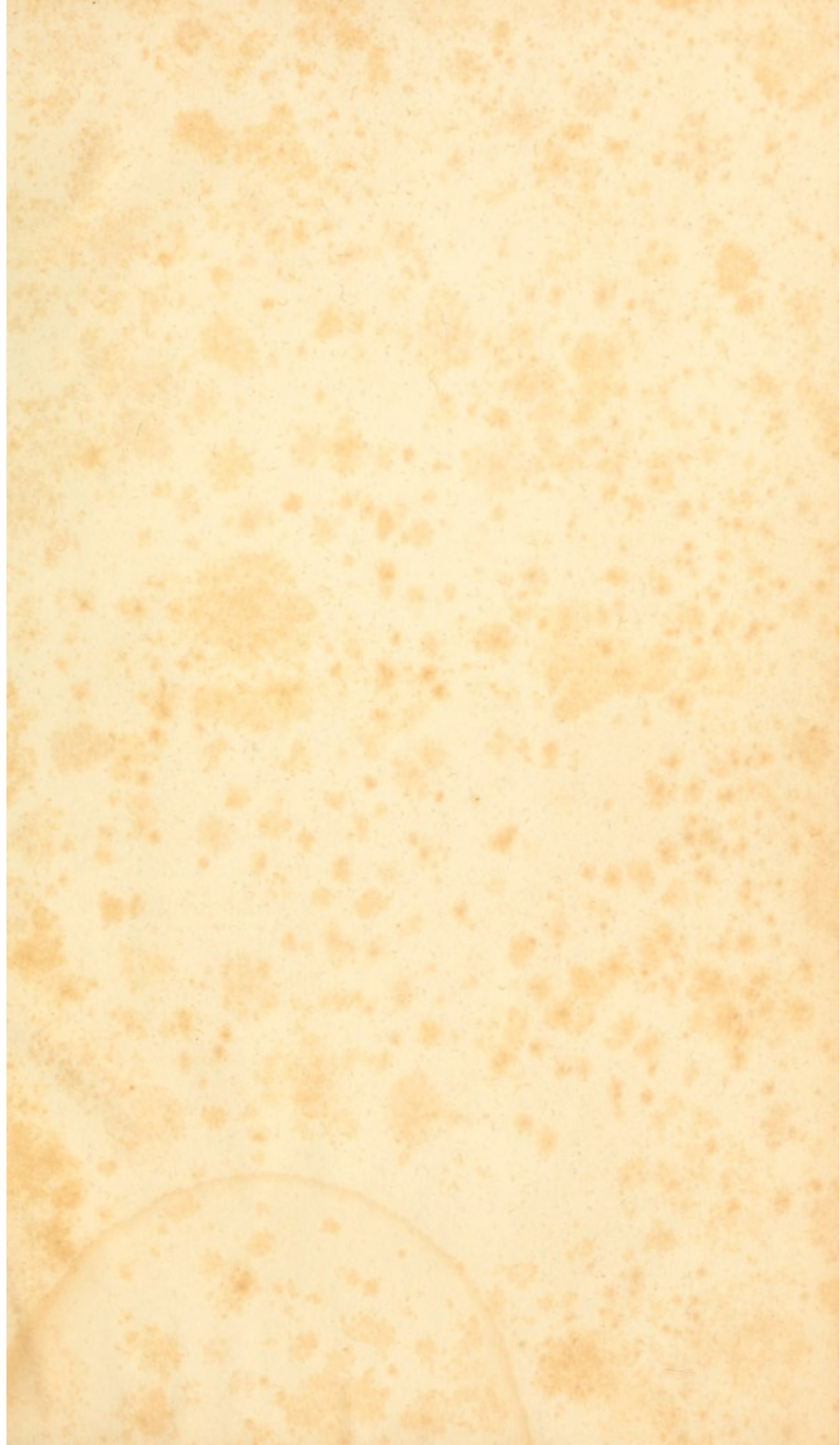
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