The principles and practice of obstetric medicine / Carefully revised & corr., with ... additions and notes by Alexander Cooper Lee and Nathaniel Rogers.

Contributors

Blundell, Dr., 1790-1878.
Lee, Alexander Cooper.
Rogers, Nathaniel.

Publication/Creation

London : Joseph Butler, [1840]

Persistent URL

https://wellcomecollection.org/works/kjcvgcxg

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org



BOOKBINDER
Buchanan Court
75 ARGYLL STREET
GLASGOW

Joannes Augustus Sommers

Universitatis Andersoniensis,

Inter ordines Classis Obstetricae

ALUMNUS,

Locum inter optime merentes Insignem

Adeptus,

Hoc Præmium Academicum

TULIT.

Apud Universit: Anderson;
die 24 Aprilis
MDCCCXLVII.

Jacobus Paterson, M.D.
Prof. Obst. Med.

Milton, Lith.



4173/B
J. xxvi. Blu

Unable to display this page

79054

THE

PRINCIPLES AND PRACTICE

OF

OBSTETRIC MEDICINE;

COMPRISING

THE STRUCTURE OF THE FEMALE GENERATIVE SYSTEM; THE PROCESS OF PARTURITION, IN ALL ITS DETAILS; THE AFTER-MANAGEMENT OF THE PUERPERAL STATE; THE PHYSIOLOGY AND DISEASES OF THE UNIMPREGNATED GENERATIVE SYSTEM; THE PHYSIOLOGY OF CONCEPTION, AND DISEASES OF UTERO-GESTATION.

BY JAMES BLUNDELL, M.D.

LATE PROFESSOR OF OBSTETRIC MEDICINE AT GUY'S HOSPITAL.

CAREFULLY REVISED AND CORRECTED, WITH NUMEROUS ADDITIONS AND NOTES,

BY ALEXANDER COOPER LEE;

AND

NATHANIEL ROGERS, M.D.

MEMBER, AND LATE PRESIDENT, OF THE HUNTERIAN SOCIETY OF EDINBURGH; AND CORRESPONDING MEMBER OF THE MEDICO-CHIRURGICAL SOCIETY OF DUBLIN.



LONDON:
JOSEPH BUTLER,
MEDICAL BOOKSELLER AND PUBLISHER,
4, ST. THOMAS'S STREET, SOUTHWARK.

[1840]

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

TO

ARTHUR, DUKE OF WELLINGTON,

"THE HERO OF A HUNDRED FIGHTS";

WHOSE

TRANSCENDANT MILITARY TALENTS,

ARE

THE BOAST OF THE PRESENT,

AND WILL BE

THE WONDER OF THE FUTURE;—

WHO HAS

AUGMENTED THE SPLENDID CATALOGUE

OF

BRITISH VICTORIES ON FOREIGN SHORES;

AND TO

CRESSY AND AGINCOURT HAS ADDED WATERLOO;—

WHO

CONQUERED THE GREAT CONQUEROR OF THE AGE;—

WHO

DELIVERED EUROPE FROM MILITARY DESPOTISM,

AND

IRELAND FROM BIGOTRY STILL MORE DESPOTIC;

This Volume is Dedicated,

WITH SENTIMENTS OF PROFOUND ADMIRATION FOR

HIS MATCHLESS TALENTS, HIS DAUNTLESS FORTITUDE,

AND

HIS UNFALTERING DECISION OF CHARACTER,

BY

THE PUBLISHER.

PREFACE.

In presenting this Work to the notice of the Medical Profession, the Editors consider that any apology for its appearance is rendered unnecessary by the great celebrity of the Author;—a celebrity which has not only procured a rapid sale of former Editions in this country, but has even led to their reprint in America, and their translation into German and Italian. But if any additional reason were required, it would be furnished by the circumstance of Dr. Blundell's retirement from the Obstetric Chair of Guy's Hospital;—an event which has deprived Medical Students of that instruction which he was so pre-eminently qualified to afford them. This circumstance alone should render the present Work particularly valuable to the Medical Profession;—as being the only channel through which the Members of that Profession can receive the benefit of the Author's extended experience, and original views. The only duty, therefore, which the Editors have to perform, is to put forth the grounds on which they ask the sanction and approval of the Profession on behalf of the present Volume; in the preparation of which no expense or trouble has been spared, in order to render it the best Work on Obstetric Medicine in the English language.

In the arrangement of the Work, the Editors have, to a great extent, followed the plan which Dr. Blundell himself adopted in the Lecture-Room; although that arrangement is at variance with the plan adopted by most preceding writers; and especially with that of the late Dr. Castle, in his Edition of the Work. The plan now pursued, however, is in accordance with the opinion of Dr. Blundell; who considers that the subjects included in the first three parts of this Edition, belong to the special province of the Accoucheur; and may therefore be most advantageously studied in

immediate succession; while the remaining two parts, although they do not come directly within the province of the Accoucheur, are nevertheless devolved upon him by the usages of society, and consequently require especial study. With this view, the Editors have arranged the Work in two principal divisions. The first, consisting of three parts, is purely Obstetric in its character; and is, consequently, the most important; while the second, including the last two parts of the work, embraces the Physiology and Diseases (Functional and Organic) of the Female Generative System, during the successive periods of female existence, and in all circumstances. How important soever the subjects included in the latter division may be in themselves, they are of secondary value in the eye of the Obstetrician.

Several minor alterations, also, have been effected; and, it is hoped, will prove advantageous to the reader. These consist, principally, in placing the Physiology and Diseases of the Unimpregnated Uterus, before the Physiology, Signs, and Diseases of Pregnancy;—in the entire re-arrangement of the Fourth Part;—in restoring the Chapter on the Transmission of the Child through the Pelvis,—which Dr. Castle placed immediately after "Natural Parturition",—to its former situation;—from the conviction that a knowledge of the manner in which the child is transmitted through the pelvis, is absolutely necessary before a knowledge of the process of Parturition, however natural, can be acquired. There are some other changes which need not be specified.

The next feature to which the Editors are desirous of drawing the attention of the Profession, is the introduction of nearly four hundred pages of additional matter, from numerous valuable sources. This, they are aware, is a task involving considerable delicacy and difficulty; as there is a risk, on the one hand, of appearing to slight the Author; while, at the same time, there is considerable danger of overlaying the text with a redundancy of valuable but ill-digested materials; and, consequently, of rendering the whole less intelligible. But the Editors considered, that they would best consult the interest of their readers, not merely by presenting Dr. Blundell's opinions in the most correct and convenient form, but also by embodying the opinions of other men, where those opinions appeared likely to elucidate the subject; more particularly if, from the progressive advancement of science, new and important modifications of former opinions had become necessary. Impressed with these views, therefore, they have always endeavoured, first, to avoid

the introduction of other men's opinions, however valuable, on subjects which had been already fully treated by Doctor Blundell; and, in the next place, to select proper matter from those sources alone which were most original.

In the First and Second Parts, the subjects have been so fully described by the accomplished Lecturer himself, as to render any additional matter, beyond a few practical notes, wholly unnecessary. These notes have been derived, principally, from the unpublished Lectures of the late Dr. Mackintosh; Gooch's "Compendium of Midwifery"; Denman's "Introduction to Midwifery" (Edited by Waller); Osborn's "Essays"; Ryan's "Manual of Midwifery"; Burns's "Principles of Midwifery"; Merriman's "Synopsis of Difficult Parturition"; and Davis's "Operative Midwifery".

In the Third Part (which treats of "Puerperal Diseases"), extensive additions were deemed necessary;—on account of the rapid advance of medical knowledge within the last few years. These additions consist, partly, in the introduction of new matter, on subjects previously described; and, partly, in the introduction of new Chapters on the following subjects;—Intestinal Irritation; Effects of the Loss of Blood on the Puerperal State; Puerperal Mania and Phrenitis; Slight Febrile Affections from Mixed Causes; Structure and Diseases of the Mamma; and the Effect of Previous Disorders of the General Health on the Puerperal State.

For the substance of these additions, the Editors are indebted to the Works (before alluded to) of Gooch, Denman, Waller, Burns, and Mackintosh; and also to Dr. Marshall Hall's "Commentaries on Some of the Most Important Diseases of Women"; Dr. Robert Lee's "Researches on Some of the Diseases of Women"; and Dr. Hamilton's "Outlines of Midwifery".

In the Fourth and Fifth Parts, also, large additions were considered necessary; and have been supplied from the Works (before mentioned) of Drs. Marshall Hall, Robert Lee, Denman, Burns, and Hamilton. The Editors have also to acknowledge the valuable information they derived from Sir Charles Mansfield Clarke's "Observations on the Diseases of Females"; Dr. Montgomery's "Exposition of the Signs and Symptoms of Pregnancy"; Dr. Gooch's "Account of Some of the Most Important Diseases of Women"; Dr. Naegele's "Treatise on Obstetric Auscultation"; Mauriceau's "Maladies des Femmes Grosses"; and Boivin and Duges, on the "Diseases of the Womb and its Appendages", translated by Dr. Hemming.

These are the principal additions which the Editors considered necessary; and which they hope will meet with the approval of the Profession. But there is still another which remains to be noticed; and which, it is expected, will be of no slight importance to the Medical Reader. This addition consists in the introduction of several new Chapters (derived principally from the works of Beck and Montgomery), on the Signs of Delivery, Impotence and Sterility, Rape, and the Duration of Pregnancy. The Accoucheur is frequently called upon to give an opinion on the subjects in question;—an opinion which may, in some cases, affect the happiness, or even the lives of individuals; in others, may confirm or destroy domestic felicity; or may involve, not merely the present generation, but their progeny, in misery and disgrace. It would, therefore, be highly culpable on the part of the Medical Practitioner, to be ignorant on these matters. The Editors, therefore, deemed it necessary to introduce these Chapters; in order that they might direct the attention of the reader to those questions, on which he might hereafter be called upon to give an opinion; and, also, because they serve as points or foci, to which much useful matter scattered through the Work may be directed.

These are the principal additions and alterations which have been effected in the present Edition. In making them, the utmost vigilance has been exercised to render the Volume worthy of the reputation of its Author. All possible care has been taken to secure the correctness of the text; to illustrate any portions that might appear obscure, by explanatory notes; and especially so to connect the various extracts with the text, as that the whole may appear perfectly clear and intelligible. All this they have directed their best energies to accomplish. How far they have succeeded, others will decide; but, at all events, they hope that the trouble and expense which the Publisher has incurred, in his anxiety to make the present excel all other works on the subject, will meet with that reward, which his spirited and enterprising exertions so well deserve.

It only remains for the Editors, to tender their best thanks to Dr. Blundell, for the courtesy with which he communicated with them during the progress of the Work; and also to Dr. Marshall Hall, for the very kind manner in which he afforded his valuable aid, during the progress of the Third and Fourth Parts through the press.

CONTENTS.

PAGE.

INTRODUCTION 1

PART I.

ANATOMY OF THE PELVIS, THE SOFT PARTS, AND THE CHILD;—SO FAR AS THE KNOWLEDGE OF THEM IS NECESSARY FOR THE THOROUGH COMPREHENSION OF DELIVERY.

CHAPTER I.—Bones and Ligaments of the Pelvis 6

SECTION 1. Os Coccygis 6
2. Os Sacrum 7
3. Ossa Innominata 7
4. Vernacular Terms given to the Bones . . . 8
5. Ligaments of the Pelvis 8

CHAPTER II.—Articulations of the Pelvis 9

SECTION 1. Sacro-Coccygeal Articulation 9
2. Symphysis Pubis 12
3. Sacro-Iliac Synchondrosis 18
4. Relaxation of the Pelvic Articulations during Parturition 19

CHAPTER III.—The Bony Case formed by the Bones of the Pelvis . 20

SECTION 1. Standard Pelvis 21
2. Distorted Pelvis 28
3. Contracted Pelvis 31
4. Small Pelvis 34
5. Large Pelvis 35
6. Means of ascertaining the Kind of Pelvis . . 37
7. Comparison between the Male and the Female Pelvis . 41
8. Bearing of the Pelvis on the Spine . . . 41

CHAPTER IV.—The Soft Parts in Connexion with the Pelvis . 44

SECTION 1. Pelvic Viscera 44
2. External Organs of Generation 51

CHAPTER V.—The Fœtus obstetrically considered . . . 55

SECTION 1. Standard Head 56
2. Deviations from the Standard Head . . . 59
3. Presentation and Situation 61

PAGE.

CHAPTER VI.—Transmission of the Child through the Pelvis . 62

SECTION 1. Cephalic or Head-Presentations 62
2. Crural or Foot-Presentations 69
3. Natal or Breech-Presentations 73
4. Transverse Presentations 78
5. Means of Ascertaining the Position of the Child . 80

PART II.

PARTURITION.

INTRODUCTION 85

CHAPTER I.—Natural Parturition 93

SECTION 1. Expulsion of the Fœtus 93
2. Duties of the Accoucheur 99
3. Birth and Management of the Secundines . . 115
4. Effects produced on the Soft Parts by Parturition . 126

CHAPTER II.—Preternatural Labours 132

SECTION 1. Foot or Crural Presentations 132
2. Breech-Presentations 137
3. Mixed Presentations 141
4. Extraordinary Difficulties in Preternatural Presentations 141
5. Transverse Presentations 148
6. Presentation of the Funis 154

CHAPTER III.—The Operation of Turning 155

SECTION 1. Easy Turning 159
2. Difficult Turning 163
3. Impracticable Turning 169

CHAPTER IV.—Floodings 169

SECTION 1. Treatment of Sparing Floodings . . . 176
2. Treatment of Copious Floodings . . . 181
a. In the Earlier Months 181
b. In the Latter Months 188
3. Treatment of Flooding with Asphyxia . . . 191
4. After-Treatment of Floodings 203
5. Transfusion 209
a. Cases in which Transfusion may be tried . . 211
b. Kinds of Blood proper for Transfusion . . 217
c. Transfusion with a Cup and a Syringe . . 225
d. Transfusion in the Human Subject . . . 231
e. Dangers attendant on Transfusion . . . 239

CHAPTER V.—Floodings in the Earlier Months . . . 248

SECTION 1. Substances which Escape during Pregnancy . . 248
2. Varieties of Flooding in the Earlier Months . 252
3. Treatment of the Earlier Floodings . . 255

PAGE.

CHAPTER VI.—Floodings in the Latter Months . . . 257

SECTION 1. Floodings where the Placenta is over the Os Uteri . 257
2. Floodings where the Placenta is not over the Os Uteri 264
3. After-Floodings 267
a. Varieties of After-Floodings 268
b. Treatment of After-Floodings . . . 270

CHAPTER VII.—Laborious Parturition 279

SECTION 1. Accidents occurring during Laborious Parturition . 279
2. Effects of Laborious Parturition . . . 288
3. The Employment of Instruments . . . 295

CHAPTER VIII.—Embryospastic Instruments . . . 296

SECTION 1. Preliminary Steps 296
2. Fillets 300
3. The Long Forceps 303
4. The Tractor or Lever 308
5. The Short Forceps 315
6. Rules for determining the Necessity of Instruments . 320

CHAPTER IX.—Embryotomic Instruments 326

SECTION 1. The Instruments Employed 326
2. Craniotomy in Cases of Slight Contraction . . 329
3. Craniotomy in Cases of Considerable Contraction . 334
4. Signs indicating the Need of Craniotomy . . 336
5. Indications of the Death of the Fœtus . . . 340
6. Causes of the Death of the Fœtus . . . 348

CHAPTER X.—Induction of Premature Labour . . . 350

CHAPTER XI.—Hysterotomy 353

SECTION 1. The Cæsarian Operation 353
2. Means of Superseding the Cæsarian Operation . . 368
3. Section of the Symphysis Pubis . . . 376

CHAPTER XII.—Laborious Parturition in particular . . 379

SECTION 1. Unfavourable Position of the Head . . . 379
2. Deficiency of Room in the Pelvis . . . 382
3. Laborious Parturition from Rigidity . . . 388
4. Laborious Parturition from Various Causes . . 392

CHAPTER XIII.—Retention of the Placenta . . . 397

SECTION 1. Effects of Retention of the Placenta . . . 397
2. Treatment of Retention of the Placenta . . 400
3. Causes of Retention of the Placenta . . . 404

CHAPTER XIV.—Complicated Labours 415

SECTION 1. Labours with Monstrosity 415
2. Labours with Convulsions 416
a. Treatment of Convulsions 423
b. Prevention of Convulsions 431
2. Apoplexy and Sudden Death 434
3. Labours complicated with Tumours in the Pelvis . 436
4. Inversion of the Uterus 440
5. Rupture of the Uterus 451
6. Lingering Parturition 456
7. Plurality of Children 466
8. Delivery after the Death of the Mother . . 472
9. Delivery complicated with Fever and Inflammation . 474
10. Extra-Uterine Pregnancy 477

PAGE.

CHAPTER XV.—After-Management of the Puerperal State . 482

CHAPTER XVI.—Signs of Recent Delivery . . . 493
SECTION 1. Concealed Delivery 493
2. Pretended Delivery 495
3. Medico-Legal Questions on Delivery . . . 499

PART III.

DISEASES INCIDENT TO THE PUERPERAL STATE.

INTRODUCTION 563

CHAPTER I.—Pathology and General Treatment of Puerperal Fever 506
SECTION 1. Pathology of Puerperal Fever 507
2. Symptoms of Puerperal Fever 510
3. Venesection, Colomel, and Opium in Puerperal Fever 515
4. Plans of Treatment recommended by Different Authors 525

CHAPTER II.—Varieties and Causes of Puerperal Fever . . 531
SECTION 1. Inflammation of the Uterine and General Peritoneum . 532
2. Inflammation of the Uterine Appendages . . 535
3. Inflammation of the Substance of the Uterus . 536
4. Inflammation of the Veins of the Uterus . . 540
5. Varieties of Puerperal Fever . . 546
6. Causes of Puerperal Fever 550

CHAPTER III.—Phlegmasia Dolens 558
SECTION 1. Chronic Phlegmasia Dolens 562

CHAPTER IV.—Intestinal Irritation 567
SECTION 1. Symptoms and Varieties of Intestinal Irritation . 567
2. Treatment of Intestinal Irritation . . . 570

CHAPTER V.—Effects of the Loss of Blood in the Puerperal State 572
SECTION 1. Signs of the Remote Effects of the Loss of Blood . 572
2. Treatment of the Loss of Blood . . . 575

CHAPTER VI.—Mixed Cases; Puerperal Mania and Phrenitis . 577

CHAPTER VII.—Mixed Cases; Hidrosis, or Hidrotic Fever . 590

CHAPTER VIII.—Slight Febrile Affections from Mixed Causes 600
SECTION 1. Ephemeral Fever or Weid, and Remittent Fever . 600
2. Milk-Fever 605
3. Miliary Fever 605

CHAPTER IX.—After-Pains 607

CHAPTER X.—Disturbance of the Lochial Discharge . 609

CHAPTER XI.—Laceration of the Perinæum . . . 610

PAGE.

CHAPTER XII.—Inflammation of the Mammæ and Nipples . 613

SECTION 1. Structure of the Mammary Gland . . . 613
2. Inflammation of the Mamma 614
3. Excoriation of the Nipple 618
4. Circumstances Disqualifying a Woman from Nursing . 619

CHAPTER XIII.—Influence of the General Health on Pregnancy . 621

PART IV.

PHYSIOLOGY AND DISEASES OF THE FEMALE ORGANS OF GENERATION IN THEIR UNIMPREGNATED STATE.

INTRODUCTION 623

Disorders incidental to Female Youth in general . . . 623

CHAPTER I.—Physiology and Diseases of Menstruation . . 628

SECTION 1. Physiology of Menstruation 628
2. Obstructed Menstruation, from Organic Causes . 636
3. Leucophlegmatic Chlorosis 640
4. Amenorrhœa of the Adult 649
5. Menorrhagia 656
6. Discharge of Membrane from the Uterus . . 663
7. Dysmenorrhœa 664
8. Offensive Catamenia 667
9. Cessation of the Catamenia 668

CHAPTER II.—Displacement of the Uterus 671

SECTION 1. Retroversion of the Uterus 671
2. Anteversion of the Uterus 683

CHAPTER III.—Pelvic Tumours independent of Pregnancy . 685

CHAPTER IV.—Descent of the Pelvic Viscera . . . 688

SECTION 1. Descent of the Vagina 690
2. Descent of the Bladder 694
3. Descent of the Uterus 697
4. Treatment of Descent of the Uterus by the Pessary . 708

CHAPTER V.—Inflammation of the Unimpregnated Uterus. . 714

CHAPTER VI.—Irritable Uterus 719

CHAPTER VII.—Scirrhus of the Uterus 727

SECTION 1. Nature and Varieties of Scirrhus . . . 727
2. Characters of Indolent Scirrhus of the Uterus . . 732
3. Treatment of Scirrhus 734
4. Prognosis of Scirrhus 735
5. Necessity of Manual Examination . . . 736

PAGE.

CHAPTER VIII.—Malignant Disorganization of the Uterus . 739

SECTION 1. Nature and Varieties of the Disease . . . 740
2. Characters of the Malignant Ulcer of the Womb . 744
3. Character of the Malignant Efflorescent Growth . 746
4. Character of Fungous Excrescences . . . 750
5. Character of the Inflamed Malignant Ulcer . . 751
6. Anatomy of the Upper Part of the Vagina . . 751
7. Excision of the Uterus 752
8. Excision of the Lower Half of the Uterus . . 784
9. Palliative Treatment 787
10. Treatment of the Cauliflower-Excrescence . . 789

CHAPTER IX.—Polypus of the Uterus 792

SECTION 1. Characters and Symptoms of Polypus . . . 792
2. Treatment of Polypus 794
3. Varieties of Polypus 800

CHAPTER X.—Chronic Inversion of the Uterus . . . 806

CHAPTER XI.—Scirrhus of the Ovaries 809

CHAPTER XII.—Ovarian Dropsy 814

SECTION 1. Characters of Ovarian Dropsy 814
2. Palliation of Ovarian Dropsy 817
3. Cure of Ovarian Dropsy 820

CHAPTER XIII.—Leucorrhœa 830

SECTION 1. Nature of the Vaginal Secretions . . . 830
2. Profluvium Vaginale, or Vaginal Discharge . . 832
3. Varieties and Symptoms of Leucorrhœa . . 837
a. Transparent Mucous Discharge from Debility . 837
b. Transparent Mucous Discharge from Vascular Action 838
4. Treatment of Leucorrhœa 840
a. Treatment of the Gleety Variety . . . 840
b. Treatment of the Inflammatory Variety . . 846

CHAPTER XIV.—Inflammation and Abscess of the Vagina . 848

SECTION 1. Inflammation of the Mucous Membrane of the Vagina . 848
2. Abscess of the Vagina 851

CHAPTER XV.—Structure and Diseases of the Bladder . . 853

SECTION 1. Structure of the Bladder 853
2. Retention of Urine 854
3. The Catheter, and its Introduction . . . 859
4. Rupture of the Bladder 862
5. Incapability of Retaining the Urine . . . 864

CHAPTER XVI.—Diseases of the Rectum 872

SECTION 1. Hæmorrhoids 872
2. Prolapsus Ani 878
3. Fissure of the Inner Membrane of the Rectum . . 881
4. Ascarides iu the Rectum 882
5. Carcinoma Recti 883
6. Ulcerated Carcinoma of the Rectum . . . 888

CHAPTER XVII.—Diseases of the External Organs of Generation 891

SECTION 1. Pruritus of the Vulva 891
2. Extreme Sexual Sensibility 893
3. Inflammation of the Labia Pudendi . . . 893

PAGE.

4. Extravasation of the Blood into the Labia . . 895
5. Œdema of the Vulva 896
6. Excrescences of the Vulva 897
7. Vascular Tumour of the Meatus Urinarius . . 897
8. Enlargement of the Nymphæ 899
9. Enlargement of the Clitoris 899

PART V.

PHYSIOLOGY, SIGNS, AND DISEASES OF PREGNANCY.

CHAPTER I.—Physiology of Generation 901

Section 1. Different Theories of Conception . . . 902
2. Two Substances necessary for Conception . . 905
3. Generation without Contact 910
4. Semen not Transmitted through the Absorbent System 917
5. General Remarks on Generation and Sexual Instinct . 918

CHAPTER II.—Impotence and Sterility 928

Section 1. Incurable Causes of Impotence 929
2. Curable Causes of Impotence 931
3. Causes of Sterility 933

CHAPTER III.—Rape 934

Section 1. Signs of Virginity 935
2. Signs of Defloration 939
3. Laws of Various Countries with respect to Rape . 947
4. Medico-Legal Questions connected with Rape . . 953

CHAPTER IV.—The Gravid Uterus 955

Section 1. Changes effected in the Uterus by Impregnation . 955
2. Changes produced during the Progress of Pregnancy . 960

CHAPTER V.—Structure of the Human Ovum . . . 965

Section 1. Peculiarities of the Fœtus 965
2. Structure of the Placenta 973
3. The Umbilical Cord 977
4. The Membranes. 979
5. Formation of the Placenta 984
6. The Liquor Amnii 993

CHAPTER VI.—Physiology of the Human Ovum . . . 995

Section 1. Circulation of the Blood in the Ovum . . . 995
2. Functions of the Placenta 998
3. Summary Remarks on the Progress of Conception . 1001
4. Epigenesis and Evolution 1006

CHAPTER VII.—Abnormal Anatomy of the Fœtus . . 1012

Section 1. Classification of Monsters 1012
2. Causes of Monstrosity 1014

CHAPTER VIII.—General Observations on the State of Pregnancy 1019

PAGE.

CHAPTER IX.—Signs of Pregnancy 1038

SECTION 1. Laws of Various Countries with respect to Pregnancy 1039
2. Usual Signs of Pregnancy 1041
3. Anomalous Signs of Pregnancy 1053
4. Signs of Pregnancy afforded by Manual Examination . 1057
a. In the Latter Periods of Gestation 1057
b. In the Earlier Periods of Gestation . . . 1060
5. Signs of Pregnancy afforded by Auscultation . . 1061
6. Signs of Pregnancy observed after Death . . 1067
7. Medico-Legal Questions connected with Pregnancy . 1079

CHAPTER X.—Diseases resembling Pregnancy . . . 1083

CHAPTER XI.—Progress and Duration of Pregnancy . . 1090

SECTION 1. Indications afforded by Manual Examination . . 1090
2. Duration of Pregnancy 1093
3. Laws of Various Countries respecting Legitimacy . 1107
4. Questions relating to Paternity and Filiation . . 1109

CHAPTER XII.—Diseases of Pregnancy 1112

SECTION 1. Nausea and Diarrhœa 1112
2. Dropsical Effusions 1117
3. Syphilis 1120
4. Dyspepsia 1124
5. Heartburn 1124
6. Fastidious Taste 1125
7. Constipation 1125
8. Prolapsus Uteri 1126
9. Vesical Affections 1126
10. Jaundice 1127
11. Dyspnœa 1127
12. Convulsions 1128
13. Odontalgia 1128
14. Salivation 1129
15. Mastodynia 1129
16. Dropsy of the Ovum 1130
17. Rigidity or Laxity of the Abdomen . . . 1130
18. False Pains 1131
19. Fœtal Turbulence 1131

THE

PRINCIPLES AND PRACTICE

OF

OBSTETRIC MEDICINE.

INTRODUCTION.

By the term "midwifery," is to be understood that part of the art and science of medicine, which has for its object the consideration of the *structure*, *functions*, and *diseases* of the *female system* in general; and more especially of the *female genitals*.

Though the art and science of midwifery, thus defined, is somewhat circumscribed, yet you will find that it may with advantage be divided, for our further consideration, into different sections. Without entering into long disquisitions respecting the advantages or defects of different modes, I shall endeavour plainly to lay before you that system of arrangement which I propose myself to adopt.

To the student of midwifery, I conceive it is of the first importance,—in order that he may thoroughly understand the process of delivery,—that he should be acquainted with the *pelvis*, the *child*, and the *softer parts* in connexion with the pelvis; so far as the properties of those are concerned in the process of parturition. This, therefore, will form the first section of our subject.

Although the process of delivery,—with the exception of a few extraordinary cases,—is always essentially the same, yet we find this process varying a good deal in the circumstances by which it is accompanied; and this diversity of circumstances requires, occasionally, a corresponding diversity in the method of treatment. Hence it becomes necessary to divide delivery, according to its different circumstances, into different classes; and, agreeably to the arrangement I have myself adopted, and which I find sufficiently

accurate for the purpose of laying down practical rules of management, labours may be divided into the following five classes:—1. Natural. 2. Preternatural. 3. Flooding. 4. Laborious. 5. Deliveries which, though on the whole natural enough, are complicated with some extraordinary circumstances. The consideration of these forms of labour will constitute the second section of our subject.

Women generally require very little subsequent attention after parturition has been accomplished;—especially if the accoucheur have not been meddlesome,—and more particularly among country patients. Labour is a natural process; and the majority of females do perfectly well. Although this is generally the case, yet we sometimes find,—in the dense populations of large towns more especially,—that after parturition, distressing or dangerous diseases are apt to occur;—*puerperal fever*, for example, *mammary diseases*, or *derangement of the actions of the brain*;—not to mention other puerperal affections which might be enumerated. Hence it becomes necessary that we should give our attention to the management of women after delivery has taken place; and this will constitute the third section of our subject.

When women are in a state of gestation, I need scarcely state to you, that the genitals are undergoing very considerable changes. The *ovarium* forms the *corpus luteum*, hereafter mentioned. The womb itself undergoes more conspicuous changes; and the fœtus, the water, the placenta, and the membranes are all generated within its cavity;—the sides thickening, and its capacity enlarging. In a word, when gestation occurs, the genitals undergo the most important changes; which give rise sometimes to disease in those parts, sometimes to disease in the system in general; and these also will occupy our attention;—forming the fourth section of our subject, which treats of the *gravid uterus*, as it is called.

The last division will comprise a part which must not be passed over in silence; though I find people are, in general, disposed to give it but a negligent attention. I mean the consideration of the genitals in the unimpregnated state, and of the diseases to which they are liable. Inattention to this important section of our inquiries, leads me to treat this subject in a somewhat cursory manner; though my considerate opinion is, that it forms one of the most valuable parts of midwifery.

[The dangers of parturition increase with the luxury of the times;—owing to the plethora and irregular determination of blood, which are produced by full living. Even in the savage state, however, the process is not devoid of peril. Several cases of dying in child-birth are recorded in Scripture. Thus Rachel died in labour with Benjamin;* and the same thing occurred in the case of Tamar, who had

* "And Rachel travailed; and she had hard labour. And it came to pass, when she was in hard labour, that the midwife said unto her,—'Fear not; thou shalt have this son also!' And it came to pass, as her soul was in departing, (for she died), that she called his name Benoni; but his father called him Benjamin." Genesis xxxv, 16 to 18.

twins.* In both cases mention is made of midwives. The wife of Phinehas, the son of Eli, also died in child-birth.†

In the earlier periods of the world, women assisted each other in the time of labour; but after a while, some women devoted more attention than others to the giving of assistance in such cases, and practised it as a profession. In Athens, the midwives had the direction of all marriages. Ambrose Paré was the first celebrated man who practised obstetricy. He was succeeded by Guillemot and Mauriceau; the last of whom had a daughter who was saved in labour by the operation of "turning;" respecting which operation a controversy lasted for sixteen centuries. Till the time of Drs. Hunter and Denman, it was thought disreputable in this country to practise midwifery. Parturition is a natural process,—often requiring no scientific interference; and when assistance *is* required, it is often difficult to render it beneficially. Dr. Clarke, of Dublin, says—that of ten thousand cases which occurred in the lying-in hospital there, nine thousand four hundred were natural labours, and that most of the rest only required patience. In 1660, one in thirty-six parturient women died; in 1760, one in eighty; in 1800, one in a hundred and thirty-six; and now, only one in three or four hundred.

When you start in life, it will be best at first to practise all the branches of the profession; and if you can get the ladies on your side, you may consider your fortune as nearly made; for they are very active friends. The study of midwifery leads to a better knowledge of the diseases of women than you would otherwise obtain; for a great number of their diseases are related, in some way or other, with the uterine system. Menstruation, for instance, has many diseases connected with it. Every medical man should understand midwifery; for he may be called upon unexpectedly to act in a steam-boat, or a stage-coach. A man in Edinburgh, whose wife was unexpectedly taken in labour, ran out to get a doctor; and having caught a Professor of Medicine, begged him to attend her; but he, knowing nothing of midwifery, ran away. Had the woman died, the Professor would have lost his reputation for ever. Sir Astley Cooper, in a case on which he was consulted, said there was a polypus in the vagina; but Dr. D. D. Davis found that it was a prolapsus of the bladder. I once saw a woman who, from not making an examination, I thought

* "And it came to pass, in the time of her travail, that behold twins were in her womb. And it came to pass, when she travailed, that the one put out his hand; and the midwife took and bound upon his hand a scarlet thread, saying 'This came out first.' And it came to pass, as he drew back his hand, that behold his brother came out; and she said,—'How hast thou broken forth? This breach be upon thee!' Therefore his name was called Pharez. And afterward came out his brother, that had the scarlet thread upon his hand; and his name was called Zarah." Genesis xxxviii, 27 to 30.

† "And his daughter-in-law, Phineas's wife, was with child,—near to be delivered. And when she heard the tidings that the ark of God was taken, and that her father-in-law and her husband were dead, she bowed herself and travailed; for her pains came upon her. And about the time of her death, the women that stood by her said unto her,—'Fear not, for thou hast borne a son!' But she answered not, neither did she regard it." 1 Samuel iv, 18 and 19.

consumptive; but three months afterwards, I found there was a polypus of the uterus. I removed it, and she got well and fat in a few months. Medical men are not now admitted into the army or navy, unless they are acquainted with midwifery.

However skilful and well-educated a man may be, unfortunate cases will occur. In many cases, if a patient were killed outright, less would be said than if she dies after every care has been taken of her. "Ravens should not pluck out ravens' eyes;" and medical men should always shield each other. Dr. Kellie, of Leith, used to act on this honourable principle. Sir Richard Croft was shamefully used; though his shoes have never since been filled. After the Princess Charlotte's death, he attended a Mrs. Thackeray, who also died; and he blew out his brains in her house. A medical man in Edinburgh wrote a book against him; but within three months afterward, he lost twenty or twenty-five women of rank, from an epidemic; and none escaped who were in his hands. He lost, beside, one case exactly like that of the princess!

Never allow yourselves to be made tools of in country-towns; —sent for to keep people company, for instance. If you mix too readily in society, they will think you are like other people; whereas you should be above them. Do not eat and drink in patients' houses; and do not go to play at cards with them. Be "studying" when they send; or "too busy" to go.

When a difficult case occurs, it is of great importance to be able to detect the difficulty at once, and to know how to apply instruments; for emergencies may occur unexpectedly, when you cannot refer to books. Even when there is time to consult the latter, the sending for them has a bad effect on the patient. In delivery, relative position presents great difficulties to young practitioners. It is very difficult to feel the ear of the child; the next difficulty is the application of instruments; and the third is, how to use them when applied. If you had attended ten thousand cases of labour, they would enable you to overcome only the first of these difficulties;— provided you did not yourself apply the instruments. It is maintained by some, that you may be taught by another to apply them at the bed-side; but that cannot be done in this country; though it may in France, where exposure is not so much dreaded. Besides, in a thousand cases (according to Smellie), you do not get more than eight which require instrumental assistance; so that a lecturer could not secure cases enough to teach you how to render it. Mechanical means, however, have been devised for our aid. When I began lecturing, I was introduced to Dr. D. D. Davis; who showed me his valuable obstetric apparatus. Dr. Davis has even contrived an instrument to imitate uterine action.

Burns's "Principles of Midwifery"* is a bad book. There are good things in it; but it was composed on the book-making

* "The Principles of Midwifery; including the Diseases of Women and Children." By John Burns, M.D.; Regius Professor of Surgery in the University of Glasgow.

system, and wants condensation. Do not read it, therefore, till you are sufficiently educated to discriminate between the valuable and the worthless. There are many contradictions in it, which were not discovered till lately; because the reviewers are a set of scamps. My book on "Pathology and the Practice of Physic," has not been reviewed by any periodical but the "Lancet;"* because I will not pay them. Here is Dr. Denman's "Introduction to the Practice of Midwifery;"† which is very good, though rather old now. He is very candid;—relating unfavourable cases, and blaming himself when occasion demands it. He rises superior to all the faults which he thus confesses; and you can believe what he says the better for it. Dr. Conquest's book‡ is very small, but well condensed. "Ramsbotham's Midwifery"§ is good.

It is a good thing to associate among yourselves, and converse on medical subjects. You have much to learn;—if I had had so much, I think I should not have adopted the medical profession. I had an inclination to be a soldier; but I never could go up thirty steps of a ladder. Besides, I sustained a compound fracture of the tibia and fibula; and a very good cure being effected, it inspired me with a liking for Surgery.]‖

* It has since been reviewed in the "British and Foreign Medical Review."

† "An Introduction to the Theory and Practice of Midwifery. By Thomas Denman, M.D." Seventh Edition. Edited by Charles Waller, M.D.

‡ "Outlines of Midwifery. By John Conquest, M.D."

§ "Practical Observations in Midwifery, with a Selection of Cases. By John Ramsbotham, M.D."

‖ Extracted from Unpublished Lectures on Midwifery and the Diseases of Women and Children; by the late John Mackintosh, M.D.; Author of a "Treatise on the Principles of Pathology and the Practice of Physic;" and Lecturer at the School of Medicine, Argyle Square, Edinburgh.

PART I.

THE PELVIS, THE SOFT PARTS, AND THE CHILD; SO FAR AS THE KNOWLEDGE OF THESE IS NECESSARY FOR THE THOROUGH COMPREHENSION OF DELIVERY.

CHAPTER I.

BONES AND LIGAMENTS OF THE PELVIS.

When the accoucheur gives his attention to the study of the pelvis (from πελυς, *a basin*), he soon discovers that there are two modes in which it may be advantageously examined. He may consider the different *bones*, *joints*, and *ligaments* of which it is formed; and he may also examine the *obstetric properties* which belong to the *bony case*, produced by the connexion of its different parts;—in both which points of view I purpose to bring the pelvis before you. We will commence, then, with the consideration of the different bones, joints, and ligaments of which the pelvis is composed;—so far, and so far only, as the *properties* of those bones are interesting to the accoucheur; for into the general anatomy of the parts it is neither my design nor my province to enter.

In the young child and the fœtus, we find the bones of the pelvis more numerous than in the adult;—being at least eight in number;—the *ilium*, the *ischium*, the *os pubis*, on either side, the *sacrum*, and the *os coccygis*; but in the adult, although nominally this division exists, it is in reality wanting;—the bones of the pelvis being in number four only; namely, the two *ossa innominata*, or side-bones; the *sacrum*, or that large bone which is fitted in behind; and, in connexion with the end of the sacrum, the *os coccygis*.

SECTION 1.—OS COCCYGIS.

The os coccygis (from κοκκυξ, *the cuckoo*; the bill of which bird it is said to represent), a small triangular bone, is frequently mentioned by the practitioner of midwifery. It is connected with the lower extremity of the sacrum, and is liable to be pressed upon when the child's head is emerging;—especially if the head be large or the pelvis small; and hence arises its obstetric interest. Though usually considered as consisting of one piece only, in reality we find that the os coccygis is made up of several;—of two or three, not unfrequently connected together by cartilage; so that the bone hence acquires a certain degree of flexibility, which may adapt it a little to the passage of the child. It has sometimes been asked why

this bone, the os coccygis, has been given to the pelvis both in the male and female; or why it is connected with the sacrum by means of a moveable joint. In the female, there is an obvious advantage derived from its mobility on the sacrum; for the bone, in consequence, receding when the child comes into the world, gives more room for its passage; but this cannot be the reason why this bone should be found in the male, though a pregnant male is not an impossible phenomenon. My own notion is, that the os coccygis may be properly recorded as the *tail-bone* of our species. We find, when we examine the history of animals, that there are certain organized parts which are not developed in certain genera, although in other genera they are. Of these parts you have examples in the muscles of the human ears; which muscles look like a sort of vestige of the muscles to be found in connexion with those parts in the lower animals. In the nipple of the male sex,—a sort of vestige of that more perfect structure met with in the female,—you have another example of the same kind of structure;—not to mention the *dartos* and *platysma myoides*,—the vestiges of the *panniculus carnosus*. Now I agree with those who think the os coccygis to be nothing more than a vestige;—a vestige, in man, of that which we meet with in very many genera, in a high degree of perfection.

SECTION 2.—SACRUM.

The next of the bones of the pelvis which claims the attention of the obstetrician (from *obstetrix*, "a midwife"), is that which is fitted into the back of the pelvis;—a large triangular bone, called the sacrum (from *sacer*, "sacred;" because it was formerly offered in sacrifices); and presenting several points of study to the anatomist, though but few to the accoucheur (from *coucher*, "to lie down"). When we examine the sacrum, we find it to be a bone of considerable size, triangular in its shape, and curved. The convexity of the bone is posterior, and the cavity in front;—the latter being frequently mentioned by the accoucheur under the name of "the *hollow* of the sacrum." On the upper edge (the base of the triangle) there is a projection in the middle; and it is this projection which, in connexion with the body of the last lumbar vertebra (from *lumbus*, "the loin;" and *verto*, "to turn"), forms what the accoucheur mentions so frequently under the name of "the *promontory* of the sacrum." This bone presents several articulatory surfaces, which unite it above with the last lumber vertebra, below with the os coccygis, and laterally with the ossa innominata.

SECTION 3.—OSSA INNOMINATA.

When, turning our attention from the sacrum and coccyx, we again examine the pelvis, we find that the principal bulk of it is formed by two very large bones,—the ossa innominata (from *in*, "without," and *nomen*, "a name"). These bones, though of very large size and very irregular shape, possess but few points requiring

obstetric attention. In the adult, the os innominatum is made up of two pieces;—the one forming the *body*, the other the *wing* of the bone; and these two pieces are connected, or consolidated to each other, in such a manner as to form a salient angle or edge. In the young child and the fœtus, we find that the bone is differently divided; consisting of three pieces, which I shall frequently have to mention under the appellation of the *brim of the pelvis*;—the *ilium* (from *ilia*, "the small intestines;" because it supports them); the *ischium* (ισχιον, from ισχις, "the loin);" and the *os pubis* (from *pubes*, "youth;" because hair growing on the parts covering these bones appears at the age of puberty). That portion which lies above and in front, is the os pubis; the portion below and somewhat behind, is the ischium; and the remaining and larger portion, is the ilium. This division, met with in the fœtus, is *nominally* preserved even in the adult.

In the os innominatum, on either side, may be noticed the *acetabulum* (from *acetum*, "vinegar;" which used to be brought to table in a similarly-formed vessel); which, in conjunction with the head of the femur (from *femur*, "the thigh"), forms the *hip-joint*; the large *aperture*, or *obturator foramen* (from *obturo*, "to shut up;" and *foramen*, "a hole"); the *tuberosity* of the ischium (the part upon which we sit); the *spinous process* (from *spina*, "a thorn;" and *procedo*, "to advance") of the ischium, (a pointed process of the bone projecting backwards and a little downwards); the *hollow* of the ilium; and the *articulatory surfaces* (from *articulus*, "a joint");—one in front, uniting the os innominatum on the one side with its fellow on the other; the other posterior, connecting it with the sacrum. So much, then, with respect to the bones of the pelvis;—the sacrum, the os coccygis, and the two ossa innominata.

SECTION 4.—VERNACULAR TERMS.

It may not be impertinent to give you the names by which these bones are known in our *maternal tongue*; because *female* practitioners, with whom you must occasionally meet, use them in preference to classical terms, ill suited to Teutonic organs*; and, therefore, without the knowledge of the vernacular expressions, you might be at a loss to understand what is meant. The bone on which we sit, the ischium, they very properly call the *sitting-bone*; the os pubis, the *shear-bone*; the os ilium, the *haunch-bone*; the sacrum, the *rump-bone*; and the little bone, the os coccygis, they call the *huckle*;—perhaps a euphonious and graceful substitute for "knuckle."

SECTION 5.—LIGAMENTS.

Connected with the pelvis there are a variety of ligaments (from *ligo*, "to bind"); some of them of no small importance in surgery. In an obstetric point of view, however, the ligaments which alone are of importance are the *obturatores*, and (more especially) the *sacro-*

* The Teutones were the ancient Germans.

× The ischium does not enter into the for-

ischiatic ligaments; for with the ligaments of Poupart and Gimbernat the accoucheur has little to do. And first of the obturatores.

Obturator Ligament.—In the ossa innominata we have, in either bone, a large aperture, through which two or three fingers may be passed;—the *obturator foramen*, already described. In the recent pelvis, this aperture is closed with a sheet of ligament (the obturator ligament); and although, in examining this ligament, we often find several apertures made by the dermestes,* or the more destructive fingers of noviciates, naturally there is only one aperture; placed above towards the back part; and transmitting the obturator artery, vein, and nerve. To the obstetrician, the vein is not of much importance, the artery is of considerable interest, and the nerve is of particular importance; as the trunk of it is liable to be compressed and injured under the passage of the fœtal head.

Sacro-Ischiatic Ligaments.—The *sacro-ischiatic ligaments* are a set of ligaments lying on the sides of the pelvis, and somewhat behind. They are divided into two pairs; the one lying externally, the other within; and hence the appellation of the *external* and *internal*. The external sacro-ischiatic ligament, arising strong and narrow from the tuberosity of the ischium, passes outwards, backwards, and upwards, becoming very broad, to be inserted into the lower part of the sacrum, and upper part of the os coccygis. The internal ligament, arising narrow and strong from the ischial spine, passes upwards and backwards, to be inserted broadly into the lower part of the sacrum and the upper part of the os coccygis laterally;—much in the same manner as the former.

CHAPTER II.

THE ARTICULATIONS OF THE PELVIS.

When, resuming the pelvis, we examine it with a view to its articulations, we find they are several; and the hip, the lumbar, the sacro-iliac, the sacro-coccygeal joints, together with the *symphysis pubis*, may all claim our attention; but of these articulations the three last only are of obstetric importance.

SECTION I.—SACRO-COCCYGEAL JOINT.

The sacro-coccygeal joint is a moveable joint; allowing the os coccygis to recede considerably,—moving on the sacrum,—so as to enlarge the outlet of the pelvis posteriorly, to the extent of an inch. This joint, constituted in the same manner as the other joints of the body, has articulating surfaces, invested with cartilage, covered also

* Beetle-like insects, vulgarly called "leather-eaters."

with synovial membrane;—the ends of the two bones being connected by capsular ligament; which, rising all round from the extremity of the sacrum, is inserted all round into the extremity of the coccyx, and completes the articulation. It sometimes happens that this sacro-coccygeal joint is the subject of disease or accident; and hence its principal interest to the accoucheur.

Anchylosis of the Os Coccygis.—In obstetric works, you will find mention made of the *anchylosis* of the os coccygis (from *αγχυλομαι, to bend*);—a disease under which, in consequence of an ossification of the joint, the sacrum and the os coccygis become consolidated with each other. This anchylosis of the sacro-coccygeal joint, I conceive to be of very rare occurrence; and, I believe, it still more rarely happens that this anchylosis produces any *serious* obstruction to parturition; yet, should it so happen that the coccyx were placed at right angles with the sacrum, and thus became anchylosed,—encroaching on the capacity of the inferior aperture of the pelvis,—it might certainly, if the child's head were large, considerably obstruct transmission. Such difficulties, perhaps, have now and then occured. It more frequently happens that, instead of anchylosis, you have a *rigidity* of the part. A woman may be forty years of age before she marries; and perhaps she has a child at forty-one; her health may have been vigorous, her flesh firm, her fibre rigid and unyielding; so that the sacro-coccygeal joint, the perinæum, and all the parts, may be indisposed to give way. Now, rigidity of the sacro-coccygeal joint, together with rigidity of all the parts adjacent, is a very formidable obstruction to the passage of the fœtus; nor is it an unlikely occurrence in country practice; and where it does occur, unless properly managed, it is not unfrequently destructive to both the mother and the child. Should it be my lot, in practice, to meet with a case allied to those I have been describing;—a case in which, from anchylosis of the sacro-coccygeal articulation, or general rigidity, the birth of the head was obstructed,—the following would be my practice. Laying it down as an axiom, that can never be too often iterated, that *meddlesome* midwifery is *bad* midwifery,—provided no dangers occurred, clearly requiring immediate delivery,—I should, for four-and-twenty hours after the discharge of the waters, give a fair trial to the natural efforts. Should dangerous symptoms urge, or should the twenty-four hours pass before the delivery was accomplished, if the vulva were relaxed, and the obstruction arose from anchylosis, I should, with forceps, and by moderate efforts, co-operating with the uterine, endeavour to extract the child,—frequently examining the pulse and the countenance, and bearing in my mind the fatal consequences of obstetric violence. The yielding of the anchylosis under moderate effort, would not, perhaps, be undesirable. Room might thus be obtained; and the child might now and then be saved. Should the forceps fail, or should the rigidity of the vulva preclude their use,—if urgent and dangerous symptoms demanded immediate delivery,—I should then, though unwillingly,

have recourse to that murderous instrument, the perforator; but if no dangers threatened,—anxious not to cover my hands with the blood of an innocent infant,—unless I believed the child to be dead, I should wait until the woman had been in strong labour for eight-and-forty hours after the discharge of the liquor amnii; then, at length, laying open the cranium, should it still not pass away.

Disruption of the Sacro-Coccygeal Joint.—It sometimes happens, that a *disruption* of the sacro-coccygeal joint occurs. The head perhaps is large, the pelvis is small, the pains are violent, and suddenly the head emerges from the pelvis; and when it does so,—there being a very strong pressure on the coccyx,—the joint may be torn asunder. With a case of disruption I never met myself; but cases where the sacro-coccygeal joint has been thus torn, are mentioned in Denman's work;—it may be sometimes heard to give way. Should disruption occur, it may be soon detected. Put the fore finger of the right hand into the rectum,—pushing it up to the joint; and apply the thumb over the joint in opposition externally; when the chasm between the two bones may be easily ascertained. Such a case should be managed on the general principles of surgery; but let me add obstetrically that, during the cure, you should so place your patient as not to throw the os coccygis directly forward; because, from the preceding remarks, it seems desirable that the os coccygis should not unite with the sacrum rectangularly, but under the ordinary bearing;—so as to form a part of the general curve.

Inflammation of the Joint.—Patients are sometimes affected with *inflammation* of this joint; examples of which, both acute and chronic, I have myself seen. Wholly unconnected with pregnancy or parturition, inflammation may occur; and still more frequently may it be brought on in consequence of the passing of a large head; where there has been vehement straining; and the joint, though not torn, has been strained. If inflammation of the coccygeal joint occur, you will know it by the patient's complaining of pain there; and more especially by her stating, that whatever moves this little bone behind, gives a sudden pang of uneasiness;—in sitting, in rising, in turning round on her bed, pain may be produced. I remember, on visiting a patient in whom labour had been laborious, being not a little surprised to find her seated on the frame-work of a chair, from which the bottom had been removed. On asking her why she seated herself in a manner so extraordinary, I learnt, that unless she had recourse to this expedient,—which you will perceive removed pressure from the coccyx,—she was continually uneasy. Taking an intimation from this observation, I made an accurate examination of the joint; and then ascertained,—more especially by moving the coccyx on the sacrum,—that the articulation with its ligaments was in a state of inflammation, and that the slightest disturbance occasioned pain.

Treatment.—*Leeches*, *clysters*, *cupping* (perhaps from the loins and sacrum), *diaphoretics*, *digitalis*, *low diet*, and *bleeding* from the arm (provided the inflammation runs high),—these will constitute

your principal remedies; and the joint should be kept still. It is remarkable that, where there has been this inflammation, it seems to be afterwards affected by the weather; and more especially when there is an east wind;—which is worthy of recollection. Patients of this kind will complain of pains in that way for years afterwards; as I had occasion to observe in the patient whose case I have related.

Suppuration of the Joint.—In *scrofulous* subjects, it sometimes happens that the sacro-coccygeal joint partakes not merely of an inflammatory, but of a suppurative action; and the parts may fall into a sort of *malignant* condition; so that the disease will not yield. In a case of this kind, should all other attempts fail, I may remark, by way of suggestion, that you might perhaps remove the os coccygis altogether; for this bone does not appear to be of any very great importance in the skeleton. You should afterwards pare away the diseased extremity of the sacrum, till you reach the sounder parts more disposed to the healing process. The hint may be worth recollecting; but beware of temerity. Here, perhaps, I may take the liberty of observing, that malignant actions are sometimes confined to a few *films* of structure only; so that if you can but destroy those few films, you will at once come down upon a healthier organisation which will heal; whereas, if you left the case to itself, it would go on working to the patient's destruction. A chancre treated by lunar caustic, is an illustration of this.

SECTION 2.—SYMPHYSIS PUBIS.

The next joint which requires attention is the symphysis pubis (from *συν, together*; and *φυω, to grow*);—a joint of vast importance in midwifery, and of frequent mention. This joint unites the ossa innominata in front. There is nothing peculiarly interesting in the structure. It is formed of the extremities of the ossa innominata, invested by cartilage, connected together by means of a fibrous substance, and more especially strengthened by a strong capsular ligament passing across it;—arising all round from the extremity of one bone, and inserted all round into the extremity of the other. It is upon this ligament the main strength of the joint depends; for if it were removed, the bones would have but little connexion. The ligamentous fibres are much more abundant on the outer than on the inner part; and there is wisdom in this; for a mass of ligament, internally, would have contracted the pelvis, where it is so frequently contracted, between the front and back of the brim; and would thus have presented a further obstruction to parturition. In a practical view, the thinness of the ligament on the back of the symphysis pubis is not without its interest. The joint, as you will hereafter understand, is sometimes filled with matter, sometimes otherwise disorganised. Now, though these parts may, no doubt, be examined externally by the touch, manual examination may be most successfully made within; and this, too, notwithstanding that the urethra is lying along upon this part.

Acute Inflammation and Suppuration.—It is not common for the symphisis pubis to be seized with acute inflammation; yet now and then spontaneously, or in consequence of some violence done to the joint, a sudden and smart attack of inflammation will occur there. When acute inflammation is attacking the symphysis pubis, severe pain is felt in the region of the articulation; and heat of the surface, whiteness of the tongue, frequency and hardness of the pulse, and all the ordinary signs of inflammatory fever attend. In conjunction with these indications of the disease, there is one symptom very characteristic; and deserving, therefore, a particular notice;—I mean the exacerbations of pain produced by all those causes which disturb the joint. Whether the patient be sitting, standing, or moving in her bed, sudden pains are occasionally felt at the symphysis,—in consequence of the movement of the inflamed extremities of the bones upon each other;—sometimes arising from the action of the muscles on the pelvis, and sometimes from the unequal alternate bearing of the trunk on the ossa innominata.

By manual examination in dubious cases, all doubt may be removed; and especially by examining internally. Pass your finger into the pelvis,—the ligament on the back of the joint internally being very thin; place the tip of the finger on the inside of the symphysis; and you may readily find whether it be tender or not. By a tenderness, therefore, observed in pressing the parts,—by a severe exacerbation of the pain arising from all those causes which throw the bones into motion,—by pain and aching in the region of the joint, and severe inflammatory fever, the disease is characterised distinctly, and easily discriminated. Unhappily the symphysis, where it has this acute inflammation, is apt to become the subject of suppurative action; and this somewhat promptly too;—perhaps in a few hours,—certainly in a few days. Where matter is engendered between the extremities of the bones, and shut up in the ligamentous capsule,—like pus concealed beneath the *theca* of the finger,—it may give rise to a vast deal of constitutional irritation. Frequent shiverings, smallness of the pulse, and general and alarming disturbance of the constitution occur; and the patient sinks;—perhaps before the matter is discharged; or where the symptoms are not so violent, and the constitution is stronger, the ligament (not without difficulty, however) may be opened by absorption; and in this manner the matter may get out;—sometimes issuing posteriorly; and sometimes working its way along the front of the pelvis, so as to escape at the upper and inner part of the thigh.

Collection of Pus.—When matter collects between the bones, this may, in general, be very easily ascertained by the previous inflammatory symptoms already enumerated, by the constitutional irritation, by the throbbings, by the shiverings, so often observed where pus is encysted, and more especially by manual examination. For my own part, if I suspected suppuration, I should confide in this examination of the joint, as the principal means of detecting it, although I should not neglect the other parts; and, in making this

examination,—remembering the thinness of the ligaments in the back of the symphysis,—I should lay my finger on the inside of the joint; and making the most diligent investigation there, if three or four drachms only of matter were collected in the capsule, it might, I conceive, in this manner, be easily detected.

Treatment.—As inflammation and suppuration of the symphysis pubis, in the acuter form, is a very dangerous disease, it ought to be treated with considerable activity in women of robust and vigorous constitutions. *Venesection*, *purging*, *diaphoretics*, and *digitalis*, in operative quantities, should be tried. *Leeches* may be applied to the part, and *fomentations*. The more quiet the patient is kept, the less disturbance there will be of the inflamed structure; and if there is a good deal of pain after blood has been taken away from the arm, I would give *opium*, or other anodynes. If it so happens that your patient is not robust, but of a weaker constitution,—such as we often meet with among those who are called the *fine ladies* of this metropolis,—you must treat the disease with a little more tenderness. Purgatives, diaphoretics, digitalis, leeches, fomentations, and so on, may all be proper as before; blood, too, it may be necessary to take from the arm; but, in those constitutions, you will soon find out, when practising for yourselves, that *large venesection* is, in general, *not* well borne.

Were matter to form in the joint, I should be anxious, on account of irritation, to ascertain the existence of it as early as I could; and if I found there was a great deal of disturbance attending, I should wish to lay open the joint as promptly as might be, to give the matter early vent. The crown of the arch of the pubis,—care being taken not to wound the orifice of the urethra, or the urethra itself, lying on the back of the joint,—would be a part convenient enough for the introduction of the lancet.

Chronic Inflammation and Disorganization of the Symphysis Pubis.—In women with *blue eyes*, *fair complexion*, *flaxen hair*, and *attenuated skin*,—beautiful but scrofulous,—we sometimes meet with another disease of the joint; namely, *chronic inflammation;* very nearly allied in its nature to the *white swelling* in the hips and knees. When chronic inflammation of the symphysis pubis occurs, the patient is affected with pain there; as in the case of inflammation in the acuter form. There is a tenderness on pressure; there is uneasiness felt upon progressive motion; in standing, nay, even in sitting or lying,—for the reason already assigned,—exacerbations of pain are apt to occur; some febrile action is present;—not that severe fever which accompanies acute inflammation, but fever of a hectic nature, continuing for a few days or weeks. The disease may remit for days or weeks, either spontaneously, or in consequence of the use of remedies;—returning with increased violence and again remitting; and thus, sometimes exacerbated and sometimes less severe, it makes its progress with varying rapidity, till it ultimately terminates either in resolution of the inflammatory action, or in suppuration, and disorganization of the joint. Suppuration occurring, the patient may die before the

matter is discharged; or she may live until the matter makes its way forth externally or internally; and until the ossa innominata are completely separated in front;—a point easily detected by examination. When the woman survives the opening of the abscess, the parts, being in a state of malignant disorganization, are indisposed to heal. Unhealthy fluids are discharged; constitutional irritation continues; and the patient is carried off by the wasting and hectic.

Treatment.—There is, I believe, in the present state of our information respecting this disease, but little hope of recovery, when the joint is completely disorganized, and especially where there is a scrofulous taint in the constitution. That man will indeed be the benefactor of his species, who shall discover the means of remedying the scrofulous defects of the habit. The *sea-air*, the *sea-side*, *bathing* in the open sea, &c., are recommended as calculated to improve the scrofulous habit; and I believe they have their advantages. If your patient is gaining ground, this would be a very proper occasion on which to send her to the sea-shore. Iodine will do no harm.

A principal object which you ought to bear in mind,—and which will serve as an indication to direct your plans of local treatment, consists especially in the *prevention* of the suppurative action, by keeping the inflammation under that level which may give rise to the formation of matter; and with this view it was that Dr. Haighton was accustomed strongly to recommend the repeated application of leeches,—six or eight, for example,—two or three times a week for weeks together. Every accoucheur knows well, that women bear the loss of blood in a manner truly surprising; and which, independently of previous observation, might scarcely have been believed. A woman *miscarries* sixteen or eighteen times in the course of three or four years, and on all these occasions has considerable discharges of blood;—the constitution being shaken, indeed, by these discharges, but not completely broken up. When patients labour under prolapsus of the inner membranes of the rectum, it is surprising what losses of blood they will sometimes bear, without becoming the subject of a fatal cachexia (from κακος, *bad*; and εξις, *habit*). Now this fact being established, in inflammation of the pubis we may, I think, venture from time to time to take away moderate quantities of blood for weeks in succession, where good is derived from it; nor, where the inflammation is restrained, ought we to be deterred from the application of leeches, merely because the patient complains of weakness. To avoid debility is indeed important; but not so important as to subdue the inflammation; and if we have no antiphlogistic means preferable to leeches, the application of them should not be rashly laid aside. *Blisters*, *issues*, and *setons*, together with the other ordinary remedies, are not to be forgotten.

Removal of the Diseased Bone.—Mr. Park, a surgeon of Liverpool, succeeded in removing, in a sailor, the knee-joint from the leg;—the patient ultimately recovering. Mr. Oxley, a gentleman formerly of this class, informed me that, in cases of diseased elbow, he had seen his preceptor (Mr. Hey, of Leeds) perform the following

operation:—He made an incision over the joint, large enough to allow the introduction of the tips of two or three fingers; and then, taking a sort of chisel, (for even a chisel may be very useful in the hands of such a surgeon), by means of this instrument, he chipped away the diseased structure. "In three or four cases," said Mr. Oxley, "I have seen this operation performed; and, with one exception, the patients all did well." Now where there is a disorganization of the symphysis pubis, and it is very obvious that the patient must die exhausted, unless something extraordinary be done, it would perhaps be worth while to remove the extremities of the bones; and if the disease had not extended so far as to require a very large removal, there would be a reasonable hope of success. I do not, however, by any means intend to recommend this operation to your rash adoption; though I think it may deserve a cautious consideration in a case otherwise desperate.

Relaxation of the Symphysis Pubis.—We sometimes find the symphysis pubis affected with another disease, not always clearly discriminated by practitioners;—I mean the *relaxation of the symphysis pubis*, of which I have seen examples in three or four different instances. Where the relaxation of the symphysis pubis takes place, it may, for ought I know to the contrary, now and then occur independently of gestation; but in all the cases I have seen, this disease has been connected with pregnancy; and it is generally in the latter months of gestation that it manifests itself. At first the patient feels a little uneasy about the symphysis; this uneasiness increases till there is a feeling of weakness in the front of the pelvis; and perhaps, when the patient is walking in the street, she has a sudden pain, which obliges her to stop; or if she is lying in bed, even upon turning herself, she feels a sudden and severe pain;—arising, it may be, from the stretching of the ligaments. The disease increasing, its character becomes more marked;—there is then a feeling as if the pelvis would fall to pieces. The woman walks with great difficulty;—feeling much uneasiness in the joint. By and by she makes use of crutches; then she lies on the sofa; ultimately she keeps her bed; and if you ask her to leave her crutch and stand up, on trying to stand she immediately sinks, as if she were intentionally sitting down. If you lay your hand on her hips, and firmly press the bones so as to support the two ossa innominata, she will stand with less difficulty; if you move your hand, she immediately sinks upon the bed. When parturition supervenes, the disease becomes obvious enough;—the woman tells you her bones are in motion. I think I have even heard them move; and if you examine them with ordinary care, the motion may be distinctly felt. After parturition,—in a few weeks it may be,—the joint occasionally recovers; but frequently the relaxation continues for months, or for years;—being apt to recur in an increased degree, with each succeeding gestation.

Here, then, are the leading characters of this disease:—a feeling as if the pelvis would fall asunder;—a sensation as if the bones were in motion;—an incapability of standing, unless the pelvis be supported;

—and such motion and displacement of the bone in front, as may be distinctly felt on a careful examination. Obscure cases may be detected with difficulty; but by these few characters, where your vigilance is alive, I think you may easily enough know the disease;—provided it be completely developed. Varieties of this disease occur; but I content myself with its general history.

Treatment.—For the relaxation of the symphysis pubis, we are not in possession of a very effectual cure; as, indeed, may be inferred from my assertion that this is a disease which sometimes lasts for months, and even for years together. *Bark*, *bitters*, *tonics*, and *alterative* medicines, are proper enough for administration; as they tend to brace and strengthen. The country, the sea-shore, the sea-bath, and sea-bathing are recommended; especially when the patient is improving. Denman (a very experienced and candid practitioner) states, that he found advantage in some cases principally from the *plunging of the hips into very cold water*; and this I also recommend.

A *palliative* for the disease,—and a very valuable palliative,—is a well-contrived *bandage*, made of some unyielding texture,—of jean, for instance; applied in such a manner as thoroughly to embrace the hips; and formed with straps and buckles, or with a lace; so that it may be tightened or slackened at pleasure. From our hunting-belts a hint may be taken for the construction of this bandage. It is made precisely on the same principle; and, in cases of slight relaxation, answers the purpose very well. I find, however, that patients sometimes lose the advantage of the bandage, from their want of perseverance. Not habituated to be confined in this part of the body, they become impatient; lay the bandage aside in two or three days; and tell us they would rather suffer from the disease, than from the use of the belt. Nevertheless, where properly applied, it is a very valuable palliative; and the patient, if she ultimately perseveres in using it, will find it do her effective service. If women could wear those stays,—the vogue of the good old times,—which came down upon the pelvis, and actually incurvated the very bones,—as my own preparations show,—I do not see why, with the help of habit, they may not be able to wear the bandage which I am here proposing.

In cases where bone has been *broken*, and the parts become reunited by cartilage (from *caro*, *carnis*, "flesh"), instead of being consolidated in the ordinary way by *callus* (from *calleo*, "to become hard"), Mr. Amesbury, a very ingenious man, has contrived an *apparatus* (which he will best explain to you) to gain an osseous reunion of the parts. The general effect of this apparatus is to keep the extremities of the bones bearing upon each other, and perhaps I may say to press a little; or, at all events, to *irritate* this cartilaginous union. The result of this irritation is to give rise to some degree of inflammatory action,—not to be carried beyond a certain point; and the result of this inflammatory action, as every physiologist knows, is the deposition of earthy matter. By this beautiful

application of a physiological principle, Mr. Amesbury has obtained a consolidation of the broken bone, where the seton itself had failed. Now this being understood, it might be worth consideration, whether something of the same kind could not be suggested with respect to the symphysis pubis. It is true, indeed, the relaxed symphysis pubis,—unlike the cartilaginous joint of fractured bones,—is not naturally prone to ossification; nevertheless it may be worth trial, whether, by the use of the bandage drawn very tightly, such irritation may not be occasioned as may give rise to anchylosis, or at least to a constriction of the joint.

I have sometimes thought there is another remedy which might be tried, where a woman has been laid up for many years a complete cripple. It is well known that the symphysis pubis may be divided by the knife, without necessary and urgent danger. Frequently, on the Continent, this has been done, though for another purpose;—that of enlarging the pelvis at the time of delivery. In the case I am now putting,—where the patient is a cripple, and where she has been laid up for many years,—might not a cure be effected by passing the knife through between the bones, and afterwards, by means of a proper bandage, keeping the extremities of the ossa pubis in firm contact with each other? It is certainly a rough remedy; and as the disease is not dangerous, women might perhaps be averse to submit to it in any circumstances; but as benefit might perhaps attend its administration, I have thought proper to mention it.

SECTION 3.—SACRO-ILIAC SYNCHONDROSIS.

The next joint to which I shall request your attention,—also not without its obstetric interest,—is the sacro-iliac synchondrosis (from *συν*, *with*; and *χονδρος*, *cartilage*);—a joint which unites the sacrum with the ilium, on either side of the pelvis. In its structure, the sacro-iliac synchondrosis very considerably resembles the symphysis pubis. It is formed by surfaces of the os ilium and sacrum, invested with cartilage, connected by a somewhat soft substance, and braced together by means of a large number of ligamentous fibres, inserted into the sacrum and ilium, and lying both in the front and back of these bones. When describing the symphysis pubis, I said there were more ligamentous fibres externally than within;—a remark which holds true here. It is principally at the back and outside of the pelvis that these fibres are accumulated; and wisely; for if there were a large mass of ligament internally, it might impede the passage of the child. These fibres are divided into two sets;—the external, and those which lie within;—called the external and internal (sometimes the anterior and posterior) pair of ligaments.

Inflammation of the Joint.—The diseases of the sacro-iliac synchondrosis, are not of the same interest as those of the symphysis pubis; and I am the more gratified at this, because it enables me to simplify my remarks upon them. *Inflammation* of this joint may now

and then occur; the joint is large, and a great deal of pain might attend. The disease would most probably be confounded with sciatica; nor, perhaps, is the distinction of real importance. It would be too much to say, that *suppuration* of the sacro-iliac synchondrosis never takes place. Such cases, however, are infrequent; and have not fallen under my notice.

Relaxation of the Joint.—*Relaxation* of the joint is of more common occurrence; and a case of this kind, accompanied with discharge, is mentioned in Sir Charles Mansfield Clarke's useful work on the Diseases of Women.* Among other symptoms, the patient had a good deal of pain in the back, and an incapability of standing for half a minute, unless supported on each side. When she made the attempt to stand up, she placed her hands on the sides of her hips; this led her surgeon to make a firm pressure there with his own hands; and as long as these were firmly applied, she could stand; but as soon as the support was withdrawn, she was in danger of falling. Now symptoms like these will enable you, with facility, to detect the disease in most instances;—provided you recollect that women are liable to this affection, and you are on the watch for its occurrence. In the case related by Sir C. M. Clarke, *time*,—which cures so many evils, and which will remove all our diseases at last,—was found to be the remedy. Palliation was derived from the use of a well adjusted bandage. Indeed I should expect more benefit from a bandage in this case, than in relaxation of the symphysis pubis; because the articulatory surfaces are broader, and consequently admit of being more readily brought to bear against each other.

SECTION 4.—RELAXATION OF THE JOINTS OF THE PELVIS.

In many of the *mammiferous* animals, when delivery is about to take place, a considerable relaxation of the joints of the pelvis occurs;—leaving the bones, in a great measure, separated from each other. Mr. Mangles informed me that, in dissecting a *mole* which had recently brought forth its young, he found the ossa innominata distinctly separated from each other in front, to the extent of three or four lines;—the pubes being connected by means of muscular fibres, the action of which would have the effect of mutually approximating these bones. When the *cow* is about to bring forth her calf, there is, I am informed, a relaxation of the symphysis pubis, and of the *sacro-sciatic* ligaments; and such a yielding of the sacro-iliac synchondrosis occurs on either side, that (a day or two before parturition) the sacrum of the animal falls inwards, and a considerable chasm in the back is produced;—denominated by farmers "the sinking of the rump;" and regarded as a token of approaching delivery.

Now the question arises, whether, as a relaxation of the ligaments and joints occurs in many of the mammiferous animals, this relaxation may not also take place in the human female? Ruysch states

* "Observations on those Diseases of Females, which are attended by Discharges. By Sir Charles Mansfield Clarke."

that he frequently observed it. Harvey speaks of it as a common occurrence; and he, though a physician, was a master in anatomy. In the year 1815, when a great number of women unfortunately became victims to that most awful disease, the *childbed-fever*,—the death of so many young mothers,—several puerperal bodies were brought to the dissecting-room; when I took occasion to inquire into that point; and found, in one pelvis carefully examined, that some little relaxation of the ligaments certainly existed. The woman appeared to have sunk some three or four days after parturition. When I laid hold of the ossa innominata and sacrum, I found I could readily move them, the one upon the other. On putting my finger behind the symphysis pubis on the ligament, I found that I could press it a little way into the joint between the bones;—the ligament yielding to compression. When I attempted to move a little the innominata in front, the articulation offered but a slight resistance. On another pelvis *not* puerperal, and to appearance equally advanced in putrefaction, comparative observations were made; but in it the joints were not equally unbraced. In making this examination of the pelvis, therefore, some relaxation of the ligaments I *did* observe; but I did *not* observe what had been asserted by the older anatomists,—a decided separation of the bones from each other. Nor, indeed, did I *expect* to find this; for how then could women walk immediately after delivery? On the whole, my opinion with respect to the relaxation of the ligaments of the pelvis is, that in many other genera of the *mammalia*, it occurs in a much higher degree than in women, but that even in them some slight relaxation takes place. Now this relaxation enables us to explain what we before stated as a fact, without entering into the reason of it;—namely, that women are liable to marked relaxation of the joints before mentioned, solely or generally in connexion with gestation. It also enables us to explain why the symphysis pubis is sometimes burst open, where the child has been unusually large.

CHAPTER III.

THE BONY CASE FORMED BY THE PELVIS; AND THE PROPERTIES OF THIS CASE, SO FAR AS THEY ARE IMPORTANT IN THE PRACTICE OF MIDWIFERY.

Having concluded our observations upon the joints and ligaments of the separate bones of the pelvis, so far as these are interesting to the accoucheur, I now proceed to another important part of our subject;—namely, the consideration of the bony case formed by the pelvis, when the different parts are put together;—and the properties of this bony case, so far as they are concerned in the process of delivery. If you enter a museum, which is well stored with pelves, you soon find, on examining them, that there are perhaps no two precisely alike. Some are large, some small, some contracted, some

distorted; some contain little osseous matter. and some an abundance; —much and variously the pelves are diversified. What a feast for a minute anatomist! The accoucheur, however, ought not to bewilder himself, as a minute anatomist might do, with the consideration of all the various forms; because many of them are of small importance in obstetric practice. For him, I conceive, it is sufficient to become acquainted with the following varieties; the knowledge of which is essential to the scientific exercise of his profession. I mean the large and small, the slightly and the highly-contracted pelvis, and the pelvis of standard dimensions.

SECTION 1.—STANDARD PELVIS.

By a "*standard* pelvis" I understand that form of pelvis which generally occurs in practice; and which, notwithstanding some small and unimportant variations, is always met with where the skeleton is well formed.

When I make my observations on the pelvis of standard make, I soon perceive that this pelvis is naturally divided into two parts,—the *superior* and the *inferior*;—the *brim* of the pelvis, as it is called, forming the line of demarcation between the two. So much of the pelvis as is lying above the brim, is denominated the *false* pelvis; and the appellation of *true* is assigned to that part which lies below.

The False Pelvis.—The false pelvis is not of much importance to the accoucheur; yet one or two observations upon it may not be out of place. This part of the pelvis is remarkable for the large chasm observable anteriorly. In the front, therefore, it lies wide open; being closed up laterally and behind, by the wings of the innominata and the vertebræ of the loins. This piece of information is of no small importance, when you are making nice examinations of the *pelvic viscera*, the *bladder*, the *womb*, the *ovaries*, and so on;—not to mention here the *kidneys* and *intestines*. If the accoucheur be asked to examine and ascertain the state of those parts with nicety, let him recollect that there is a large chasm in the front of the pelvis, and that this chasm allows the hand to be fairly introduced into it. Sometimes we may actually feel distinctly the promontory of the sacrum; and if this can be done, surely any intervening enlargement, hardness, tenderness, &c., of the uterus, ovaries, kidney, or omentum, may be easily made out. In making this examination, the woman should be recumbent; with the knees and shoulders elevated, and the abdominal muscles thoroughly relaxed.

To the unpractised in midwifery, these niceties may appear to be of small importance;—"parva leves capiunt animos;"* but remember, it is the knowledge of these little niceties that makes the difference between an awkward and an able examiner; in other words, it is this knowledge which distinguishes the man who can make out what are the diseases of the pelvis, from the man who cannot.

The True Pelvis.—As the true pelvis, or that part of it which lies below the brim, is of very great importance in the practice of

* Little things attract little minds.

midwifery, it has, with a view to a necessary examination of it, been obstetrically distinguished into three parts;—the *brim*, the *outlet*, and the *intermediate cavity*. The superior aperture of the pelvis, through which the child descends, is denominated "the brim;" the inferior aperture, at which the child comes forth into the world, is called "the outlet;" and the space between the two has received the name of "cavity of the pelvis."

Brim.—If you examine a large collection of pelves, you will probably soon discover that there are no two brims formed exactly alike;—being in some round, in others more oval; in some small, in others large; but in general, when the pelvis is standard, it is of an elliptical form;—the regularity of the oval being broken by the promontory of the sacrum. Of this oval, the long measure is from side to side; the short from before backward. The average width between the sacrum and the pubis, is about four inches; the average dimension from side to side about five inches; the oblique, or that which stretches between the *acetabula* and the *sacro-iliac synchondrosis*, about five inches and one-eighth, or five and one-fourth. These few points are the principal niceties in the anatomy of the brim. They are all very easily borne in mind; and are all of more or less importance in practice.

When a labour begins in the ordinary way, the vertex of the child presenting (that is, lying over the centre of the pelvis), we find, in the commencement of the process, that the face is lying to one side of the pelvis, and the occiput* to the other side; and thus,—the greatest length of the head and the greatest length of the oval brim of the pelvis corresponding naturally,—the head very readily descends. Sometimes, indeed, it happens that the head of the child is placed, in a labour, with the face, not laterally, but in front; and then the greatest length of the head is opposed to the shortest length of the superior aperture, or brim; and consequently, if the pelvis be small and the fœtus large, it cannot be transmitted. I have myself, unfortunately, been compelled to open the head of a child, because it lay in this way; and even where there is a large pelvis and a small head, it passes with difficulty in this position.

It sometimes happens that children come away feet first;—under what may be called the *crural*† presentation; nor is this delivery, on the whole, uncommon. Now when a child descends in this manner,—if the softer parts are very relaxed, the pelvis very capacious, and the child not very large,—it descends easily enough; and whether you are acquainted with the make of the pelvis or not, you will probably find little difficulty in accomplishing the delivery. But it sometimes happens, that a pelvis is very small, or a child very large; and then a great deal of care may be necessary to get the fœtus away, and more especially where you are abstracting the head. Now I have said the long measure of the brim is from side to side, and the short measure from before backward; therefore, the face ought

* From *ob*, "over against;" and *caput*, "the head;"—because opposite to the forehead.

† From *crus, cruris*, "the leg."

to lie on the side of the pelvis, that the long and short measures of the head and brim may correspond. If you do not attend to this, in dragging the head downwards with the face over the pubis, you may go on pulling until you separate the head from the body; and then you have an unfortunate case. This is midwifery with some people; who are a sort of obstetric dray-horses. They pull straight forward, and without considering, come what may; and then they marvel when accidents occur.

Now in this case the whole difficulty arises, not from misfortune, but mismanagement;—either from not knowing what is the form of the brim of the pelvis, or (what is the same thing) knowing it, and not acting on that knowledge; for once more I repeat, it is necessary not only to be acquainted with the principles of midwifery, but to carry this knowledge to the bed-side of the patient, and to make it operate there in your practice; for there is a living and dead knowledge in the healing art, as there is a living and dead faith in religion. Now then, instead of pulling violently in this case, if you only turn the face of the child to the one side of the pelvis, so as to make the long diameter of the head to correspond with the long diameter of the pelvis, the head will pass with the greatest facility. It is therefore by adroitness and dexterity, and not by main strength, that the difficulty is to be overcome;—*arte, non vi.**

It is sometimes necessary to carry your hand up into the pelvis;—an operation never to be done if it can by possibility be avoided. Remember that carrying your hand into the uterus† you may bruise, you may tear, you may kill; but still occasionally you are compelled, by inexorable necessity, reluctantly to do that which is always dangerous, particularly if you have a large hand and boisterous disposition. More especially you may have to perform this operation for the purpose of turning the child, by drawing the feet down over the brim of the pelvis. Even in performing this simple operation, you may avail yourselves of the knowledge of those anatomical properties of the brim, which we have just been contemplating; for if you wish to enter easily into the cavity of the uterus, when near the brim of the pelvis, you ought to lay your hand in the side of the aperture, because there we find most room. These points may seem to be of little importance; but remember it is an operative knowledge of these little circumstances, which makes all the difference between a dexterous and an embarrassed operator;—in other words, between one who is fit to practise the manual part of midwifery, and one who is not. So much, then, respecting the brim of the pelvis. It is of oval form; the greatest length is from side to side; the shortest length is from before backward; the regularity of the oval is broken by the promontory of the sacrum;—points of anatomy of great importance in the practice of our art.

Inferior Aperture.—This aperture, in a pelvis devoid of ligaments, is of a very irregular form;—consisting of three large scallops (one upon either side, and one in front) known under the name of the

* By *skill*, not by *force*.

† From *uter*, "a bag."

arch of the pubis,—of vast obstetric importance; because, in ordinary labour, when the head is at the outlet of the pelvis, the pubic arch facilitates the passage, by allowing the occiput to lie forth in front, and thus make more room within. But in a pelvis with which the ligaments are still in connexion, this aperture, of nameless irregularity, assumes a more familiar shape, tending somewhat towards a quadrangular figure. Now this is the form of the aperture in the living woman; where the bones are connected with the sacro-sciatic ligaments, and various soft parts. This quadrangular or square aperture, like the brim of the pelvis, has its two measures;—the one from side to side (which may average about four inches, though varying), and the other stretching from the arch of the pubis to the front of the os coccygis (which may, though it likewise varies, average about four inches also).

It seems, therefore, in this stage of our observations, that there are two striking differences between the inferior and superior apertures of the pelvis;—the superior being oval, the inferior more square;—the two measures of the inferior being of equal length (four inches), while the measures of the superior are unequal. But I must now remark, that the os coccygis (before described) is made up of two or three pieces of bone;—the pieces being connected to each other by cartilage; so that it acquires a certain degree of flexibility; and, moreover, that this bone is put into connexion with the sacrum by the sacro-coccygeal joint, which allows a retreat of one inch. In consequence of the retreat of the os coccygis, and the flexibility of the bones, we find that the outlet behind admits, under pressure, of being elongated about an inch; so that when the coccyx is thrown out,—as in difficult labours it will be,—there are, in fact, two diameters;—the one measuring about five inches from before backward; the other about four inches, and stretching between the sides. Here, however, be it observed, that there is this important obstetric difference between the brim and outlet;—that at the brim the long measure is from side to side, and the short from before backward; whereas, at the outlet, the long measure is from before backward, and the short from side to side. Accordingly, in ordinary labour, we find that the child's head (when entering the superior aperture) comes into the pelvis with the face to the one side, and the occiput to the other; but at the outlet, before it emerges,—its position changing,—the face gets into the hollow of the sacrum, and the occiput under the arch of the pubis;—the sagittal suture resting on the perinæum,—a part not yet described. In this way the long measure of the head corresponds with the long measure of the outlet, and so the child passes more easily into the world.

If you are bringing the child's head from the pelvis under a foot presentation, this nicety of anatomy must not be forgotten. Should you pull down the child while the face is lying to the one side of the pelvis, and the occiput to the other,—if the head be small, and the pelvis large,—the fœtus will come away notwithstanding; but if the pelvis be small and the head large, the face and the occiput lying

in the way I have supposed, you may go on pulling till you separate the body from the head.

Dr. Lowther, being once requested to attend in a case of great difficulty (as it was represented), found, on making his examination, that the head was nearly severed from the body;—a piece of information which a midwife, his predecessor, seemed loath to communicate; imagining, perhaps, that he would complete the operation she had begun, and take the whole credit of it to himself. On further investigation, he observed, also, that the head was lying at the outlet of the pelvis, with the face towards the one side, and the occiput towards the other;—the long measure of the head lying against the short measure of the outlet. Directed, therefore, by those oracular whispers,—the whispers of common sense,—he cautiously put the face of the child into the hollow of the sacrum; and without further difficulty, to the great surprise of the parties, the head was abstracted. Thus it may happen, in a foot-case,—if you have a large head and a small pelvis, and forget to put the head into the proper situation,—you may do the woman a great injury, and actually pull the head of the child from the body; while, by knowing and acting on this small point of anatomy, the whole difficulty may be surmounted, or rather set aside.

It is sometimes necessary to carry the hand into the pelvis for other purposes, or in order to turn the child. Now an operative knowledge of the flexibility of the coccyx, may be of advantage even in performing this simple operation. If the hand, in entering the pelvis, bear too much anteriorly, or to the one or other side, it cannot be easily introduced; but bearing it backward on the perinæum and the yielding coccyx,—care being taken not to lacerate or strain the parts,—we may often introduce it with comparative facility. This is a hint which must not be forgotten in practice.

Thus much respecting the outlet of the pelvis, so far as it is interesting to the accoucheur. Though somewhat quadrangular in its form, it has, like the brim, a long and short diameter; but there is this important difference between the two;—that at the brim, the long axis lies from side to side, while at the outlet it is from before backward; so that the two measures are placed at right angles with each other.

Cavity of the Pelvis.—In the cavity of the pelvis, one of the first points of obstetric anatomy deserving our attention, is the *incurvation* of the *sacrum*, and the consequent formation of that *hollow of the sacrum*, which is so often mentioned by the accoucheur. In some women, the sacrum is straighter than usual, and there the hollow becomes smaller; in others it is much more incurvated, and there you will find the hollow greater. In the practice of midwifery, this hollow is interesting; as it makes more room for the child's head, or breech, or whatever part may be descending. When the *vertex* presents, the *face* lies there; when the *face* presents, the *occiput* lies there; nay, even in breech-presentations, you will find that the de-

livery is facilitated by the lodgment of a part of the buttock in the cavity of the sacrum.

Of this knowledge we may avail ourselves in practice, when we are assisting in a foot-case. For example;—when the head is in the cavity, you might throw the face forward and the occiput backward;—thereby occasioning difficulty; for the parts, as you may see, do not fit well together. The rule, therefore, is to place the face and forehead backward, and the occiput in front. Suppose a child is coming away vertex first, and that you are obliged, though unwillingly, to have recourse to the forceps; on abstracting by this instrument, you might throw the occiput forward, and the face backward; but as the face does not fit well under this position,—availing yourselves of the benefit of your anatomical knowledge,—you may throw the face backward, and the occupit forward; when the head will readily come forth.

Examining the cavity of the pelvis further, we find it is of very *unequal depth*; and this also is a little point of anatomy, not of much consequence certainly, but yet not be forgotten. If you examine the pelvis all round, you find its depths various;—shallow in front, deeper behind, intermediate laterally; and therefore in an ordinary labour, when a child's head has got down into the pelvis,—although behind and laterally it be still incarcerated among the bones, so that much difficulty may be experienced in completing its expulsion,—yet, in front, it lies bare and open to the finger. I mention this, because those who are commencing the practice of midwifery, sometimes imagine, upon feeling the head in the front of the pelvis, that the fœtus is just upon the point of emerging; whereas it may be embarrassed by the bones enclosing it laterally and posteriorly, and parturition may be protracted for hours. The shallowness of the pelvis in front is not to be forgotten, in making examinations. If you wish to examine well, you must learn to carry your fingers very far into the pelvis; and this cannot be done if you lay them on the sides or back where the pelvis is deeper, it is only in front of the pelvis where the bones are shallower, that the tips of the fingers can be insinuated considerably beyond the brim. Here, again, I may observe, that it is attention to these minute circumstances, which makes the difference between a clumsy and a dexterous operator; in other words, between one who is qualified to undertake the manual part of midwifery, and one who is not.

Arch of the Pubis.—A third point of obstetric anatomy which I must notice, is the large scallop in front; frequently mentioned by the accoucheur under the name of "the arch of the pubis." This arch is obviously important; because, in ordinary labour, when the head is at the outlet of the pelvis, this arch facilitates the passage, by allowing the occiput to lie forth in front, and thus making more room within. Or, again, suppose the child presents by the face;—that is, that the face comes away as the first part. As the labour advances, the chin gets out under the arch of the pubis; and the

vertex, lying in the hollow of the sacrum, there is room afforded here in front to facilitate the delivery. It is at the point of the arch of the pubis that you will always find the *orifice* of the *urethra*, when you want to introduce the *catheter* (from καθιημι, *to thrust into*). The standard arch is of large span;—wider in some women, more contracted in others. Where contracted, some little difficulty may arise; as the chin or occiput cannot lie forth as far as ordinary.

Incurvation of the Pelvis.—There is one other property of the cavity of the pelvis, which I must notice, as the most important of all;—that is the incurvation of it. For, instead of the tube or tunnel which it forms being straight, it is curved in the same manner as the sacrum; the two, being nearly, if not wholly, parallel with each other. Now, as the cavity of the pelvis is curved in the manner demonstrated, the course of its axis or central line at the brim, lies downward and backward; so that a straight line will pass downward, through the axis of the upper portion of the pelvis, to the point of the sacrum or the parts lying near it; and further as, in consequence of this curve, the course of the central line at the outlet is downward and forward (as before demonstrated), a straight line placed in the axis of the inferior half of the pelvis, will at its upper extremity, bear upon the promontory of the sacrum.

How very important, and very easy, it is to recollect this;—namely, that the axis of the brim passes downward and backward, and that the axis of the outlet passes downward and forward. In ordinary labours, the head follows the axis of the brim in the commencement;—passing downward and backward when traversing the brim, and downward and forward when it emerges through the outlet. In a foot-case, if the head be large and pelvis small, a knowledge of the axis will be of no small importance. For were the head to be drawn downward and forward through the brim, instead of downwards and backwards towards the point of the sacrum, the accoucheur might draw till he drew the child's head from its body, without getting it away. I have myself known a child's head torn from its trunk, owing to the practitioner not being aware of this. The same thing is not to be forgotten when the head is at the outlet; though attention to these niceties is then of minor importance, as the difficulties are smaller. When you get the head to the outlet, you ought to draw downward and forward;—the axis of the outlet, lying in this direction; when the head will pass readily enough.

By neglecting this, you may create a difficulty which it is easy to avoid. Even in bringing the fœtal body through the pelvis, the course of the axis must not be forgotten; and this more especially if the pelvis be contracted, and the body form a larger mass than ordinary.

We find, then, that the cavity of the pelvis is not straight, but incurvated;—that the curve corresponds with the bending of the sacrum;—that, at the brim, the course of the axis is downward and backward toward the lower extremity of the sacrum; while, at the outlet, its course is downward and forward; so that a straight line passed upwards would impinge against the promontory of the sa-

crum ;—and that the head and other parts are transmitted through the pelvis by a sort of semicircular movement.

SECTION 2.—DISTORTED PELVIS.

Distortions and *contractions* of the pelvis in the *higher degrees*, happily, are not often met with ; yet now and then such cases do occur ; giving rise to most formidable difficulties and dangers, well deserving our closest attention. When a pelvis thus becomes distorted,—in consequence of *fracture*, *rickets*, or above all, from *mollities ossium* or softening of the bones, (which is the most frequent cause),—all its parts are generally more or less altered in shape ;—the false and the true pelvis,—the brim,—the cavity,—the outlet,—are all incurvated and distorted together. Sometimes, however, where there is a good deal of distortion and contraction of the pelvis, these are confined principally to certain parts of the pelvis only ;—a fact of some little importance in practice. Where there are distortions of the pelvis, too, it is not unusual to find one side of the pelvis much more contracted and distorted than the other.

When the accoucheur meets with cases of distorted pelvis,—and in practising in large towns (such as Liverpool, Manchester, Leeds, Glasgow, and this metropolis) cases of this kind will occasionally occur,—he must carefully examine, with his fingers, what part of the pelvis is most contracted, and what part the most roomy ; in order that he may direct his operations accordingly.

In distortions of the pelvis, of course there is no end to the different varieties of form that the bones may assume. Nevertheless, on making an examination of my specimens, I have observed that there are *two* leading shapes, or forms, to which these varieties may be reduced ; and which may not inaptly be denominated the *angular* and the *ellipsoidal*.

Elliptical Distortion.—Elliptical distortions sometimes occur at the brim ;—elliptical distortions produced by the approximation of the promontory of the sacrum towards the symphysis pubis ;—the diameter of the brim from side to side being increased, while it has been diminished in a direction from before backwards. The ellipsoid contraction may also occur at the outlet ;—the symphysis pubis being approximated to the lower extremity of the sacrum and the coccyx ; so as to obstruct or to render impracticable the passage of the fœtus, even after its bulk has been reduced by the perforator.

Angular Distortion.—The second, or angular, variety of distortion is produced, at the brim, in consequence of the acetabula and the promontory of the sacrum being all of them pushed inwards upon the axis of the pelvis. Of this kind of distortion I have many very striking examples ; and I once possessed a cast (which some rude hand demolished) in which the acetabula and promontory were so nearly proximated, that the brim was, as it were, divided into three fissures ;—two lateral, and one in front. Distortion occurs also at the outlet ; where it is occasioned by the approach of the tuberosities of the ischia, and the incurvation or advance of the sacrum

and coccyx; and gives rise, as at the brim, to a formidable contraction of the passage.

Treatment in Distortions.—What is to be done with women unhappily labouring under these distortions and contractions, whether of the elliptical or angular kind? What assistance can be afforded them in their deplorable situation? If such a female is unfortunately pregnant, and at the end of her gestation, there are but two modes in which delivery can be accomplished. The one is by laying open the child, and reducing its bulk; the other is by performing the *Cæsarian section*. If the fœtus is to be abstracted, in these cases, by the natural passage, the head must be perforated, and the contents removed;—nay, sometimes the thorax and even the abdomen itself must be laid open; and when, in this manner, the bulk of the fœtus is reduced, and the parts are softened by putrefaction, it may at length be got away. In circumstances of this kind, then, it becomes a question whether you should perform the Cæsarian operation, or the operation of *embryotomy*.* Dr. Hall, of Manchester, and Mr. Burns (who has written so well on midwifery) have ascertained that, when the standard head is reduced, in the best possible way, to the smallest size, by the most expert operator, it will require, for its transmission, an aperture of three inches in length, and one inch and three-quarters in breadth. Therefore if you find, upon examining, that the pelvis is not so capacious as this, it follows that the Cæsarian operation must be performed, and perforation is unjustifiable. After all, however, the mere capacity of the aperture will not enable us to decide; for,—not to mention the difficulty of ascertaining it with precision,—much must depend on the skill of the operator; and one man may fail altogether in his attempt to deliver, when another may bring away the child with comparative facility. On the whole, perhaps, the rule may with advantage be laid down as follows:—If the passage of the pelvis be three inches throughout in length, and one inch and three-quarters throughout in breadth, and the operator possess the necessary skill, then let him bring away the child by the operation of embryotomy. If, on the contrary, the capacity of the passages be not equal to that I have stated, and the operator be wanting in dexterity, and unable to call in some person who may be more expert than himself, the Cæsarian operation must be performed.

A robust country woman, in vigorous health, the mother of several children, was thrown out of a cart; which went over her, and broke her pelvis to pieces. She was carried home, and lay a long time; but at last recovered. She again became pregnant, and was attended by a woman; but the pelvis was so contracted by the displacement of the fractured bones, and the mass of osseous matter by which they were consolidated, that the midwife was unable to deliver her. Mr. Barlow, of Blackburn, (who used to relate the case), was called in; and found that she could not be delivered without the performance of the Cæsarian operation. As soon as she was willing

* From εμζρυον, *a fœtus*; and τεμνω, *to cut*.

to submit to it,—feeling there was no hope in any other way,—he performed it, and the child was extracted; but it was dead. Before the operation, probably, its vitality had become extinct. The mother herself did very well. In a fortnight after the incisions were made, she got up; and in three weeks she was attending to her usual concerns. I mention this case as a rare instance of the success of the Cæsarian operation; for in general that operation, as performed at present, proves fatal. I mention it also as an instance of the operation being required, in consequence of the fracture of the pelvis, and a high contraction of it produced by this cause.

[Whatever may be the deformity of the spine, if the legs are straight, the pelvis will be found well shaped; but if the legs are crooked, the pelvis is deformed. If women walk with their toes much turned out, they have a narrow pelvis;—the acetabula being nearer to each other than in a well-formed pelvis; and the symphysis pubis being very sharp. Such women suffer much in labour.*]

Division of the Fallopian Tubes.—But let us put another case, which ought to be duly weighed before engaging in practice; as the life of some unfortunate woman may depend on the previous consideration of it. I will suppose a woman has a great contraction, and is in the early months of gestation;—I will suppose she may not have gone above one or two months. In such a case, of course it would, if practicable, be desirable to introduce an instrument into the uterine cavity; so as to discharge the *liquor amnii*, and in that way bring on *premature delivery*. But, very probably, you might not be able to enter the uterus; nay, you might not be dexterous or fortunate enough even to feel the os uteri; and, in these circumstances, another operation,—one which I would strongly recommend to your attention,—might be attempted. Make an opening a little above the symphysis pubis, in or near the *linea alba;* carefully avoiding the bladder. At this opening introduce one of your fingers,—say the fore-finger of the left hand,—so as to get a bearing on the uterus; then introduce a slender pointed instrument through the body of the uterus into the cavity; and, on entering the uterine cavity, move the wire cautiously, in different directions, so as to break up the structure of the ovum, and put an effectual stop to the generative process. The ovum destroyed, draw up the fallopian tube on either side, and cut out a portion of it, so as to render it impervious; by which means, the woman will ever afterwards be sterile. By this operation, when successfully performed, the woman is secured against the Cæsarian section; and, at the same time, against the risk of ever again becoming pregnant. I shall hereafter lay before you some experiments I have made on the subject. They first led me to think of this expedient; and induce me to believe that, unless the fluid discharged from the ovaries above, can come in contact with the seminal fluid derived from below, a *new ovum* cannot be produced. As the imperviousness of the tubes will effectually prevent this contact, impregnation will not take place. In performing the

* Extracted from Dr. Mackintosh's unpublished Lectures on Midwifery.

operation, I should be very careful to *break up the ovum thoroughly*; even if I laboured for fifteen or twenty minutes together.

What is to be done in those cases, where a woman is known to have contraction of the pelvis; and, though married, is yet unimpregnated? Let her *abstain*. But women have not always the power of abstaining; and unluckily they become pregnant. My friend Dr. Hall knew a woman who, having this sort of pelvis, was informed of it; and, who, after abstaining some five or six years, in an evil hour,—I know not how it was,—became impregnated. In the early months of pregnancy, an operation to occasion the expulsion of the ovum was very properly attempted; but failed. In the course of two or three months afterwards, labour supervened; but too late. The fœtus was too bulky; the parts became contused; and she died. Then what is to be done in the case of a woman so circumstanced, and unimpregnated? If she distrust herself, I should recommend an operation;—not, perhaps, wholly without difficulty and danger; but so far preferable to the Cæsarian incision, that I should not hesitate to advise it. I would make the small opening which I described before;—not for the purpose of taking away the ovaries altogether (for that would unsex her); but to take away part of the fallopian tubes. This I should more especially recommend, if a woman laboured under a contraction of the pelvis from fracture, and if her general health were good.

SECTION 3.—CONTRACTED PELVIS.

The distorted pelvis contracted in high degree, is by no means frequent in obstetric practice; but those coarctations,* which are accompanied with little or no distortion, and in which the contraction is slighter, are by no means uncommon. More especially are they liable to be met with in large manufacturing towns; such as Glasgow, Leeds, Manchester, and this metropolis. Therefore, although these contractions make but little show in the museum, they peculiarly deserve the attention of the obstetric student.

In the slighter degrees, contractions of the pelvis may affect any part of the bony structure; sometimes the *false* pelvis is the seat of the contraction; and sometimes the *brim*, or the *cavity*, or the *outlet*, of the *true* pelvis. It deserves remark, however, that the contractions of the *true* pelvis only are of much importance in the practice of midwifery.

Contractions of the True Pelvis.—Those contractions of the *true* pelvis which create the most frequent difficulties;—and which, at the bed-side, most frequently require the use of instruments, are almost invariably found at the *brim* of the pelvis;—a fact of great interest. Whenever, therefore, you suspect that there is a pelvis contracted in such a degree that the lever, the forceps, or the perforator, may be requisite, the brim is the part of that pelvis that you should first, and most carefully, examine. I may also add, that when those contractions occur at the brim, they *rarely lie between the sides* of the

* From *coarcto* "to narrow."

pelvis; but are found *almost invariably between the front and the back*, (terms which I use in a lax sense). This contraction between the back and front, may be produced, either by the approximation of the symphysis pubis to the promontory of the sacrum, or by the thrusting of the acetabula towards the promontory of the sacrum. When contraction of the pelvis arises from the former cause, no distortion whatever is observed; but when it is produced by the latter,—namely, by the pushing in of the acetabula,—then, together with contraction, some loss of symmetry will be noticed.

The other remark which I have to make upon the subject of these contractions, is, that they are sometimes *very partial*;—a fact which I find important in my own practice. It sometimes happens, that the outlet of the pelvis alone is the seat of the contraction; but this is not common. Much more frequently we find contraction of the brim, while the outlet is capacious enough. Now, in cases like these, the fœtus is sometimes very unexpectedly expelled. Let the womb act,—let the child's head advance but one inch, perhaps, and (after some hours of labour, when the delivery is unlooked for) suddenly the head bursts into the world; while the accoucheur (engaged in washing, or dressing, or refreshing) returns to be informed that, during his absence, the fœtus has been expelled.

Thus much, then, respecting the obstetric anatomy of the *contracted* pelvis. Recollect that all parts of the pelvis are liable to be contracted in a greater or less degree; but that those contractions which require the use of instruments, are usually at the brim. Recollect, also, that those contractions which are lying at the brim, may now and then be placed between the one and the other side; but that contractions requiring instruments are rarely so situated;—being found, almost invariably, between the front and the back. Recollect, further, that these contractions between the front and the back are produced by two causes;—the one, the pushing of the symphysis pubis toward the promontory of the sacrum; the other, the thrusting inward of the acetabulum on either side;—the latter contraction being attended with a certain degree of distortion. Recollect, lastly, that when contractions occur, they are generally confined to a particular part of the pelvis,—a practical fact of no small importance; but are more generally found at the brim; so that if the head once pass the brim,—whether under the use of instruments, or by the natural efforts,—all further difficulties vanish.

Management of Labours with Contracted Pelvis.—When the pelvis is contracted, the birth is more or less obstructed;—especially if the fœtus be larger than ordinary; but in these difficulties, the rules of management are, I think, simple and intelligible. If no dangerous symptoms appear, (and of these incarceration of the head is one), we ought to give a fair trial to the full efforts of the uterus for four-and-twenty hours after the discharge of the liquor amnii; abstaining, as long as may be, from the use of instruments;—for they are great evils; and meddlesome midwifery is bad. But should dangers, referrible to the prolongation of the labour arise, or should the woman

be in labour for twenty-four hours after the discharge of the liquor amnii,—the head not advancing,—you would then (constrained by an overbearing necessity) be justified, if skilful, in employing embryospastic* instruments. Further,—should the dangerous symptoms become pressing,—should the womb have been in action for eight-and-twenty hours (the head still not advancing),—should, in addition to all this, the embryospastic instruments have failed,—then will embryotomy (a dreadful operation, of tremendous responsibility) become justifiable;—provided it be clearly necessary to deliver immediately; for it is a fundamental axiom of British midwifery, that we must save the mother, come what may to the child;—an axiom which is equally approved by the head and by the heart.

Lastly, should a woman who has lost half a dozen children successively,—in consequence of deficient room,—again become pregnant, an attempt might be made to facilitate her delivery, and save the fœtus, by inducing parturition at the end of seven months and a half; when the bulk of the fœtus is small, and its powers are sufficiently great to render its preservation probable. Instruments, remember, are never to be used but with reluctance;—when the necessity is inexorable; and when conscience tells you that you would wish their employment, in the case of your nearest relative, or of those still dearer.

Causes.—There are *three principal causes*, by which distortions and contractions of the pelvis are produced; and these three causes are *mollities ossium*, *rickets*, and *fracture* of the bones. It sometimes happens, though rarely, that the skeleton is attacked by a disease (generally fatal), under which the *animal* matter *predominates*, and the *osseous* matter is *deficient*. The result is a *softening* of the bones (mollities ossium); so that, yielding like tempered wax, they become distorted in every part of the skeleton to which pressure is applied.

It more frequently happens,—in unhealthy situations, where the children are pale, weakly, and ill nourished,—that the form and capacity of the pelvis are altered in consequence of rickets;† a disease allied to mollities, except that it is confined principally to the earlier period of life. Here, as before, the animal matter is redundant; and the osseous matter is deficient; some softening of the bones, therefore, is produced. Now the contractions of the pelvis, where you have not the higher degrees of distortion, are, I think, principally occasioned in this manner by rickets; and on this account, where children are known to be ricketty,—female children especially,—you ought to give particular directions that they be not put too early to the ground. It is wrong even in the case of males; but by putting a young female, when prone to rickets, to the ground too early, you may give rise to one of those contractions of the pelvis, which may become the torture of her future life.

Fracture of the bones of the pelvis is not a common cause of their

* From εμβρυον, *the fœtus*; and σπαω, *to draw*.

† From ραχις, *the spine*; which was supposed to be in fault.

distortion. Now and then, however, it occurs; and where it does, it usually gives rise to the higher degrees of contraction.

SECTION 4.—SMALL PELVIS.

Ayesha, the favourite wife of Mohammed, was married at nine years of age. If a girl become early impregnated, as in the Eastern countries,—at the age of twelve or thirteen years for example,—the pelvis will be small, in common with the other parts of the skeleton; and of course the pelvis will be of small size if the woman, though of full age, be of dwarfish stature. By a "small" pelvis, then, is to be understood one which preserves its proportions and symmetry; but in which all the measures are unusually short. When the pelvis is small, the woman small, the child small,—so that the parts correspond with each other,—parturition becomes easy. This, however, does not invariably exist; and thence sometimes difficulty arises. A woman with a small pelvis, has occasionally the misfortune to produce very large fœtuses. I know a woman, not exceeding the ordinary stature, who has produced several children; one of whom, to my own knowledge, weighed at birth eleven pounds, and the other nearly seventeen; though the general weight is only seven. Unhappily for females who are of a small size, the stature, or other qualities of the father, seem to have an effect upon the child. A friend of mine had in his possession two dogs;—one of them a somewhat small bitch of the Danish breed (such as you see running after our carriages); the other from Newfoundland;—an unusually large animal, and a male. Unluckily for the female, a connexion was accomplished between them; and six puppies were produced. Of these, three were expelled, apparently with much difficulty; but the other three could not be emitted; so that the poor animal died undelivered. This I state, first as an example of the difficulty of parturition occurring in an animal, and secondly (and principally) for the purpose of proving that the largeness and other qualities of the male parent, like those of the female, may influence the bulk of the fœtus.

What is to be done if a woman have a very small pelvis and a very large fœtus? Why, that is to be done which would be necessary in a case of contracted pelvis. Proceed exactly on the same principles: and this simplifies and narrows my observations. It may be necessary to use instruments; but do not officiously and pragmatically interfere. Give a fair trial of four-and-twenty hours to the natural efforts, if no dangerous symptoms appear. If the natural efforts fail, or dangerous symptoms manifest themselves, make use of the embryospastic instruments. If they do not succeed, and dangerous symptoms attack the patient, or if the woman have been in labour six-and-thirty, or eight-and-forty hours, lay open the head of the child by embryotomy;—a repetition of the rule before prescribed.

SECTION 5.—LARGE PELVIS.

As a pelvis may be *small* in all its dimensions, so also, on the other hand, we sometimes meet with those that are *unusually capacious*; which over-capaciousness renders them of considerable obstetric importance. Various evils, not to be despised, are produced by this deviation from the standard.

Having a large pelvis, women become more obnoxious to a disease called *retroversio* uteri*; the nature of which may be more fully considered hereafter. Under this disease the womb, in the third or fourth months, having acquired the size of the head of a large full-grown fœtus, will now and then change its position;—the *fundus* lying below the promontory of the sacrum, and the *mouth* rising and advancing. To this displacement all women, indeed, are obnoxious; but those, more especially, in whom the pelvis is large;—there being more room for the retroversion to take place. Among the evils resulting from a large pelvis, then, set this down as one not to be forgotten;—the greater facility with which the womb becomes retroverted.

There is another disease to which all women are exposed; more especially those who have a large pelvis, and in whom the parts are relaxed; namely, *descent of the womb*. Varying in the degree of descent, the womb sometimes comes down a little way only; sometimes it just appears through the outlet in front; and sometimes it lies out a considerable distance between the thighs. This descent of the uterus (to which all females may be subject when the parts are relaxed) occurs most frequently where the pelvis is capacious; and not only in the *earlier*, but sometimes in the *later* periods of gestation. There is a case related in which the womb, during labour, actually protruded beyond the external parts, before the mouth was fully opened; so that the *os uteri* could be distinctly seen, and the child behind it. In this case the pelvis was over-capacious. You may, therefore, set down,—as a *second evil*, resulting from this over-capacity of the pelvis,—the greater facility with which *prolapsus† of the uterus* is apt to occur in maids, and in mothers during gestation, or in the unimpregnated state.

But of all the evils resulting from the largeness of the pelvis, the last which I shall mention, and the most important, is the *unexpected* and *sudden* manner in which the child is sometimes pushed into the world. A woman is walking in the street; she attempts to cross to the other side,—perhaps a little agitated; and the child drops from her. Or, again, a woman feels an irritation of her bowels,—not uncommon, when parturition is about to commence. She retires, makes an effort, and loses her child.

Dr. Lowder used to relate a case, which is well illustrative of this; and is calculated to make a useful impression on the mind. A patient of his had a pelvis unusually capacious; the softer parts were relaxed; and she was the mother of many children. Desirous

* From *retro*, "backwards; and *verto*, "to turn."
† From *prolabor*, "to slip down."

not to be out of reach when labour might supervene, he called on her to know whether she had any pains about her. She had none. He returned promptly to his own house, which was were I now reside; and by the time he reached the door, he found the husband had arrived there too, to tell him that the child was born; adding that, when he left the house, the lady, in crossing the floor of her drawing room, was seized with a *single pain*, by which the fœtus was expelled. Thus it is by no means improbable,—when the parts are relaxed and the pelvis is capacious,—that the child may unexpectedly be expelled, and precipitated into situations of most imminent danger.

This enables us to answer a question, which may be put occasionally in a court of justice; and to which you should always be prepared with a reply;—namely, whether it is possible for a woman to be delivered without knowing that labour is about to occur at the time? I will suppose that a woman becomes the unfortunate subject of an illegitimate pregnancy. I will suppose, further, that (moved by that modesty which seems to be ingenerate in the sex) she is induced, without evil design, to delay a disclosure till delivery renders it inevitable. I will suppose, too, that a woman thus circumstanced,—with a pelvis that is capacious, and with a fibre which is thoroughly relaxed,—feeling bowel-irritation, retires. The womb acts; the fœtus is at once precipitated; she hears no cry; she deems it lost; and has but a moment to take her determination. She decides amiss;—she has not the resolution to step forth and promulgate her shame. But circumstances create suspicion; the child is discovered; and she is summoned into court. Then comes the question for the accoucheur. Is it possible for the child to be precipated, before the mother is aware? To this it may be replied that, if the pelvis be large, and if the softer parts be relaxed, it is not only *possible*, but in a manner *probable*. On occasions like these, I conceive, substantial justice requires that women should have the full advantage of every leaning in their favour. The laws and customs of mankind are of the masculine gender. The sex of the legislators is very obvious. Not to mention the male tyranny of Asiatic, or of semi-barbarous nations, our own system with respect to woman,—notwithstanding the influences of chivalry,—is austere enough,—perhaps oppressive. Unmarried, perhaps, because the over-wrought civilisation of society renders a family a burden; solicited, because the lawgivers and custom-makers assume to themselves, without shame, a sexual licence (often their boast instead of their infamy); deprived of caste, like a contaminated Indian, if the offence be detected; with no effective public provision for the foundling;—a woman becomes a mother; and is driven to a crime the most revolting to maternal instinct. Law follows; the crime is execrated; the culprit is suspended to the gallows, by the very sex which has so large and solid a share in the offence;—the very sex which, in this country, has turned the accoucheur, with his perforator, loose upon society, to open the heads of living children without accounting to any; and

then——to dinner! But all this is "unavoidable!" Be it so! Let it be remembered, then, that some of these unfortunate creatures are to be looked on rather as victims, than as criminals. Knowing this, let me implore you, should you ever be called on to give an opinion in these matters, not to give a rash judgment; and thus to be the ignorant murderer of an innocent and misguided woman.

Thus much, then, respecting the different forms of the pelvis,—so far as they are interesting to the accoucheur;—the standard, the large, the small, the contracted, and the distorted. Other varieties of the pelvis will also be met with in practice; but they are of so little importance, that I forbear to dwell upon them. Sometimes the wings of the ossa innominata are unusually *spread out;* in other cases they are *more erect* than usual. In general the brim is oval; sometimes it is rounded. In some pelves the spines of the ischia are long, and penetrate far into the cavity. The coccyx may be consolidated by osseous matter with the sacrum, at right angles with that bone;—so as to occasion an obstruction. Now and then osseous matter is placed on the promontory of the sacrum;—giving rise to difficulty in parturition.

SECTION 6.—MEANS OF ASCERTAINING THE KINDS OF PELVIS.

The means of ascertaining, in the living subject, the kind of pelvis which nature has allotted to the patient, comes now under consideration; for it would be of little consequence to know that there are varieties of the pelvis, requiring a corresponding diversity of treatment; unless we could, at the bed-side, state with tolerable certainty upon which of these pelves it is our duty to operate.

Independently of a very accurate *internal examination*, which is not always practicable, we may often form a very useful and probable conjecture, whether a woman have such a contraction of her pelvis, as is likely to give rise to difficulty in parturition. When the pelvis is contracted, it is, not unfrequently, the result of rickets in early life, or of mollities ossium; and in these cases, the other parts of the skeleton are suffering too. Now,—though it does not invariably follow that where you have distortion of the arms, legs, fingers, toes, or spine, the pelvis should be contracted so as to give rise to dfficulty,—yet, in such a case, pelvic distortions are by no means improbable. Observe, therefore, the other parts of the skeleton; and you will be able to form an opinion respecting the pelvis.

Again. We sometimes find persons distorted, in a high degree, about the upper part of the spine, in consequence of some *local disease* there;—the pelvis, notwithstanding, being of the natural dimensions. We are not, therefore, hastily to infer,—because there is a distortion of the upper part of the spine; the result of topical disease,—that there exists a distortion of the pelvis; for very considerable spinal distortion will take place, without distortion of the pelvis. But if the person be labouring under distortion of the *lum-*

bar vertebræ,—particularly the *lower* lumbar vertebræ,—and more especially if she has an *unusual hollowness in the loins*, then contraction of the pelvis will generally be found to exist.

A woman distorted in a high degree, was brought to one of the medical schools at Paris; and among the pupils, there was some whisper about the Cæsarian operation; but while they were considering the point, the child suddenly came into the world; and it is remarkable that this woman had become a mother by a French grenadier. The woman afterwards died; and it was found that there was only a slight contraction of the pelvis. There was another female, with what is called a *hump* on the back, brought into one of the French hospitals; and this woman, being asked whether she had borne any children before, replied that she had had six,—all born alive.

It is not generally correct, therefore, from a case of distortion of the spine,—especially of the upper part of it,—to infer that there is a distortion of the pelvis. Nevertheless, where there is hollowness of the loins, contraction of the pelvis may always be *suspected*. The arts of *dress* would conceal, in a great measure, deformities of this kind.

When we are anxious to know whether a woman has full capacity or not, there is yet a *third* inquiry to be made; and that is concerning the result of *previous labours*. If the woman has had five or six children, all born dead, or all requiring the use of extracting instruments, or all sacrificed to the perforator,—though the practitioner (not being your rival) may be supposed to have talent,—there can be no doubt that there is a want of capacity there. On the other hand, if the children have been born alive,—in whatever state the parts may be,—it is quite clear there is a sufficiency of capacity; unless contraction has subsequently occurred; which is highly improbable. So that, by inquiring into previous labours, by cautiously making observations on the spine, and by examining the skeleton generally, a very probable opinion may be formed whether the pelvis is of full capacity, or not.

When women are in labour,—knowing, as they do, the necessity of the operation,—in general they cheerfully submit to *internal examination*. This being the case, obstetricians have the means of ascertaining the variety of pelves on which they may have to act. With a view of ascertaining the measures and dimensions of the pelvis, our Gallic neighbours have contrived an instrument, sometimes called a pelvimeter (from πελυς, *the pelvis*, and μετρεω, *to measure*);—an implement not to be altogether despised. The instrument was invented by Coutouli. It consists of *two rods*; the one sliding along the other in a groove. Upon the *superior* rod, there is a graduated *scale of inches*; and at the end of each rod, is an upright. The mode of using the instrument is twofold. Where the soft parts are relaxed in a high degree, it may be used *internally*, or it may be applied *externally*. When applied internally, place one upright upon the *symphysis pubis*, and the other against the *promon-*

tory of the sacrum; and then read off, by the scale, the distance between the two. If the parts are too rigid to admit of its use internally, then lay one upright against the projection of the promontory, and the other to the pubes. *Seven or eight lines* must be deducted, as an allowance for the thickness of the soft and harder parts in front; when the difference will give the clear space between the front and the back. By obstetricians of some repute, there is another instrument much applauded. It is nothing more than a pair of *bow-compasses*; but a more useful instrument, perhaps, than the other; because of very easy application. The method of using it is this. Place one point on the symphysis pubis, and the other on the spinous process of the last lumbar vertebra; then deduct *three inches;* and in this manner the distance between the sacrum and symphysis pubis is determined. This is an instrument I do not use myself, for I measure the pelvis in another way; but I deem it a useful one.

Besides these methods, the pelvis may also be *very sufficiently* measured, by means of the *fingers*. To know the distance between the front and the back, let the fore-finger be placed on the promontory of the sacrum, and the root of the finger at the arch of the pubes. To measure the brim from side to side, *spread out* the fingers; —introducing all the fingers closely together, and then spreading them from one side to the other.

But a better method of measurement, I think, consists in the application of all the fingers to the *back part* of the symphysis pubis. If there be want of room behind the pubis, something of an *angle* will be felt there. If the brim be of full measure, from side to side, when all the fingers are introduced and placed behind the symphysis, they will all of them lie in the same place. The most convenient time to measure the *outlet* of the pelvis, is when the child's head is there; and then certainly the inquiry becomes most important. It is easy to pass the fingers round between the bones and the head, and so ascertain whether there is a sufficiency of space. Before, however, the head descends, the outlet of the pelvis may be measured; first, from front to back, by so placing the fore-finger that the root of it lies against the arch of the pubes, and the tip of it upon the coccyx; and secondly, by laying all the four fingers into the arch of the pubes; which will indicate the distance between the tuberosities of the ischia;—in other words, the measure from side to side.

When the pelvis is contracted in a slight degree only, there may arise those difficulties which result from contraction between the front and back; of which the brim is the most frequent seat. There is another mode of ascertaining the deficiency of room; and which experience has led me to prefer to the preceding. If I were called to a woman supposed to labour under this contraction, my first inquiry would be,—"How many children have you had?" "Twelve," she might answer, if she were of the lower class of life. "Were they born *alive* or not?" If she told me that all or most of them were born alive, I should thence infer that contraction of the brim was by no means probable. Now this is a question which any can

put as well as the most accomplished professor;—it is so easy and so important that it ought to be the first inquiry. On the other hand, if she were to say,—"All my children were born *dead*, sir;" then I should suspect a contraction. If I suppose a woman has contraction of the pelvis, after making the inquiry I have mentioned, I make a careful examination with my fingers; and, if the pelvis be of full size, I find no difficulty in reaching the promontory of the sacrum; though young practitioners may not perhaps be able to distinguish it; because it lies so distant from the symphysis pubis, that the fingers must reach very far to find it. But if I find (as I too often do) the promontory coming forth, as it were, to meet the tip of the finger,—so that we in a manner "blunder" upon it,—then I know that contraction exists. To judge in this manner, however, it is necessary to know the promontory when it is felt;—a piece of intelligence which all do not possess. I have known the promontory to be mistaken for the child's head; and I have heard of an attempt to introduce the perforator, in such a case. If a patient have a pelvis in which contraction is suspected, I inquire, in the third place, how long she has been in labour? If I find that she has been in labour *only an hour or two* after the discharge of the liquor amnii, I do not infer there is a want of room at the brim. But if she has been in very strong labour for twelve or twenty-four hours after the discharge of the liquor amnii,—the softer parts being relaxed, and the fœtus making no progress,—the probability is, that room is deficient.

Suspecting the contraction of the pelvis, I should, in the *fourth* place, make a very careful examination of the state of the child's head; which is always to be felt. If it is not swelled, but apparently in a good condition, I have proof that it has not been injured by long pressure; and I have presumption that there is no deficiency of room. But if, on the contrary, the parietal* bones are lying over each other (so as to form a ridge), and if the head feel considerably swelled and soft (so as to resemble the breech), I then infer that it has been subject to much compression, and that room is wanting.

In the last place,—as I wish always to ascertain this point with as much accuracy as may be,—as soon as the head is fairly come down among the bones of the pelvis, I endeavour to pass the fingers between the symphysis pubis and the cranium;—inferring, on the one hand, that room is wanting if they cannot be passed up; and, on the other, that the pelvis is of full capacity at its brim and in its cavity, if the fingers can be lodged between the head and the bones without difficulty. That this observation may have value, however, it is absolutely necessary that, as observed above, the head should be thoroughly within the pelvic cavity.

So then,—by passing the fingers between the bones and the head;—by ascertaining what is the condition of the head, and more especially the existence or absence of a swelling of the scalp;—by learning what has been the duration of the labour under strong

* From *paries, parietis*, "a wall."

pains, after the discharge of the liquor amnii;—by making out whether the promontory of the sacrum can be felt with facility or not;—and by inquiring of the patient what has been the result of previous labours,—I am enabled, in most cases, to say, without difficulty, whether there is such a contraction of pelvis, as demands the use of instruments. To me it matters little what is the precise measure below or above. With measures of a line, or a quarter of an inch, I have little concern. All I want to know is, whether there is such a contraction above, as to require the use of instruments; and by the means just described, I am enabled to ascertain it, without resorting to nicer measurements.

SECTION 7.—COMPARISON BETWEEN THE MALE AND THE FEMALE PELVIS.

Although the obstetrician has not to operate upon the *male* pelvis, and therefore takes but a small interest in it absolutely considered, yet as there are some striking differences between the pelves of the corresponding sexes, and as the comparison and observance of these differences are calculated to render our ideas of the *female* pelvis more exact and prominent, it may not be amiss to enter on them.

In the male pelvis there is a certain *roughness*, *bulkiness*, and *weight*, which makes it contrast strikingly with the *lighter*, *smoother*, and *more elegant* pelvis of the female.—In the male, the ilia or wings of the ossa innominata are more erect; in the female more expanded. —In the male, the brim is more rounded, though tending somewhat to an ellipse;—the long diameter of which stretches from before backward; in the female, the brim, though sometimes rounded, is generally oval; and the long diameter lies between the sides.—In the male, the pelvis is deep; in the female it is shallow.—In the male, there is a very small outlet; in the female, a very capacious one.—In the male, the arch of the pubes is contracted; in the female it is capacious,—to make room for the more ready passage of the head.

We sometimes meet with an *effeminate pelvis* in the man;—just as the whole subject may partake more or less of the feminine character. In women, on the other hand, we sometimes meet with pelves having much of the *masculine make*; just as the whole person may exhibit the character of a virago, or of a Narcissus. Nevertheless, where the pelvis, healthily formed, possesses its ordinary characteristics, nothing is more easy for the accoucheur, than at one glance to distinguish the sex to which it belongs. Were I to select from the various sexual characters enumerated, any single mark more sexual than the rest, it would be the sign of the outlet generally, and more especially the size of the arch;—always contracted in a well-formed male pelvis, and always extended in a well formed female one.

SECTION 8.—BEARING OF THE PELVIS ON THE SPINE.

In practice, the obstetrician finds it of no small importance to have a correct notion respecting the bearing of the pelvis on the spine;

and as, in illustration of this bearing, we shall have occasion to speak of the *plane* of the brim, it may not be amiss to define, at the outset, what is intended by that term. By "the plane of the brim," then, I mean an *imaginary surface*, closing in the superior aperture of the pelvis;—forming a sort of *flooring* there,—to use a familiar illustration; just as a piece of card-board might do.

When we first give our attention to the bearing of the pelvis on the spine, some of us adopt the notion, perhaps, that the plane of the brim and the spinal column are placed in a line with each other; while others (and that is a still more common opinion) imagine that the pelvis is so placed with respect to the vertebræ, that the plane and the spine are at right angles with each other;—the sacrum lying directly backward, and the symphysis pubis directly forward. In truth, however, it is in neither of these bearings that the pelvis unites with the spine; for it is placed in such a manner that the plane and the spine form an obtuse angle with each other;—the sacrum lying above and posteriorly, the symphysis anteriorly and below; and therefore the uterus rests on the pelvis, as its pedestal; so that towards the end of gestation,—when the womb acquires a large size,—it is not placed in the abdomen erect; and you would err greatly, and become very embarassed in your manual operations, were you to be deceived by this idea. In the living female, when the womb, enlarged by gestation, is resting on the brim, the mouth and neck lie inferiorly and backward; while the fundus, or upper part, is placed anteriorly, so as to lie out beyond the ensiform cartilage. To recollect this is of no small importance in turning the fœtus. If, for example, the arm present,—if the feet of the child are lying in the fundus uteri,—if you are compelled to carry the hand into the fundus, in order that you may reach and grasp these feet,—the hand must not be passed directly upon the centre of the diaphragm, but upward and anteriorly; in such manner that it may project beyond the ensiform cartilage,—where the fundus is placed. Observing this rule, you may turn with comparative facility; while considerable embarrassment may arise from its neglect.

By knowing the bearing on the spine, though you cannot see the pelvis, you are further enabled, in the living female, to place this part of the skeleton in any direction necessary for your operations. It rarely, though occasionally, is necessary to place the pelvis with the sacrum above, and the symphysis pubis below; that is, with the plane vertically. Now and then, the position may have its advantages; and this position the pelvis assumes when the woman inclines the body a little forward.

More frequently, we are desirous to give the pelvis such a position that the plane of the brim may lie horizontally;—perhaps in order to feel the head through the cervix uteri, or to ascertain the weight of the uterus by balancing it upon the finger. This position of the pelvis, will enable you most easily to make both these observations; and it is easily obtained by placing the patient in a semi-recumbent posture, with the shoulders a little elevated;—in a word,

half sitting, half lying. In retroversion of the uterus, it is sometimes necessary to invert the pelvis, in order that the womb may fall back into its natural position. This position may be obtained by depressing the shoulders, and raising the hips;—in other words, by placing the woman on her knees and elbows; and frequently (the bladder being thoroughly evacuated) this position alone will be sufficient for the reduction of the uterus. If then, you would place the plane of the brim vertically, let the woman bow; if horizontally, let her be semi-recumbent; if inverted, let her take a position on her knees and elbows.

[Levret thought that the spine of the ischium, which encroaches on the pelvis, impeded delivery; but, on the contrary, it assists it, by assisting to turn the child in the proper direction. The plane of the ischium is behind the acetabulum, running obliquely towards the outlet. Between the sacrum and the ilium, there is a thin cartilage; which, if the bones be wrenched asunder, adheres to the sacrum. I think it best to describe the sacro-sciatic ligament as one; proceeding from the side of the sacrum and coccyx, to the spine and tuberosity of the ischium; and allowing the tendon of the obturator internus muscle to pass between its insertions. If the sacrum be too much, or too little curved, it will give rise to difficulty in parturition. There is a regular joint between the sacrum and the coccyx in females, till late in life; and I have seen anchylosis of this joint impede labour.

The *adult* pelvis differs in shape from that of the *fœtus*; for, in the latter, the antero-posterior diameter is the longest; whereas, in the former, it is the shortest. The lateral diameter, in the adult, measures about five inches. The oblique diameter, from the acetabulum on one side, to the sacro-iliac symphysis on the other, is said to be a little more; but after measuring a great many, I am persuaded they are both alike. People split straws; and accoucheurs quarrel with each other, as to which of these two diameters is the longest; but it is of no practical consequence. Most persons make miseries for themselves.

From the symphysis pubis to the promontory of the sacrum, the distance measures about four inches. Of the outlet of the pelvis, the antero-posterior diameter is the longest; measuring about five inches, if the coccyx be pushed back, from the point of the latter to the symphysis pubis. A space of about four inches intervenes between the tuberosities of the ischium. The depth of the pelvis, at the anterior part, behind the symphysis of the pubic bones, is only an inch and a half. If it were more, it would make the pubic arch more confined. Posteriorly, the depth of the pelvis is five inches; or, if we follow the bend of the sacrum, five and a half. The position of the pelvis, with its axis at an inclination of thirty-five or forty degrees to the spinal column, prevents the protrusion of the abdominal viscera; nor does it render parturition more difficult. The axis of the *brim* of the pelvis, is represented by a line passing from the umbilicus, to the junction of the sacrum with the coccyx. In performing lithotomy, the operator should remember this. It is in the direction of this line,

that the child enters the pelvis. But the axis of the *outlet* of the pelvis, is in the direction of a line from the hollow of the sacrum, to the arch of the pubis. Emerging from the pelvis in the direction of this line, the child turns upward;—thus completing the circle.

The cranial bones in the fœtus are joined together, not by sutures, but by membranes. If the head, at the time of birth, be too well formed, or its bones united by sutures, the labour is rendered difficult; for if the head of the child, and the pelvis of the mother, be of the natural size, the bones of the former must overlap each other, in order to its passing easily.]*

CHAPTER IV.

VARIOUS soft parts are connected with the pelvis; some of them lying externally, others contained within; which parts it is necessary to consider;—so far, at least, as they are interesting to the obstetrician.

SECTION I.—PELVIC VISCERA.

Uterus.—If we examine the uterus, while yet unimpregnated, we find its bulk (like that of the fœtus) various in different women; as large, however, on an average as a small pear. It lies in the middle of the pelvis; with its fundus forwards, its mouth backwards, its anterior surface directed somewhat downwards, and its posterior surface upwards.

But making our observations on the womb towards the end of pregnancy,—when it becomes a most important study,—we find it very bulky; as large, for example, as the adult head; or larger. When thus enlarged by gestation, the uterus occupies about two-thirds of the abdominal cavity;—still placed in the same bearings as the unimpregnated womb;—the mouth of it lying downwards and backwards, toward the sacrum; the fundus pushing forward beyond the xiphoid† cartilage; the posterior surface still facing somewhat upwards, and the anterior surface downwards. The abdominal muscles are spread out before it; the intestines lodge above and behind it; and the bladder (which, when contracted, retires behind the symphysis pubis), when dilated, becomes interposed between the abdominal coverings and this viscus; where, in labour, its form and fluctuation may sometimes be distinctly felt.

The uterus is usually divided into the *fundus*, the *cervix*, the *body*, and the *os tincæ*. The broad upper part is called "the fundus" (from "fundus," *foundation*, or *chief part*); the narrow or lower part, has received the name of "cervix," (from "cervix", *the neck*); the space between

* Extracted from Dr. Mackintosh's unpublished Lectures on Midwifery.

† From ξιφος, *a sword*; and ειδος, *likeness*;—alluding to its *point*.

them is denominated "the body;" a transverse fissure, in the posterior and inferior part of the cervix, is called the *os uteri*, *os internum*, or *os tincæ* (from its resemblance to the mouth of the tench). The uterus is about three inches in length; two in breadth at the fundus; and one at the cervix.

The cavity of the uterus corresponds with the external form. At the place of juncture between the cervix and body of the uterus, the cavity is smaller than at any other part. From that point it expands towards the fundus; assuming a triangular shape; with two of its angles opposite the entrances into the fallopian tubes. The cavity of the uterus is lined with a continuation of the greyish mucous membrane which lines the vagina. The surface of the triangular cavity is smooth; and the membrane which covers it is soft and vascular; while, at the cervix, it is rugous. The rugæ are there beautifully arranged in an arborescent form;—hence called *arbor vitæ*, or *arbor Morgagni*. This part is by no means so vascular as the cavity above; but it contains, between the rugæ, several lacunæ (from "lacuna," a *furrow*), which secrete a mucous fluid.

The substance of the uterus is made up of numerous fibres, arteries, veins, lymphatics, nerves, and muscular fibres, curiously interwoven and connected together by cellular membrane. On cutting open the uterus, we observe that its sides are about a quarter of an inch in thickness; but are thinner at the fundus than elsewhere, though the difference is trifling.

On laying open the *gravid** uterus, we find within its cavity the egg of the human species; cousisting of a full-grown fœtus;—an aquatic animal, immersed in water, and contained in a membranous bag. Adhering to the bag or cyst, is a fleshy mass, about twice the size of a small breast; and this, connected with the fœtus by means of the umbilical cord, adheres by its convex lobular surface to the upper part of the uterine cavity; and constitutes that part so important to the accoucheur,—the *placenta*.† In the first stage of our existence, we are placed with the head depending;—this being the ordinary position of the fœtus, as that of the adult is the reverse.

The appendages of the uterus, (to which I shall next advert), are the *fallopian tubes*, the *ovaria*, and the *broad* and *round ligaments*.

Fallopian Tubes.—Two muscular tubes, of an irregular round form, proceed from the angles at the fundus of the uterus; and are named after Fallopius, the first correct describer of them. They are about three inches long; are lined with a continuation of the internal coat of the uterus; and are covered with a peritoneal coat. They originate from the uterine cavity, by very small orifices; but terminate, at the other extremity, in an expanded opening with margins; which are called the fimbriæ of the tube (from "fimbria," a *fringe;* because these parts are ragged or fringed). The communication between the uterus and ovaria is preserved through the fallopian tubes. They are wrapped in duplicatures of the peritoneum; which duplicatures are called the *broad ligaments* of the uterus; but a por-

* From *gravidus*, "pregnant." † From *placenta*, "a cake."

tion of their extremities, thus folded, hangs loose on each side of the pelvis; and, being fimbriated, is supposed to seize and convey the unimpregnated ovum, from the ovarium into the fallopian tubes.

Ovaria.—Two flattened oblong bodies, called ovaria, are situated a little below the fallopian tubes, and about an inch and a half from the uterus. They consist of a semi-cartilaginous substance; principally composed of a number of highly vascular vesicles, united by cellular structure. These are probably so many ova, charged with the rudimentary matter of the future children; and consequently vary in number. Haller says he never saw more than fifteen in one woman; Denman speaks of twenty-two; Dr. Ryan mentions an Irish lady of title, who had seven-and-twenty children; and he therefore concludes there must have been the same number of ova. Dr. Castle, from his own knowledge, mentions two instances; in one of which there were twenty-two children, and in the other twenty-seven. The ovarium is covered with the peritoneum; but when the ovum is impregnated and becomes prominent, the peritoneum which covers it is absorbed; the ovum passes into the fallopian tube; and the little scar, or altered texture, which remains on the surface of the ovarium, is called the *corpus luteum*, on account of its colour (from "corpus," *body*; and "luteus," *pale yellow*).

Physiologists very generally agree that the ovaria prepare whatever the female originally supplies towards the formation of the fœtus. This is proved by the operation of *spaying*; which consists in the extirpation of the ovaria; after which not only does the animal lose the power of conceiving, but desire is for ever extinguished. Thus, we may conclude, the ovaria stand in the same relation to the female, as the testicles do to the male.

Round Ligaments.—The round ligaments, two in number, originate from the superior lateral parts of the uterus. They run in the doublings of the broad ligaments; and, rising to the brim of the pelvis, pass over it, through the abdominal ring, and lose themselves in the mons veneris and groins. They are composed of arteries, veins, lymphatics, nerves, and a fibrous structure, united together by cellular membrane. Though small in the unimpregnated state, they become developed by gestation; when they lengthen, spread, and are more vascular.

Vagina.—In the middle of the pelvis, and in the course of its inferior axis, is situated the vagina; an organ which next deserves attention. Originating all round from the neck of the uterus, just above the mouth, (which projects into it), the vagina terminates, at its inferior extremity, in the genital fissure, or *vulva* (from "vulva," *the womb*). This canal,—from three to five inches or more in length, though various in capacity,—may be capable of containing, on an average, two or three fluid ounces; and is about three inches in length anteriorly, and (owing to the mode of its junction with the uterus) four and a half posteriorly. It is lined by a *mucous membrane* of a greyish colour; often interspersed with livid spots. It is chiefly remarkable for the number of folds, or *rugæ* (from "ruga," *a*

wrinkle), which its surface presents;—at the *upper* part taking various directions; but at the *lower* exhibiting a regular arrangement, and becoming more distinct. The rugæ run in a transverse direction; and are disposed in an anterior and posterior column. They join together laterally, and produce a raphe (from ραφη, a *suture*) at the right and at the left sides. The whole extent of the vagina (particularly towards its lower extremity) is furnished with *follicles;* the orifices of which are frequently seen.

Placed in the axis of the outlet of the pelvis, we find the vagina lies with its back on the rectum, and its front on the bladder and the urethra;—the upper portion being on the neck of the bladder, and the lower upon the urethra; so that laceration, or sloughing of the vagina, may lay open either the bladder or the rectum.

Bladder.—Closely connected with the vagina and uterus, and not to be overlooked by the accoucheur, is the *bladder*;—a musculo-membranous receptacle of ever-varying capacity. Contracted, it contains scarcely a *drachm* of urine; dilated to its full dimensions under urinary obstruction, it becomes capable of containing from *one* to *two gallons*;—not, however, without risk of laceration. Together with the *bulk* of the bladder, its *situation* is of importance. When dilated, it lodges extensively between the abdominal coverings and the uterus; when contracted, it occupies but a small space; and then lies concealed, in a great measure, behind the symphysis pubis in front. It is, of course, much exposed to pressure during the transmission of the head;—more especially when the pelvis is small, or the cranium unusually bulky.

Ureters.—The ureters (from ουρητηρ, *a urinary passage*) are two excretory ducts of the kidneys, about the size of a quill; conveying the urine, as secreted, from the kidneys to the bladder. At their origin they are situated behind the emulgent* veins; then descending obliquely inwards, behind the peritoneum, upon the psoæ muscles, they are continued into the pelvis; and terminate in the bladder,—at its under, outer, and back part.

Urethra.—The urethra (from ουρον, *the urine*), arising near the lower point of the bladder in front, is about two inches in length; and lies on the back part of the symphysis pubis; where it may be readily felt, and traced by the finger. Its roundness and firmness reminds one of a piece of cord;—a comparison which, though coarse, may be readily understood. At the point or key of the pubic arch, the orifice of the urethra opens. It is of various capacity. When large, it may admit the little finger; when contracted, it may exclude a sound; when of ordinary dimensions, it readily receives the catheter. To find the orifice is not a difficult task. Placing the finger in the arch of the pubes, and stirring it a little, you may discover the aperture there;—though not always with equal facility, yet with the same certainty as, with closed eyes, you might, by the touch, detect an aperture in a piece of moistened skin. Of course, during the trans-

* From *emulgeo*, "to melt out;" because the kidneys were supposed to strain out the serum from the blood.

mission of the child through the pelvis,—especially if the head be large, or the pelvis small,—the urethra is more or less subjected to compression. It may be closed; or it may be pushed out of its place and distorted; or, under contusion, it may become inflamed, swelled, or spasmodically contracted.

Rectum.—On the internal surface of the pelvis, posteriorly, lies a musculo-membranous receptacle, of very different form from the preceding, and of great obstetric interest;—I mean the *rectum* (from *rectus*, "straight"), or lower end of the great intestine. It rests upon the concavity of the sacrum;—one extremity opening at the anus, the other into the *sigmoid* (from the Greek letter σιγμα, and ειδος, *likeness*) *flexure* of the *colon*, to the left of the sacrum. Lying in the hollow of this bone, the rectum is placed a little obliquely;—a nicety of anatomy to be remembered by the surgeon as well as the accoucheur, when examination by the bougie, or any other instrument, becomes requisite. Of the rectum, the lower portion is formed merely by the mucous membrane, the muscular fibres, and a little cellular web; the upper half, or two-thirds above, is covered by peritoneum anteriorly; while the back part lies directly in the hollow of the sacrum;—a cellular web alone being interposed there. The superior extremity of the rectum opens into the sigmoid flexure of the colon; the inferior opening, at the anus, is surrounded by a broad muscle, called the *sphincter* (from σφιγγω, *to shut up*);—of various breadth, thickness, and strength, in different bodies. During a mismanaged labour, the sphincter ani is sometimes torn; and the retentive power of the rectum is lost,—at least for a time;—not without great discomfort and vexation to the patient; who, by this infirmity, is excluded from the social circle.

Soft Parts lining the Pelvis.—Let us next examine the various soft parts which, immediately lining the pelvic cavity, are intimately connected with the pelvic viscera already considered.

Internal Pelvic Muscles.—There are several muscles in the pelvis which require notice from the obstetric student;—the *psoæ*, the *iliaci*, the *obturatores interni*, the *pyriformes*, and the *levatores ani* being the principal.

The *psoas magnus* (so called from ψοαι, the loins) is a considerable muscle, placed close to the sides of the bodies of the lumbar vertebræ, and extending along the brim of the pelvis. It arises, by distinct tendinous and fleshy portions, from the transverse processes, and from the sides of the bodies, of the last dorsal and four first lumbar vertebræ. These processes unite to form a round and fleshy belly, which descends before the inner portion of the iliacus, then over the junction of the os pubis and ilium, and terminates in a strong tendon, to be inserted into the trochanter* minor, and the body of the os femoris,† a little below that process.

The *psoas parvus* is a small muscle situated in front of the last named; but often wanting. It arises, thin and fleshy, from the side

* From τρεχω, *to run*; because the muscles inserted into it assist in running.

† From *femur*, "the thigh."

of the bodies of the two uppermost lumbar vertebræ, and sometimes from the last dorsal; it then extends over a part of the psoas magnus, and terminates in a thin flat tendon, which is inserted into the brim of the pelvis, at the junction of the os pubis and ilium.

The *iliacus* (from *ilia*, "the flanks") is a large muscle, filling up the hollow of the sacrum, and giving support to the gravid uterus and intestines. It arises, fleshy, from the inner lip of the ilium, from most of the hollow part, and likewise from the edge of that bone, between its anterior superior spinous process, and the acetabulum. It joins with the psoas magnus, where it begins to become tendinous; and, passing under the Poupart's ligament, is inserted in common with that muscle.

The *coccygeus* is a small muscle, situated upon the front of the sacro-ischiatic ligaments. It arises, tendinous and fleshy, from the spinous process of the ischium, and is inserted into the extremity of the sacrum, and side of the os coccygis (whence its name).

The *pyriformis* (from *pyrus*, "a pear," and *forma*, "shape") arises within the pelvis, by distinct fleshy portions, from the anterior surface of the sacrum, between the foramina which give passage to the nerves; also from the anterior sacro-ischiatic ligament, and adjacent part of the ilium. Thence passing through the great ischiatic hole, it descends obliquely outwards, and ends in a round tendon; which, descending over the capsule of the hip, is inserted in a cavity on the inner side of the trochanter major, above the tendons of the gemelli (from *geminus*, "double") and obturator internus, with which it is intimately connected.

The *obturator internus* is situated on the inner side of the obturator foramen, within the pelvis, and covered by the levator ani muscle. It arises, by very short tendinous fibres, from about the upper half of the internal circumference of the obturator foramen. It is composed of several distinct fasciculi, which terminate in a roundish tendon, surrounded by muscular fibres; then passes out of the pelvis, through the niche that is between the spine and tuberosity of the ischium, to be inserted into the cavity of the trochanter major.

Lastly, the *levator ani* is a strong muscle, with glossy tendinous fibres, arising from the posterior part of the os pubis, from the ilium above the obturator internus, from the spine of the ischium, and from the fascia* covering the obturator internus. It passes obliquely downwards and backwards, upon the side of the bladder, vagina, and rectum; and from the *side* of the rectum it is continued to the *back* part of the intestine. Its fibres, tending towards the perinæum and the anus,† partially close the outlet of the pelvis.

Blood-vessels.—In the pelvis, connected with the softer parts, we meet with blood-vessels, not to be passed over in total silence;—consisting of the *internal* and *external iliacs*. The *external* iliac veins and arteries‡ lie upon the sides of the false pelvis, beneath the outer

* From *fascis*, "a bundle;" into which it collects the muscles.

† From *onus*, "a burden;" as bearing the weight of the intestines.

‡ From *αηρ*, *air*; and *τηρεω*, *to keep*;—because thought by the ancients to contain air instead of blood.

margins of the psoæ muscles; while the *internal* iliacs, spreading over a wider surface, are deposited on the sacro-iliac synchondrosis; in the vicinity of which their pulsations may be sometimes felt.

*Absorbents** *and Glands.*—Accompanying the blood-vessels, as is usual, we have lymphatics and their glands; and there are some lymphatics, with their conglobates,† accompanying the *external* iliacs, and others the *internal* system of vessels. Into a minute consideration of the pelvic lymphatics, it is not my intention to enter; for they are not of much obstetric importance. I may observe, however, that on the loins and the back of the vagina, glands are seated; which, sometimes swelling, may become as large as a pullet's egg; though they rarely obstruct parturition.

Nerves.—In your obstetric studies, the pelvic nerves are not to be forgotten;—the *anterior crural* (from *crus*, "the leg"), the *great sciatic* (from *ischiaticus*, "belonging to the ischium"), and the *obturator*, being of especial importance.

The anterior crural nerve,—arising from the first, second, third, and fourth lumbar nerves, and lodging, as it passes through the true pelvis, under the outer edge of the psoas muscle on either side,—is preserved from direct uterine pressure by the interposition of this muscle. In conjunction with the fleshy mass, however, it is obnoxious to compression, when the womb is large and ponderous.

Originating from the second, third, and fourth lumbar nerves, the trunk of the obturator nerve is found in the sides of the true pelvis; lying, as it were, on the denuded bone; perforating the upper and posterior portion of the obturator ligament; and, when the head is large, the pelvis small, or instruments are used, susceptible of much injury.

The branches of the great sciatic trunk, formed ultimately by a coalition of the lower lumbar and the upper sacral nerves, are situated principally in the region of the synchondrosis; during the passage of the fœtal cranium, when room is deficient, these origins of the nerves lying on the sacro-iliac syncondrosis, must be more or less exposed to compression, from instruments or the head.

The nerves of the uterus are derived from the lower mesocolic plexus (from μεσος, *the middle*; κωλον, *the colon*; and "plector," *to plait*); and from two small flat circular ganglions (from γαγγλιον, *a knot*), which are situated behind the rectum. These ganglions are also joined by a number of small branches from the third and fourth sacral nerves.

Cellular Web.—Connecting the soft parts, and lying internally, there is a cellular tissue, which has its claim on our attention; as it invests those parts not covered by peritoneum (from περι, *around*, and τεινω, *to stretch*), and sometimes becomes the seat of inflammation, and more rarely of a fatal suppuration.

The pelvic viscera are partially invested by peritoneum. This membrane detaches itself from the abdominal muscles below; covers

* From *absorbeo*, "to suck up."

† From *conglobo*, "to gather into a ball."

the body of the urinary bladder posteriorly; lines the upper part of the uterus in front; spreads over the whole of the womb, and perhaps two-thirds of the vagina posteriorly; and is afterwards reflected, so as to double upon itself, extend over the rectum in front, and generally over the back of the pelvis. Under this distribution, therefore, in the human body, the whole of the neck of the bladder, with the front of its body, the whole of the vagina in front, with the lower portion of the uterus, a small portion of the vagina behind, and, the whole corresponding portion of the rectum below, together with the whole posterior part of this organ where it rests upon the sacrum, receive no investment from this abdominal membrane;—these surfaces being clothed solely by a cellular web, subject to inflammation and suppuration, as before stated.

SECTION 2.—SOFT PARTS IN CONNEXION WITH THE PELVIS. EXTERNAL ORGANS OF GENERATION.

The external parts of generation (from γεινομαι, *to beget*) in the female, are,—the *mons veneris*, the *labia*, the *clitoris*, the *nymphæ*, the *meatus urinarius*, the *orifice of the vagina*, the *hymen*, and the *perinæum*.

Mons Veneris.—Immediately over the symphysis of the pubis, and part of the insertion of the recti muscles, there is a prominence; which, at the age of puberty, is covered with hair. This is called the *mons veneris*. It consists of an accumulation of cellular and adipose membrane; and is covered with hair, in order (it is said) to prevent injury during sexual intercourse.

Labia Pudendi.—From the lower part of the mons veneris proceed the two *labia pudindi externa*, or lips of the genital fissure. They pass downwards and backwards, and terminate within an inch of the anus;—forming a part of the perinæum. They are composed of skin, cellular membrane, and fat; are thicker above than below; are, like the mons veneris, covered externally with hair; and internally are lined with a beautifully fine and sensible membrane, which is of a florid red colour, in young subjects; and is abundantly supplied with glands, that constantly secrete a fluid, for the especial protection of these parts against cohesion. They are closer above than below; and are joined behind by a small bridle, called the frænum labiorum, or the fourchette; which part is generally torn during parturition. The places where the labia are connected to each other, above and below, are called the *superior* and *inferior commissures*.

The fissure formed by the labia has received various names; the most common of which are the *vulva*, the *pudendal fissure*, and the *genital fissure*. It is narrower above than below, and is smaller and closer in persons before conception than afterwards.

Clitoris.—On separating the labia we observe, directly beneath their superior union,—exactly at the lower part of the pubic junction,—a small projecting body; which, in structure, appearance, and sensibility, strongly resembles the penis; it is called the *clitoris* (from κλειω,

to conceal). It consists of a body, formed by the junction of two crura, or corpora cavernosa, contained in a ligamentous sheath, with a septum between them. The crura are upwards of twice the length of the body; and, together with the muscles belonging to them, are attached to the cura of the ossa ischii and pubis. It is also provided with a glans, which is covered by a continuation of the skin of the labia; forming, at its inferior extremity, a semilunar fold, and called the *præputium clitoridis.*

The clitoris has the power of erection; and is supposed, by some physiologists, to contribute to sensual gratification in the female.

Vestibulum.—Behind the glans of the clitoris, and between the nymphæ, is a triangular space, about an inch in extent, called the vestibulum (*a porch*); which does not fulfil any function in generation.

Nymphæ.—From the prepuce of the clitoris, a fold or doubling of skin is continued down on each side of the labia;—resembling them in form, but smaller and more delicate in texture. These folds have received the name of *labia minora*, or *nymphæ* (from *νυμφα*, *a water nymph*;—so called, because they stand in the course of the urine, which they are supposed to direct downwards). They pass on each side of the pudendum, within the labia, to about half their length; when they gradually diminish till they disappear. The nymphæ are also supposed to contribute to sensual pleasure.

Meatus Urinarius.—Immediately below the inferior edge of the symphysis pubis, between the nymphæ, is the orifice of the urethra, or meatus urinarius; which is a small prominence about the size of a split-pea, and resembling a dimple. By drawing a finger along the junction of the bones of the pubis, this orifice can in general be readily detected. The orifice of the meatus is surrounded by several lacunæ,* or follicles; sometimes called *Cowper's glands.* They are of considerable depth; and secrete a viscid mucus, to defend the parts from the acrimony of the urine.

Orifice of the Vagina.—About a third of an inch below the orifice of the urethra, and almost immediately under the symphysis pubis, an opening exists, which is called the orifice of the vagina,† or *os externum.* It is surrounded by a sphincter muscle; and by a congeries of blood-vessels arranged like net-work, and termed the *plexus retiformis* (from *rete*, "a net," and *forma* "resemblance). This sphincter muscle has various degrees of power;—owing either to original conformation, or the habit of exerting it, or both.

Hymen.—In the virgin, the orifice of the vagina is naturally closed by a membrane, called the *circulus membranosus*, or *hymen* (from *Υμην*, the god of marriage; because its rupture was viewed as a sacrifice to that deity); which distinguishes the human female. It is a delicate, vascular, and sensitive membrane; which, together with the contiguous parts, suffers a good deal of pain when pressure is made upon it. It is of various forms, though generally semilunar. It nearly closes up the orifice of the vagina;—leaving only a small opening at the upper part, for the escape of the menstrual fluid. Some-

* From *lacus*, "a channel." † From *vagina*, "a sheath."

times it is circular;—containing a free central aperture, capable of transmitting the tip of the little finger. Sometimes there are several small holes instead of one; and then it is said to be *cribriform*, or *cribriated* (from *cribrum*, "a sieve"). Sometimes it closes the orifice of the vagina entirely;—leaving no opening for the escape of the menstrual fluid; and then it is said to be imperforate. It is said to be ruptured in the first nuptial congress; and consequently it used to be considered an unerring test of virginity. This, however, is not correct; as it has been found *wanting* in female infants and girls, and it has been found *entire* in pregnancy. Besides, its rupture might be occasioned by various circumstances, without the occurrence of sexual intercourse.

Carunculæ Myrtiformes.— Certain little fleshy excrescences are observed in the orifice of the vagina; and, from their reputed resemblance to myrtle-berries, have been called *carunculæ myrtiformes*. Some consider them as the remains of the hymen;—an opinion which is denied by others, on the ground that the two may coexist. Their use is not clearly known; unless it be to protect the orifice of the vagina against the admission of dust, air, or other foreign bodies.

Perinæum.—The perinæum* lies between the fleshy swelling of the lower portion of the nates;—extending from the genital fissure to the extremity of the rectum. It consists, externally, of the common integuments; and internally, of the posterior portion of the vagina;—having a little cellular web, and perhaps a few of the sphincter fibres interposed. The whole structure spreads, by continuity, to the internal and adjacent parts; and forms the front of the rectum; a part of which intestine sometimes stretches forth when the head emerges; and gives, for the time, additional extent to this important structure. The extent of the perinæum is generally about an inch and a half; though, in some subjects, it is not more than one, and in others is equal to three inches.

[The levator ani muscle, which lines the sides of the pelvis, is perforated for the passage of the urethra and the vagina; and sends off fibres, which form a kind of sphincter round the orifice of the latter. The pressure of the fœtal cranium on different nerves, as it passes through the pelvis, causes pain in different parts of the legs. Indeed, parturition is a very painful process. I told a woman (the mother of two children) who was about to undergo amputation of a leg, that she would not suffer so much during the operation, as she had undergone in either of her labours; and she declared afterwards it was true.

The mons veneris differs much in different cases. It is sometimes characteristic of different nations. It varies in size as do the mammæ; and seems to correspond with them. The labia are lined with a fine mucous membrane, which resembles that of the mouth. The posterior commissure of the labia is called the fourchette. There is a fold of mucous membrane there, called the frænum labiorum;

* From περι, *about*; and νεω, to *accumulate*;—for perspiration is apt to accumulate there.

which is generally torn in the first labour. The nymphæ are duplicatures of mucous membrane, with cellular tissue between them, and supplied with numerous vessels. They are said to become rigid and stiff during the venereal passion. They may be minutely injected by a pipe fixed in the pudic* artery. They seem to take their origin from the clitoris; and differ in different women, and different nations. If the nymphæ and clitoris are large, they may cause inconvenience from being subjected to friction; and in some Asiatic tribes, women are employed to excise these parts, in order (as they think) to preserve the chastity of those who undergo it. These parts are very large in Hottentot females. The clitoris is attached to the pubic bones; and is said to be erect in coition. It has sometimes a perforation; which, however, extends only a little way. Fabricius mentions a female, who had a clitoris which resembled "a goose's neck;" and he saw a preparation taken from a female child that had been christened as a boy;—owing to the large size of the organ in question.

The orifice of the urethra is situated about an inch below the clitoris (sometimes, however, considerably nearer or more distant), and immediately above the entrance of the vagina. It is important to be well acquainted with its situation, in the introduction of the catheter, which is more frequently bungled than any other operation; for the orifice is sometimes not felt in its usual situation. Sometimes the orifice is within the vagina. Accoucheurs get into the habit of trusting to their fingers; so that, in one case, I distinguished an ulcer better by the feel, than when I saw it by means of a speculum.

The urethra is not more than an inch and a half long, at the utmost; but in one case I found its length increased to four or five inches;—owing to the fundus of the bladder having become attached, by inflammation, to the umbilicus. It is lined with mucous membrane, is of a spongy structure, and is provided with numerous follicles.

The orifice of the vagina is situated about an inch and a half below the arch of the pubis, and midway between the anterior part of the tuberosities of the ischium; and runs backward. The vagina itself curves upward; and its orifice is the narrowest part of the canal. The sphincter of the vagina is sometimes very powerful in women.

In some women the hymen is wanting at birth; in others it is lost by disease; but it is generally present, and is sometimes imperforate. In the "Dictionnaire de Medicine," a hymen in an old woman is represented as the rarest phenomenon in France. It has three forms. The first is that of a curtain, with a central slit. The second is that of a band, or bridle, running vertically;—like the hymen of a filly. Dr. Kellie, of Leith, was called to a case of lingering labour, in which a hymen of this kind obstructed the birth. Then, as the third form, we may have a crescentic hymen. When this gives way, we find in its place the carunculæ myrtiformes, generally three in number, which are its remains. Some have denied the existence of the hymen; but the wise of all nations have admitted it; and, among the

* From *pudor*, "shame.

Hindoos, there are rules for rupturing it. Sometimes it does not exist even in virtuous women. It puzzled even Solomon.*

The os uteri feels like the point of the nose when we press on it with the finger, so as to separate its cartilages. In the middle of the cervix of the uterus, its cavity widens; for it is narrower at each end than in the middle. The rugæ in the cervix tend to retain the coagulable lymph which is thrown out after conception, so as to close up the uterus. The mucous membrane which lines the cervix, is not so vascular as that of the body of the uterus; and the latter is smooth, while the former is furnished with the rugæ we have mentioned. The Fallopian tubes, at their trumpet-shaped extremity, easily admit a probe, or even a blow-pipe; while, at the other extremity, a bristle can scarcely be passed into them. I suppose their fimbriated extremities embrace the ovaries during coition; and, by a vital process, suck in a vesicle. They are furnished internally with folds; which become less evident after conception. The ovaries are soft, spungy bodies; which do not appear vascular till after conception, and then only in one part. Haller says, that the ovaries contain fifteen vesicles; but it is difficult to count them; for, in making sections of an ovary, you cut its vesicles into pieces. The broad ligaments are attached, on each side, to that part of the pelvis which corresponds to the junction of the sacrum with the ilium. The rectum is so closely connected with the uterus, and especially with the vagina, that in dissecting the lower part, we cannot tell where the rectum ends, and the vagina begins. In the unimpregnated state, the broad ligaments lie by the side of the vagina. The round ligaments come off below the Fallopian tubes; lie along the broad ligaments; and pass through the opening in the external oblique muscle, in company with the vessels. The latter separate from the round ligaments, and pass into the thigh; and therefore leeches used to be applied to the groin, in diseases of the uterus; but there is now a good way of applying them to the os uteri.†]

CHAPTER V.

THE FŒTUS OBSTETRICALLY CONSIDERED.

I shall now proceed to the consideration of those properties of the child, a knowledge of which is important to a thorough comprehension of its mode of transmission through the pelvis. Examining the child obsterically, it may be conveniently divided into *three* parts;—the *head*, *trunk*, and superior and inferior *extremities*. Of these three parts, it is the head only which requires attentive study; as under the natural presentations, it is the head that constitutes the principal impediment, where a labour is obstructed. Rarely is there much difficulty in abstracting the trunk and extremities; though, now and

* See "Notes of Lectures on Forensic Medicine; by the late John Mackintosh, M.D." Page 99.

† Extracted from Dr. Mackintosh's unpublished Lectures on Midwifery.

then, it is true, if the shoulders are large, they may not descend with ease. Besides, there are no differences between the trunk and extremities of the fœtus, and those of the adult, that, from their effects on parturition, require the study of the obstetric practitioner.

With the view, then, of simplifying the subject as much as may be, my observations on the fœtus will be principally confined to its head,—the cranium especially. And I may set out by observing of the head, what I have already observed respecting the pelvis;—that no two, perhaps, can be found precisely similar to each other. Of these differences in the make of the head, however, there are some, in a practical view, of little importance; on which, therefore, I forbear to dwell; while there are others of no small obstetrical interest; and requiring, therefore, a more careful consideration. These more important varieties may be divided into two classes; namely, those of a *standard make*, and those heads which *deviate* from the standard. First, let us consider the standard head; or that variety which, on the whole, is most frequently met with in practice.

SECTION 1.—STANDARD HEAD.

The standard head of the fœtus is a large oviform mass, resembling somewhat the *egg of the ostrich*;—the long diameters of which lie between the front and back, and the short diameters from side to side. In the measurement of this oviform cranium, there is considerable variety; it becomes less requisite, therefore, that we should recollect its dimensions with accuracy. But, though it is not necessary to bear in mind the precise number of inches and lines* contained in the different diameters of the cranium, thus much should never be forgotten;—that the long measures of the head lie between the front and back, and the short between the sides. It is proper, however, that the obstetrician should not be unacquainted with the average measure of the fœtal head; and therefore a few words will not be useless or misplaced.

From side to side, between the tuberosities of the parietal bones, the average measure may be about *three inches and a half*. Between the front and back, from chin to vertex, the average is about *five inches and a quarter*; and this is its greatest diameter. From the lower part of the occiput to the upper part of the forehead, the measure on an average is about *four inches*; and from the lower part of the forehead to the upper part of the occiput, about *four inches and a half*.

The head, measured in this manner at its different parts, and giving different diameters, will, consequently, occupy more or less room, according to the position in which it lies with respect to the aperture that transmits it. The head, therefore, may be so placed, that it will pass through various apertures of unequal size, with equal facility. Now it must, therefore, occupy much less room in the pelvis in some positions than in others.

* A "line" is a useful measure, derived from the French; and consists of the twelfth part of an inch.

Meddlesome midwifery is *bad* midwifery;—frequently shall I repeat this axiom. In ordinary labour, the accoucheur has little to do. He sits at the bed-side; he watches the progress of the labour; he supports the perinæum; he receives the child; and ties the umbilical cord. In the first part of the labour, his duties extend no further; nor is it necessary that he should consider the advantages or evils resulting from the varying positions of the head. But in cases of difficulty,—when the head is large, or the pelvis small, and it is necessary to have recourse to manual or instrumental assistance,—then, indeed, it becomes important to know in what position you can place the head, so as to occupy the least room. Suppose a child were descending through a contracted pelvis, feet first;—that is, under the crural presentation. In such a case, it would become imperative to assist the descent; as detention in the pelvis might endanger life. If the head (when at the brim) be placed with the face in front, and the occiput on the promontory of the sacrum,—the long measure of the head being opposed to the short measure of the superior aperture,—it could not be drawn through. If the position be altered, and the face and occiput respectively be placed in the sides of the aperture; still, if the chin be on one side, and the vertex on the other, the brim becomes filled completely, and the head does not pass without difficulty. But if the chin of the fœtus be placed upon the chest,—so that the shortest of the three long diameters (that stretching between the summit of the forehead and the lower part of the occiput) may correspond with the long diameter of the brim,—then a large space will be obtained. Or (to give another example) if, the pelvis and head being of standard dimensions, the face lie forward throughout the delivery, of course a difficulty is produced at the brim;—the long diameter of the head being opposed to the short diameter of the aperture; and if the chin start from the chest, so that the longest diameter of the head becomes opposed to the short diameter of the brim, extraction then becomes impracticable. But if you carry your knowledge of first principles into practice; if you recollect the brevity of that diameter which stretches between the upper part of the forehead and the lower part of the occiput; and if, by placing the chin on the chest, you bring this shortest of the three long diameters to a correspondence with the short diameter of the brim,—the head will readily descend.

The cranium of an adult is compact and unyielding, but not so the cranium of the fœtus; for the latter possesses a degree of flexibility and conformability, fitting it for certain changes of form and diminutions of bulk, which materially facilitate its transmission through the pelvis. This conformability of the head,—a most valuable obstetric property,—arises from the nature of the sutures; which,—instead of being compacted edge to edge, or united by serration, as in the adult,—are placed in connexion with each other by means of cartilage;—a yielding substance, which communicates to the head a degree of softness and conformability. Hence it sometimes happens that, although in the morning of the day the cranium

cannot be abstracted, even with the lever or the forceps dexterously used, yet in the evening the head may descend easily enough, and the child may be born alive;—as I have myself seen. In the morning, perhaps, the *os uteri* had been laid open, and the water discharged for a short space of time only;—say for two or three hours;—the head not having had time to adapt itself to the apertures, to alter its shape, or diminish its bulk; but in the evening, after the long-continued action of the womb, the form is changed; the bulk is diminished; and, when prepared in this manner, the head descends.

A knowledge of the position of the head being very important to the obstetricion, it becomes necessary that he should consider the characters by which the different parts of the head may be recognized, while lying within the body of the mother.

The *eyes*, the *nose*, the *mouth*, the *ears*, are easily distinguished *by the eye*; but a little attention is requisite to enable you to discriminate them while laying *within the womb*. I was once called in to a reputed facial presentation;—the surgeon telling me, that he had put his finger into the *mouth*. On making an examination, I found the *nates* presented. Now there is more difficulty in recognising the mouth of a fœtus than many suppose; because it is generally edentate;—that is, destitute of teeth; and I remember very well, when I first had my finger in the mouth of an unborn infant, I scarcely knew where it lay. So with respect to the eyes and nose, you may not be able to distinguish them, if you have not been in the habit of feeling them after birth. I advise you, therefore, in beginning practice, on every occasion when a child lies in your way, to pass your fingers over the nose, eyes, and mouth; and, indeed, over the other parts of the body; so as to acquire a familiarity with their tangible characteristics.

To recognise the vertex, the pelvis, and other parts, when lying within reach, you must be well acquainted with certain sutures; and these are the *sagittal*, the *frontal*, the *lambdoidal*, the *coronal*, and perhaps I may say the *squamous*. A knowledge of these is most desirable in midwifery. The *sagittal* suture stretches from the front of the head to the back;—uniting the parietal bones. No suture has the accoucheur more frequent occasion to mention;—its name is familiar to every obstetric ear. The *frontal* is that suture which stretches from the sagittal to the root of the nose;—sometimes open throughout in the full-grown fœtus;—generally open at the superior part, where it meets the coronal and the sagittal. The *coronal* suture is that which stretches from one side of the head to the other,—from ear to ear; crossing the sagittal and frontal at right angles; and connecting the os frontis with the parietal bones. The *lambdoidal* suture lies at the back of the head, on the occiput; resembling the Greek capital lambda (Λ);—whence its name. It unites the occipital bone with the ossa parietalia. On the sides of the head are seated the squamous sutures; and they unite the squamous portions of the temporal with the parietal bones. The squamous on either side, the sagittal,

the frontal, the coronal, the lambdoidal;—these, then, are the sutures which it is important for the accoucheur to recollect.

When I examine the cranium further,—with a view to ascertain the features by which it is characterized,—I find there are two regions where the *osseous* matter is deficient; and these, yielding under the touch, appear sometimes to pulsate a little; and form what are called the *moulds*, or *fontanels* (from *fons*, "a fountain;"—from the pulsation),—small and large. The former,—situated at the point of meeting between the lambdoidal and sagittal sutures,—is of triangular shape, small size, and has three concurrent sutures. The latter,—placed at the point of union between the sagittal and frontal sutures on the one hand, and the two lateral portions of the coronal on the other,—is distinguished by its rhomboidal shape (from ρομβυς, a geometrical figure, having four equal sides, but not right angles), broad extent, and the meeting of *four* sutures there. And thus it is that, in my own practice, I am enabled to discriminate these fontanels, even within the person of the patient;—the greater, by its large size, rhomboidal or diamond shape, and the conflux of *four* sutures;—the less by its smaller size, triangular shape, and the communion of *three* sutures. The latter characteristic is less decisive, however; because, at the conflux of the coronal and squamous, there are three portions of sutures also. These fontanels are sometimes larger than at others. Little portions of bone, called *ossa triquetra*,* are occasionally interposed between the edges of the sutures; which, though sometimes narrow, are occasionally broader than usual. In the head of the fœtus, then, the parts deserving obstetric attention, are,—the form of the head,—the measures,—the conformability,—the sutures,—the fontanels;—not to mention the more familiar features by which the different parts are recognised.

SECTION 2.—DEVIATIONS FROM THE STANDARD HEAD.

We now proceed to comment on deviations from the standard;—so far as these are important in the practice of midwifery. A head unusually small is of little interest; because it gives rise to no difficulty in parturition. But when large, difficulties during the birth may be the result;—more especially if the cranium be too firmly ossified, and the pelvis do not exceed the ordinary dimensions. Cases of this kind, however, may be easily managed, according to the rule already laid down;—always recollecting that a meddling midwifery is bad. When you suspect there is a large head, first give a fair trial to the natural efforts for four-and-twenty hours after the discharge of the liquor amnii;—provided no dangerous symptoms appear. But if dangerous symptoms supervene, and the natural efforts fail, four-and-twenty hours after the discharge of the liquor amnii,—the head not advancing,—you are, I conceive, justified in having recourse to the lever or forceps;—instruments never to be used without an overbearing necessity. If, again, the lever and

* From *os, ossis*, "a bone;" and *triquetrus*, "triangular."

forceps fail, and dangerous symptoms manifest themselves; or if six-and-thirty, or eight-and-forty hours have elapsed after the discharge of the waters,—the head making no progress,—you would then be justified in laying open the child's head;—proceeding on the same principle as in cases of contracted pelvis.

The management of this case, therefore, is exceedingly simple; and to be conducted on general maxims. No nice measurements of the pelvis are required;—no uncertain conjectures respecting the bulk of the head. The rule here given emancipates you from these difficulties. The natural efforts, as usual, are to be fairly tried; nor may you lay your hand on instruments, till compelled by a necessity which is inexorable.

Sometimes, in consequence of *compression* during labour, the head deviates much from the standard; and becomes an important obstetric study. In facial presentations, frequently though not universally, the blood accumulates; the features swell; and altogether the parts are so much changed, that you have some difficulty in recognising them,—even when the child is under your eye; and much more so when it lies within the pelvis. The same happens with respect to the vertex; for,—where there is a want of room,—where there is a rigidity of the softer parts,—and where the head does not lie in position favourable for transmission,—you may find the parts about the cranium so much swelled, that it resembles the breech more than the head. Many who may have been in obstetric practice for a considerable time, and may boast some hundreds of cases under their care, on feeling the swelled head for the first time, may not be able to distinguish it from the breech;—a piece of tact, which is to be acquired solely by taking every opportunity of examining these swelled heads,—after the children are born, as well as previously.

The head is sometimes found greatly enlarged from the disease called *hydrocephalus*;*—a morbid affection, which is by no means very uncommon before delivery, and which I have more than once encountered in my own practice. It is known, on diligent examination, by puffiness of the vertex, by obscure fluctuation there, and by a sagittal suture unusually broad;—as broad, for example, as the three fingers. Where the head is hydrocephalic, you may, if you please, carry your hand into the uterus;—you may, if you please, burst the vagina;—you may, if you please, rupture the uterus, turn the child, and pull its head from its body;—but have some little mercy. I will not say that it is never necessary, in cases of hydrocephalus, to turn the child by introducing the hand; but surely such necessity is rare. Meddlesome midwifery is bad. The operation of turning, though sometimes trifling, is sometimes tremendous. Among the young and the interesting,—among the matronly and the respected, how many have been its victims! Give, therefore, a trial to those natural efforts, which, by the wise accoucheur, are never hastily distrusted. The natural efforts failing, puncture the head;—should the lever or forceps have been previously tried without success.

* From ὑδωρ, *water*; and κεφαλη, *the head*.

Under the natural efforts, when the pains are strong, the cranium sometimes busts open; or, the spaces between the sutures being large, the head may become compressed; and, notwithstanding its extraordinary bulk, may unexpectedly emerge.

There is yet another variety of head, of no small importance in practice;—I mean the head of the *dead* fœtus. Where a child has been dead in utero for days, perhaps, before parturition,—or where it has died at the very commencement of the labour, you will find it undergoes conspicuous and tangible changes. The skin softens; the cuticle desquamates; the brain is pulpified by putrescence; and, the contexture of the bones being dissolved, the different pieces of the cranium separate from each other; so that, as Dr. Hunter used to express it,—not inappositely, though quaintly,—"the scalp with its bones feels like so many nut-shells in a bag." If, then, you find that the head is softened,—that the cuticle is coming away in flakes upon the finger,—that the cranial commissures are thorougly dissolved, and the bones, detached from each other, are floating upon the pulpy brain, you may look on the decease of the fœtus as certain. That the mother has not felt her child for weeks together, is no decided proof. Mobility of the bones alone deserves no reliance whatever. Cuticular desquamation itself (possibly in consequence of cutaneous disease) is an ambiguous indication. The total dissolution and breaking up of the bony structure of the cranium is the best, and perhaps the only certain sign of death. Many a child, rashly pronounced to be dead, breathes and cries immediately on leaving the vagina; and the recollection of these acknowledged truths may, I trust, hereafter paralyze some prurient murderous hand, too eager for the perforator.

I shall conclude my remarks upon those fœtal heads which deviate from the standard, by observing that we sometimes meet with heads without brains. By the Germans, in consequence of their resemblance, these crania are called *cat's-heads*;—a denomination by no means inappropriate. The bones of the occiput, front, sides, and summit, are wanting; while those which form the basis cranii are perfect enough. I notice this defective organisation, because, where it occurs, and where the accoucheur is not in full possession of the confidence of the family, it leads sometimes to an ill-grounded suspicion, that the cranium has been laid open. Observe, therefore, that this is nothing more than a particular variety of monstrosity, on the whole not unfrequent. Within the circle of my own obstetric acquaintance, four or five examples of this brainless monster have occurred; and in two instances gave rise to unpleasant and unjust surmises.

SECTION 3.—PRESENTATION AND SITUATION.

Before entering on the next important topic,—I mean the passage of the full grown fœtus through the pelvis,—it may not be amiss that I should explain the meaning of two obstetric terms of frequent use;—*presentation* and *situation*. By *presentation*, the accoucheur

(accurate in his language) understands that part of the child which is found lying over the centre of the pelvis. Thus the arms, the face, the breech, the legs, and so on, may constitute the presentations; for these may lie successively over the centre of the pelvis. By the *situation* of the child,—when speaking of its passage through the pelvis,—we mean the place of it, with respect to the surrounding bones. Thus, when the vertex of the child presents, one ear is situated on the symphysis pubis, and the other on the sacrum; the face on one side of the pelvis, and the occiput to the other. Again, when the arm presents, the head is situated on the one os innominatum; the body on the other; the abdomen in front; and the back in the posterior part of the uterus. So then (to drop a more extended exemplification), in the accuracy of obstetric language, by "presentation" we mean that part of the child which is lying over the centre of the pelvis; and by "situation," the place which the child holds with respect to surrounding bones.

CHAPTER VI.

THE VARIOUS MODES IN WHICH THE CHILD IS TRANSMITTED THROUGH THE PELVIS.

The fœtus may pass the pelvis, or attempt a passage, under *four* different presentations;—of the *head*,—of the *feet*,—of the *breech*,—and those in which the child is lying across the pelvis. Under one or other of those general presentations,—cephalic, natal, crural, or transverse,—the passage of the pelvis must be accomplished or attempted.

SECTION 1.—CEPHALIC, OR HEAD-PRESENTATIONS.

Of all the presentations, the cephalic are decidedly the most common; and of the parts of the head, that which presents most frequently, and which forms the presentation in all ordinary labours, is the *vertex*, or that part of the summit around which the hair is curvilinearly arranged.

Vertex-Presentation.—When the vertex presents,—as in an ordinary labour,—we find, in the commencement of parturition, that the face is lying upon the sacro-iliac synchondrosis, the occiput on the acetabulum, and the chin upon the chest; and in this position the head descends with facility. In consequence of the face lying in this manner towards one side of the pelvis, and the occiput towards the other, the long diameter of the head (stretching from before backward), is in correspondence with the long diameter of the brim, which reaches from side to side;—the two diameters agreeing with each other. If the face lie forward, the head will not descend with

equal facility;—the long diameter of the head being opposed to the short diameter of the brim. Evident advantage, therefore, is derived from the natural situation;—the face lying towards the sacro-iliac synchondrosis; and the occiput being opposed to the acetabulum; so that the long diameters correspond.

In a labour that is natural,—the vertex presenting,—we also find the chin depressed upon the chest; so that the two parts are brought into contact with each other. The chin being thus placed upon the thorax, the occiput descends; and you bring the shortest of the three long diameters, or axes of the head,—that, I mean, which is stretching between the upper part of the forehead and lower part of the occiput,—to bear upon the long diameter of the brim;—a great deal of clear space,—into which the whole mass of your fingers may be passed,—being retained, in this manner, at the side of the pelvis. If the chin be separated from the chest,—so that the longest of the three diameters of the head (namely, that stretching between the chin and the vertex) is made to correspond with the long diameter of the superior aperture,—a larger space is in consequence occupied, and (excuse the levity) the brim becomes brim*ful*. Thus we find, on examination, that in this natural position of the head, the cranium lies in fact in that exact situation, beyond all others, the most favourable for transmission through the brim;—the chin being brought upon the chest, the face upon the synchondrosis, and the occiput upon the acetabulum. In these favourable positions plenty of room is obtained; and the head of the fœtus readily descends.

When the head reaches the outlet of the pelvis, it emerges in the following situation. The vertex presenting, the occiput lies out under the arch of the pubes; the face and part of the forehead are deposited in the hollow of the sacrum; and the sagittal suture stretches along the perinæum, or that portion of the softer parts which is interposed between the genital fissure and the anus. Now if you examine this position of the head at the outlet, and compare it with those properties of the inferior aperture which I formerly explained, you will see that nature, in an ordinary labour, places the head in the position most favourable for its passage. The face and forehead lying in the hollow of the sacrum, and the occiput lying out under the arch of the pubes, the long diameter of the head accords with the long diameter of the outlet; for the long diameter of the outlet lies between the pubes and the coccyx; whence arises a great facility to the passage of the head. If the face had been to the one side and the occiput to the other, difficulty must have arisen; for the long diameter of the head would have been opposed to the short diameter of the outlet; and the passage would have been thereby obstructed. It is clear, therefore, that, when the head passes into the pelvis under the vertex-presentation, a turn is accomplished,—pre-eminently called "*the* turn;" and by this the occiput, which, in the first part of labour, lies on the side of the pelvis, is carried forward under the arch of the pubes. The occiput may start suddenly forward into this position; but more frequently it turns gradually;

so that, unless you are continually examining, you may scarcely know when the evolution is effected.

In presentation of the vertex, the face of the fœtus may lie on the symphysis pubis all through the labour; and, in consequence of this unfavourable position, no small danger may arise. The mother herself not unfrequently suffers; and the fœtus often dies. When, the vertex presenting, the face lies forward, in the passage of the superior aperture, considerable difficulty may be occasioned;—the long diameter of the head being opposed to the short diameter of the brim. If the head be large, or the pelvis small, it cannot be transmitted through the aperture; and even when the head is smaller and the pelvis more capacious, and the chin of the child lies on the chest,—so that, of the three long diameters, the shortest is opposed to the short diameter of the brim,—it is not without strong uterine effort and many pains, that the descent is effected; and the bladder, rectum, and vagina are all of them liable to suffer from the severe pressure to which they are subjected. Besides, the face lying forward, no part of the head lies out under the arch of the pubes, as in ordinary labour; nor does the occiput lodge itself in the hollow of the sacrum, without considerable loss of room. Moreover, when the head emerges, the occiput must bear most forcibly on the rectum and perinæum; and,—in those cases, especially, in which instruments are unskilfully employed,—contusions, lacerations, and sloughings, will not improbably be produced. To all which we may add that, occasioning so much compression, the head is itself forcibly compressed; so that the fœtus not uncommonly perishes, in consequence of cerebral contusion.

As this case is important, I shall demonstrate the different parts of it again, in the way of brief recapitulation. The vertex presenting, and the face lying forward throughout the labour, there is difficulty at the brim; because the greatest length of the head does not correspond with the greatest length of the aperture. The head, however, is frequently forced down by the strength of the pains; but not without much suffering from resistance and pressure. Further, the vertex presenting and the face lying forward, there is great difficulty at the outlet;—arising from three causes. First, because no part of the head lies under the arch of the pubes; secondly, because the occiput does not fit in, or commodiously adapt itself to, the hollow of the sacrum; and thirdly, (and very principally), because the back part of the head (or the occiput) is making so much pressure on the perinæum and rectum, that it occasions bruising, laceration, and sloughing, with much resistance of those parts.

It seems, then, that where the face throughout the labour is lying forward on the symphysis, many difficulties are occasioned. What is it then, that the accoucheur can do in order to diminish, surmount, or remove them? What is there that he can do with prudence;—without committing the unpardonable sin of midwifery;—the sin, I mean, of those obstetric reprobates,—the meddlesome and the pragmatic? When the case is indisputable, the dexterity great,

and the circumstances are conducive, I will not venture to assert, that turning the child is universally unjustifiable. When the softer parts are lax, and the pelvis is capacious, and our dexterity from long practice such, that we can introduce the hand into the cavity of the uterus, and lay hold of the child's legs, and bring it away with facility, by the operation of turning,—I will not say that, in such circumstances, we may not now and then be justified in making the attempt. By this operation, we clear ourselves of the malposition of the head;—the *vertex* becoming changed into the *crural* presentation. Decidedly, however, and in the strongest terms, would I reprobate turning as a general practice in these cases;—because you will be contusing the vagina, if you needlessly push the hand up towards the uterus;—because you will be tearing the womb,—pulling the head from the body,—meddling. Remember also that, until you acquire the dexterous use of the fingers, you must frequently be deceived when endeavouring to ascertain the situation. Often might you fancy the child's face is forward, when it is not; often, if you were to make a practice of turning, would you perform the operation without need; and when, perhaps, the child's head was lying in the position most favourable for parturition.

If the softer parts are lax, the pelvis large, and the fingers dexterous, I will not assert that you may not be justified in doing what I myself sometimes have done; I mean rectifying the position. Finding that the face of the child is forward, that the head is above the brim, and that the passages are relaxed and capacious, you may put your hand into the uterus; you may lay hold of the head, as you would lay hold of any other body; and you may gently place the head with the face in the side of the pelvis. All this, I say, may be done,—may perhaps be commended, sometimes; but beware lest you rashly contuse or lacerate the softer parts.

So, again, if it be clearly ascertained that the face of the fœtus is lying on the symphysis,—when experience and practice are not wanting,—if you have a pair of forceps, or a lever, you may endeavour to rectify the position with these instruments;—proceeding, however, cautiously and with reflection; remembering that you are operating upon the softer sex. Then, having secured the cranium by means of one or other of these instruments, when the head is at the brim, you may lay the face on the side of the pelvis; and when it reaches the outlet, you may deposit it in the sacrum behind.

There is yet another practice proposed by Dr. Clarke;* and which seems to be excellently adapted to cases of this kind;—recommending itself to our attention by its ease and safety. When the face lies forward, and the head has descended into the cavity of the pelvis, you may lay two fingers on the cheek; and, pressing gently when the womb is in action, gradually transfer the face from the front to the back of the pelvis,—gaining a little progress with every

* See a Paper on "The Management of Cases in which the Face of the Child presents towards the Os Pubis," by Dr. J. Clarke.—*Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge*; Volume II.

pain; and this, too, without injury to the delicate structure of the female; unless turbulence and violence unfit you for the duties of an accoucheur. So that, to recapitulate, in those cases where, the vertex presenting, the face is on the symphysis, we may sometimes, though very rarely, attempt to turn the fœtus by the feet; or, sometimes, when the head is above the brim, we may effect the rectification by the hand, forceps, or lever; or lastly, and most securely, by laying two fingers on the cheek, and gradually, with every pain, bringing the face towards the side, and ultimately into the hollow of the sacrum, a rectification of the unfavourable situation may not unfrequently be accomplished.

But what is to be done, should neither the rectification of the situation of the head, nor the turning of the child, be deemed the proper practice? Perhaps you cannot rectify; and to turn the fœtus is impossible. In cases like these, the general rule should be your guide. First, give a fair trial to the natural efforts; which the wise accoucheur, who has seen much, and thought much, never hastily distrusts. If, therefore, no dangerous symptoms manifest themselves, let the womb act powerfully for four-and-twenty hours after the discharge of the liquor amnii; and, notwithstanding its unfavourable position, the head will frequently descend. But if dangerous symptoms appear;—if the bladder become obstructed, the parts about the neck of the womb inflame, the pulse rise in frequency, and remain between the pains at 125 or more in the minute; or if, independently of these or other symptoms, the womb has been in strong action for twenty-four hours, the head not advancing,—with *tenderness* and *prudence* the lever or forceps might be tried. Lastly, should these instruments be unavailing, or should symptoms of danger manifest themselves, (to be effectually relieved only by delivery); or, even independently of such symptoms, should the head make little or no progress, though the womb have been in action, after the discharge of the liquor amnii, for six-and-thirty or eight-and-forty hours,—compelled by an inexorable necessity, you must have recourse to the perforator; your reluctance being somewhat diminished by the recollection that, in such circumstances, the fœtus, even when unopened, is generally born dead.

In every labour attended with difficulties or dangers, there must be need for the exercise of a corresponding discretion. General rules must be modified by individual contingencies. But adhering to the directions which I now prescribe, I am persuaded you cannot wander far from the correct line of practice.

To conclude, then, with a summary. When, the vertex presenting, the face lies forward throughout the labour, and this is ascertained, in some cases you may turn, though with a trembling hand;—in some cases you may rectify;—always justified in trying that simple method of rectification, by lateral pressure with the fingers, as before mentioned. In the majority of cases, however, and especially if you are as yet inexperienced in the practice of midwifery, you may trust with confidence to the natural efforts. These

failing, you may have recourse to the lever or the forceps; and these not availing, to the perforator. Under the best management, (unless you can rectify), these are bad cases; for bruising, laceration, and sloughing of the parts, and the death of the child, are to be apprehended.

Face-Presentation.—When the head of the child presents, you sometimes have the face lying over the centre of the pelvis; the chin, I believe, usually lying on one side of the pelvis, and the vertex on the other;—so that the greater lengths of the head, and of the superior aperture, reciprocally correspond. Under the efforts of the uterus,—the face presenting,—the head is gradually worked down; and, at last, we find it lying in the outlet of the pelvis. The chin, at this time, usually takes its situation under the arch of the pubes; and the vertex and occiput in the hollow of the sacrum and coccyx, and upon the perinæum. The child, when about to emerge, lies with the ears on the side of the pelvis, the chin under the arch, and the occiput and vertex in the hollow of the sacrum and perinæum;—as before described. The head, advanced thus far by a continuance of the pains, and the occiput being gradually rolled out from the hollow of the sacrum, the head is pushed into the world;—the perinæum, and all the softer parts, being stretched dreadfully; so that there is great danger of laceration;—especially if you accelerate the escape of the occiput, by the use of the lever or the forceps.

I will suppose, then, that you are called to a case in which the face is presenting. What is to be done? Must you meddle? Must you use instruments? Must you turn the child? In the face-presentation, as in the case already described, (in which you have a presentation of the vertex, the face lying forward throughout the labour), I do allow that, in occasional and exceptional instances,—when the pelvis is large and the softer parts are lax,—the skilful, confident, and, above all, judicious accoucheur, may carry the hand into the uterine cavity, and bring the child away by the operation of turning;—laying hold of the feet as before described, and abstracting the child under the crural presentation.

As an *exception* to a general rule, this method of delivery may be proper enough; but observe, as a *general* rule of practice in face-cases, with the whole weight of authority which I may possess, I condemn it. Do it ninety-nine times, and successfully, and I condemn it still; because you are meddling;—because you are cramming your hand into the uterus without any sufficient cause;—because you are, as it were, doing your best to tear the vagina;—because ninety-nine operations, undeservedly successful, may lead to the hundredth, and the destruction of your patient.

It is the same with respect to *rectification*. If you find the pelvis large, the softer parts lax, and your fingers very adroit, you may venture to introduce the hand, for the purpose of rectifying the position of the head;—an operation sometimes, perhaps, accomplished with facility, while the head lies at the brim. In these cases,—operating with the fingers or the lever,—you may make that which was

facial, a *vertex*-presentation. But understand again, clearly, that this is an exception from a general principle;—a practice unfit for the novice, though conceded occasionally to the adroit and experienced accoucheur. In presentations of the face, the stoical rule will apply;—a rule which might, with advantage, be whispered into the ear at all times, when you are at the bed-side;—*naturam sequere.** Delivery is a natural process; give, therefore, a fair trial to the natural efforts. When you meet with a face-case, then frequently, nay, generally, you have little to do. You need not send for another practitioner;—you need not allow your minds to get into a state of perturbation, as if you had some mighty feat to achieve. You have only to sit quietly at the bed-side; to support the confidence of the woman; to let the uterus act; to protect the perinæum; and to open your hands, as it were, and receive the child which nature deposits in them. If, however, the head be large, or the pelvis small, it may happen in this, as in the vertex-presentation, that the natural efforts fail; and, in such cases, you may try the lever or the forceps; but with gentleness,—with caution,—as on your dearest friend. Beware lest you occasion a laceration or sloughing of the softer parts. These instruments failing, should delivery be peremptorily requisite, then lay open the forehead and discharge the contents of the cranium; when the head will readily descend.

Forehead-Presentation.—In presentations of the head, we sometimes find the forehead, instead of the face, lying over the centre of the pelvis. And this presentation,—made out in the way hereafter described, by a careful examination,—can rarely, I believe, occasion much difficulty; for after there have been a few pains,—the head turning somewhat,—the vertex or the face descends; and the case is to be afterwards managed by rules already prescribed. Ear-presentations also occur; but they are so rare, or so easily conducted on the principles already laid down, that I consider it unnecessary to enlarge on them.

[The French books are too minute in their divisions. Maygrier is the most moderate; but even he has four divisions of presentations of the temple, and subdivisions of each.† I divide malpositions of the head into five varieties. 1. The head at the brim; with its long axis in the antero-posterior diameter of the pelvis. 2. The head lower in the pelvis; but with the forehead instead of the occiput towards the symphysis pubis. 3. The face presenting itself. 4. The forehead presenting. 5. Presentation of the head, but complicated with that of the arms, &c.

1. *Malposition of the Head above the Brim.*—The long axis of the head, is here in the short diameter of the pelvis. Introduce your hand, in the absence of a pain, and push back the head a little; and then it may perhaps become natural. Do not use violent counter-pressure.

* Follow nature.

† Nouveaux Elemens de la Science, et de l'Art des Accouchmens.

2. *Malposition of the Head below the Brim.*—Sometimes the head comes low down in the pelvis, with its long diameter in the short axis of the outlet. This is a case for the long forceps. Introduce them slowly over the occiput and the face; which is a difficult operation, on account of the head being firmly wedged in the pelvis. When you have accomplished it, turn the face into the hollow of the sacrum. The other variety of malposition of the head, mentioned above, with the forehead towards the symphysis pubis, will generally do well, after a longer time than usual. If in this, or any other case, the scalp should be swollen by having been long impacted, you need not interfere with it, unless the people about the child are fools; and then you may send a little camphorated oil, or something of that kind, to be rubbed over it.

3. *Presentation of the Face.*—When the face presents, the best plan is to push it back, and to get the forehead or the vertex forward, by the help of the lever. The face is generally so much swollen, as so make it difficult to be recognised. The chin, in face-presentations, is generally turned to one side. You may try to get the vertex round, to its proper situation; but I have always failed. The child has been always born alive, however, after considerable difficulty. I remember one case, in which the child was born at once, after I had examined the patient, without doing anything to expedite delivery. Be careful not to let the head come out, till the parts are well dilated. All the books describe cases in which the chin is towards the sacrum; but such a position is impossible, except in early abortions. Presentations of the ear, likewise, do not occur at the full term of pregnancy.

4. *Presentation of the Forehead.*—This is known by the anterior fontanel being felt; which is not the case in natural labour; for it is then too far back to be reached by the finger. The posterior fontanel is easily felt; but I have felt the anterior one only twice in my life.

5. *Presentation of an Arm with the Head.*—If an arm comes down along with the head, and you cannot get the former up again, let it come; it will only protract the labour. But if called sufficiently early, push up the arm, and keep it there, till the next pain forces down the head beyond its reach.*]

SECTION 2.—FOOT OR CRURAL PRESENTATIONS.

By the French obstetrician, the crural or foot-presentation is divided into no fewer than six varieties; which may be conveniently in practice reduced to two kinds only;—those in which the abdomen is lying more or less *anteriorly*, and those in which it is placed on the *back* of the mother;—whether it bear a little to the right or left, or fall directly on the promontory of the sacrum.

Of all the crural presentations, the easiest and most simple is that in which we find the abdomen of the child lying towards the back of

* Extracted from Dr. Mackintosh's unpublished Lectures on Midwifery.

the mother. In cases of this kind, the child passes through the pelvis, in the following manner.—By the strong action of the womb, the legs are gradually pushed beyond the outlet of the pelvis; when, the thighs coming within reach, the accoucheur lays hold of them; —a napkin being interposed, in order to render the hold more secure. The thigh grasped, he next draws down in the axis of the pelvis; (which, it should be borne in mind, stretches downward and backward at the brim); taking care not to lacerate or bruise the parts, and swaying the fœtus from side to side, or a little backward and forward, as the motion one way or other may most facilitate the delivery. If the pains are frequent, the accoucheur co-operates with the pains; but if the pains are unfrequent or wanting, he draws notwithstanding; for when the delivery is once begun, and the umbilical cord is brought down,—so as to be compressed between the fœtus and the vagina,—delivery should be promptly accomplished; because, when there is much and continual pressure on the cord, the child dies. But of this hereafter. In cases of this kind, when the breech is passing, take care that you do not lacerate the perinæum.

When the breech is abstracted, and the abdomen begins to appear, lay hold of the umbilical cord, and draw it forth a little;—so as to prevent extension during the further abstraction of the child. When the thorax* begins to descend, lay your finger in the side of the pelvis; and if you find, on examination, that an arm is disposed to come down, draw it out at full length, and lay it along the side;—so as to prevent it from starting at an angle, and lodging against the brim of the pelvis. In general, however, the arms do not descend by the side of the thorax, so as to demand this manœuvre.

When the axillæ† are approaching the external parts, a precaution of no small importance becomes requisite; I mean, that of preventing the arms from taking their place behind the occiput; and from becoming impacted between the front of the pelvis and the head, so as to render extraction impracticable. To prevent this accident, it is necessary, when the arm-pits approach the inferior aperture, to pass up the fingers, so as to get a bearing on the arms, and throw them as much as may be upon the back of the pelvis, towards the face of the child. With these precautions,—the axillæ of the child being brought down to a level with the external parts,—the body of the fœtus being thrown out of the way, and into such position as shall favour the descent of the arm,—putting all the fingers, if practicable, about the bend of the elbow, and sweeping the arms in succession over the cheek, you disengage them from the cavity of the pelvis.

When the arms are drawn forth, the head usually descends without further difficulty;—more especially if the cranium be small, or the pelvis be capacious; but should difficulties arise, endeavour to throw the face and occiput, at the brim, on the sides of the pelvis respectively; so that the greatest lengths of the head and of the aper-

* From θορεω, *to leap*; because the heart leaps within it.

† Derived, according to Scaliger, from *ago* (*axo*), "to act."

ture may correspond with each other. Then, bearing the head towards the symphysis pubis, yet drawing in the axis of the brim, (a line stretching from the navel to the point of the coccyx), you cause the head to come down. When the head reaches the outlet of the pelvis, turn the face into the hollow of the sacrum, and the occiput on the symphysis pubis; and then, drawing downward and forward,—taking care not to lacerate the perinæum,—you complete the delivery.

This, on account of its importance, I shall recapitulate. The feet presenting, suffer the womb to act till the thighs are lying forth in the outlet of the pelvis; then gently grasp the legs, and sway the body a little from side to side, or from before backward;—taking care that the genital fissure sustain no injury. When the breech passes, guard the perinæum. When the abdomen passes, draw forth the umbilical cord a little;—so as to prevent its extension during the subsequent descent of the child. When the thorax approaches, pass the finger into the side of the pelvis,—cautiously, tenderly, yet effectually; and if the arm on either side be descending, extend it, and lay it at length along the side of the trunk. When the axillæ begin to enter the inferior part of the pelvis, be very careful, as they come forward, to press the arms toward the promontory of the sacrum; and, by preventing their impaction between the head and the pubes, facilitate their subsequent descent. The axillæ reaching the outlet, throw the body into the position most conducive to the descent of the arm; placing three or four fingers about the bend of the elbow, and swaying the arms in succession downward, with a sweep over the face. Afterwards, abstract the head with due attention to its position; guard the perinæum; and, indeed, take care that the whole operation be conducted with only that degree of force, which shall inflict no violence on the mother or her child. *Vir consilii expers mole ruit suâ.** Contusions,—lacerations,—sloughings,—decapitation,—dislocations,—fractures;—these are the dreadful evils to which brute force may give rise.

In crural presentations, the abdomen of the child is sometimes situated anteriorily;—such cases being just the converse of the preceding. When the abdomen is placed towards the front of the pelvis, there are *two* modes in which the child may be extracted; though not with equal facility. In the first place, draw down the feet as before; and,—the axilla being brought to a level with the outlet,—extricate the arms, by throwing the body thoroughly out of the way, getting the fingers into the bend of the elbow, and sweeping the arm out of the pelvis over the face of the child, behind the symphysis. Although, however, the child *may* be abstracted in this manner, still there is a difficulty;—in the abstraction of the arms, especially. This being the case, it is proper to throw the abdomen of the child to the back of the mother. This transfer of the abdomen to the posterior surface of the womb and vagina, may sometimes be effected by laying hold of the thighs with the left hand, spreading the fingers of the right hand upon the back of the fœtus, and, at the same time,

* A man void of tact rushes on with violence.

making a turn. A foot case with the abdomen seated posteriorly, is thus produced;—to be managed by the rules already given. Little skill is required to make this change of situation.

But there is one point of nice determination; and that is the selection of the proper moment for performing the operation; for before the turn is made, you may, if you please, draw the head and arms into the pelvis; you may, if you please, impact them there; and you may, if you please, unwisely attempt to make the turn, when you have unwisely made the operation impracticable. But to proceed:—

Incidit in Scyllam cupiens vitare Charybdin.*

In avoiding this error, you may fall into the other extreme, by attempting to place the abdomen on the back, when only the tips of the feet are lying within reach;—a practice exceedingly unadviseable; as the turn, though accomplishable, must be effected with difficulty; since a force applied to the ancles, will not readily act upon the head and shoulders above. What, then, is to be done? On the whole, I think the best time for performing the operation, is when the thighs make their appearance; for in grasping them, you may get command over the body and other parts;—the head and shoulders still lying above the bones of the pelvis, and of course not being impacted in the brim.

It seems then that, in crural presentations, it becomes the office of the accoucheur to co-operate by drawing down the child; but there still remains a question for consideration; namely,—What is the proper moment at which co-operation should be given? And here I may state to you a maxim of midwifery, on which, hereafter, I shall frequently lay stress; which is, that, in selecting the proper time for giving assistance, the accoucheur often shows his judgment, more than in the execution of the manual operation itself. The manual operations of midwifery are sometimes sufficiently easy; but much nice discrimination is required to seize the moment, at which those operations should be performed. Suppose, for instance, a foot presentation,—a first delivery,—the parts rigid,—the head large,—the pelvis small; you lay hold of the legs without reflection, and advance the child without difficulty, till the thorax enters the pelvis. Mark the result! In consequence of not selecting the proper moment for your operations, you find yourself on the horns of a dilemma. The legs have descended easily enough; the abdomen, too, has opposed but little difficulty; but the head and shoulders will not pass. Now if, anxious to avoid the laceration of the mother, you wait for a relaxation of the softer parts,—the child lying with the legs in the world, and the head and thorax in the pelvis,—its life becomes the sacrifice. Pressure on the umbilical cord occasions a suffocation, as painful probably as the death of the felon, who perishes by the rope. On the other hand, if, desirous to preserve the fœtus,

* Endeavouring to avoid Charybidis (the whirlpool), he strikes upon Scylla (the rock).

you draw down without delay, you lacerate and bruise the softer parts of the mother; and thus, by giving assistance at an improper moment, you endanger at once both the parent and her offspring.

Aware of this risk, practitioners have endeavoured to lay down plain rules, which may enable us to decide, when we *ought*, and when we ought *not* to interfere. There are some who, not without reason, take their indication from the laxity of the parts, and the expansion of the os uteri; and if, on examination, they find that the parts are lax, and that the dilated os uteri is as broad as the disk of a crown-piece, they commence the delivery; but refrain from manual operations if the parts be rigid, or if the mouth of the womb be shut. Others, again, (Denman for example), ascertain the moment of interference by the descent of the child. If the breech be at the outlet, they deliver; but if it lie at the brim, they wait; for, as the cord is not under pressure, the life of the fœtus is not in danger; and meddlesome midwifery is bad; and there is, as yet, no necessity for accelerating the birth. There are, again, other practitioners, who judge by a rule which, if of easy application, would perhaps be preferable to the former. If the cord be pulsating strongly, they let the labour proceed without interfering; for they consider that there is no danger of suffocation, while the fœtal heart is in full play; but if pulsation in the cord be weakened or suspended, they endeavour to abstract the fœtus as promptly as may be; unless they believe it to be lost beyond recovery.

I am accustomed, in my own practice, to combine these rules; and to act under the influence of all three. With me it is, of course, a maxim *never* to deliver while the softer parts are rigid, and the os uteri is little expanded; but if the softer parts be thoroughly relaxed, and the disk of the os uteri exceed that of a crown-piece, I deem myself justified in assisting the delivery. But this is not all. Although the soft parts are yielding, and the os uteri is dilated,—under the impression that meddling is wrong, and that the natural powers are great,—I give a fair trial to the natural efforts;—waiting (as Denman advises) till the breech is pushed down upon the outlet, and the cord becomes compressed. Then, finding the breech in the outlet and the softer parts relaxed, I proceed with the delivery;—not neglecting the examination of the chord;—advancing more rapidly if the pulsation in it fail; and in a more slow and gradual manner if the firm beat of the cord indicate that the child is secure; always bearing in mind another axiom of British midwifery; namely, that the life of the child is invariably to be sacrificed to the security of the parent; and never accelerating the birth more than the softer parts will bear.

SECTION 3.—NATAL OR BREECH-PRESENTATIONS.

When the breech of the child is lying over the centre of the pelvis, the abdomen and legs may be variously situated;—in front,—behind,—to the one or the other side,—obliquely,—backward,—forward,—and so on. Thus, if we are fond of minute divisions, may

we produce a great variety of cases. With a view to practice, however, the presentations of the breech may be commodiously enough divided into *two* leading sorts or kinds;—those in which the abdomen of the child (as in the crural presentations) is lying *posteriorly* (that is, on the back of the mother); and those cases in which it is lying more or less *in front*; and if the principles on which these two varieties of the breech-presentation should be managed, be thoroughly understood, all the intermediate cases may be conducted with great ease.

First, then, of the presentation of the breech in which the abdomen of the child is lying more or less on the back of the mother. When the vertex of the child presents, I have already observed that —large as the head is,—it is, in natural labour, easily expelled by the spontaneous and unaided efforts of the womb; and thus it is with the presentations of the breech. It does not follow, because you find the breech presenting, that therefore the case is difficult,—that further obstetrical assistance is requisite,—that manual interference is requisite in order to secure the descent. In general, by the unaided efforts of the uterus, the nates will be gradually pushed to the external parts;—in the same manner as, in ordinary labours, the head is pushed down into the outlet; and to these efforts we ought to trust. When, in this manner the breech has gradually descended,—so that it lies at the outlet,—then lay your finger upon the one side, and your thumb upon the other, and,—without violence (a brutal error, always to be reprobated), but with gentleness and firmness,—co-operating with the pains, if there be any,—you may draw;—throwing the body a little from side to side; and from time to time examining the perinæum (that portion of the skin which intervenes between the anus and the genital fissure); lest, in drawing down the nates, this part should be torn. Advancing the breech in this manner, and (as the part descends) carrying the back of the child towards the abdomen of the parent, the legs spontaneously drop forth;—what was a *breech*, becoming of consequence a *foot*-presentation; to be managed afterwards by rules already prescribed.

To repeat.—In the breech-presentation,—the belly of the child lying on the back of the mother,—the natural efforts push the nates to the outlet;—it may be in a few hours; it may be in a few minutes;—the length of the time depending upon the capacity of the pelvis, the size of the fœtus, and the laxity of the softer parts. The breech reaching the outlet, lay your fingers on the one side, and your thumb on the other, and,—solicitously guarding the perinæum, co-operating with the pains (if there are any), and now and then feeling the umbilical cord, which lies between the thighs,—draw down;—remembering that you are operating on the softer sex; proceeding with gentleness, and not with violence;—*arte*, non *vi*,—like *men*, and not like *brutes*;—for it may be so translated.

It will sometimes happen that, the breech presenting, the abdomen of the child may lie *forward* throughout the labour. Aware that, in that form of the breech-presentation where the abdomen lies

posteriorly, the natural efforts, if fairly tried, will commonly push the nates to the outlet,—to these you ought generally to trust where the abdomen lies *anteriorly*; though it must, I think, be admitted, that the part does not descend quite so speedily in this case, as in the preceding. The nates being pushed down upon the external parts, then, as before, lay the fingers on the one hip, and the thumb on the other, and,—swaying the child a little from side to side, and co-operating with the pains,—you may draw down with gentleness;—suffering the legs to drop forth of themselves.

If, indeed, you wish to *fracture* the legs, you may do this with facility. Put your fingers on the middle of the thigh-bones, and give a pull with the sympathetic gentleness of a brewer's dray-horse, and you will break them easily enough; for, at this period, the bones are very fragile. But as I presume you have no wish to do this, you had better, perhaps, draw forth as I have recommended;—suffering the legs to escape spontaneously. Dr. Lowder was requested to see a woman labouring under the presentation of the nates;—the labour being difficult; because the breech was large, and the pelvis small. The action of the womb being powerful, however, the breech was pushed to the outlet of the pelvis; and the accoucheur, laying hold of the hips, assisted a little with his characteristic gentleness, but suffered the legs to drop forth of themselves. To this case a midwife had been called,—a woman; and after the doctor had brought away the child, she went up to it, examined the thighs, and turning round with surprise, exclaimed, "Why, you have not broken the thighs!" "No," said the doctor, "why *should* I? I should not like to have my *own* thighs broken, and why should I break the *child's?*" "Why," said she, "I always break the thighs!" And this operation, it seems, she achieved, by pulling them violently in the manner already mentioned.

Let the natural efforts, then, bring the breech to the outlet of the pelvis; then lay hold of the hips, and draw down;—carefully guarding the perinæum, and suffering the legs to come forth of their own accord; or, at all events, soliciting them with the utmost gentleness only, and taking care lest the bones be fractured. The legs being expelled, you obtain a foot-presentation;—to be managed by the rules already prescribed.

There is, however, a second mode, which may be advantageously tried where the nates present, and the abdomen of the child is lying on the abdomen of the mother; and that is by rectifying the position. This may be accomplished in three modes. You may carry your hand into the pelvis when the child is at the brim, and turn the abdomen on the back. Or if the breech present,—the abdomen lying forward,—you may wait till the natural efforts have pushed the child to the outlet; and then slowly, and not without difficulty, make the turn. Or, lastly, you may delay till the legs have dropped forth; and then rectify the position;—provided all this can be accomplished without violence (*arte, non vi*).

It is desirable that (in these cases more especially) the fœtal abdomen should lie on the back of the mother, before the extraction of the shoulders and head be attempted; because the head, arms, and shoulders come away more easily when the abdomen is lying this way, than when placed anteriorly; and I should therefore recommend it as a general practice, to turn the fœtal abdomen on the back of the mother.

I have said that there are three occasions in which you may rectify the position;—when the legs drop forth, when the breech is down at the outlet, and when the breech is at the brim. But, on the whole, I would dissuade you from making the turn when the breech is at the brim; for, to make this evolution then, you must carry your hand into the pelvis;—an operation never justifiable, unless the necessity be inexorable; since in doing it, you may lacerate, contuse, and kill. It is better, therefore, to wait till the breech is pushed down upon the outlet, before you attempt to turn; or should you fail in your attempts to turn when the breech is at the outlet, wait till the legs have escaped; and then endeavour to accomplish it, by grasping the hips with one hand, spreading the other on the back, and effecting the necessary movement by the co-operation of the two.

In most cases of breech-presentation (as before observed), if a fair trial be given to the natural efforts, the fœtus of itself descends to the outlet;—the accoucheur, happily, having little to do, except to sit at the bed-side, and to abstain from doing injury or mischief. As, however, the natural efforts are now and then insufficient to push the head to the outlet, so also, when the breech is large and the pelvis small, they are sometimes insufficient to expel the nates; and in that case artificial assistance is necessary. The methods of assisting in breech-presentations, when necessary, are the following:—In the first place, you may put your finger into the bend of the thigh; and, acting as with a hook, draw down with the finger, on either side alternately; and, by co-operating with the pains, you can draw with great effect;—the uterus actively assisting. If you have not power enough to draw with effect in this manner, take two handkerchiefs; put one over the bend of each thigh; and, laying the handkerchief neatly into the fold formed by the thigh and abdomen,—so as to get an even bearing upon all the parts,—you acquire a hold at once firm and safe, and may extract with much effect.

In cases of this kind, too, you may give assistance by means of a *blunt hook*;—an instrument, however, to which I am myself exceedingly averse; as, like the finger of a rude accoucheur, it has no feeling for the mother or child. If the blunt hook be employed,—and it may at times be tried with considerable advantage,—slide the finger into the fold, and conducting the instrument by the finger, plant the hook on the bend of the thigh; so that the curve has a general bearing upon those parts, and that the instrument does not rest on its point. Remember, in using this instrument, that force

will produce terrible effects ; and may occasion sloughing, or may cripple the child for life, or (which is scarcely a greater evil) may destroy it.

There is yet another mode in which you may assist the descent of the breech, and which I think worth your knowing; though I do not recommend it to general practice;—that is, by the use of the forceps. I am not deterred from the forceps by the alarms of Capuron;* who asserts, that the use of the instrument, in this case, is *toujours dangereux, sinon meurtrier, pour l'enfant.*† He thinks that the sides and viscera of the abdomen may be bruised by the application of the forceps to the breech; and so they may, if you use force; but force, as I have before said, is to be exploded from obstetric practice. If you lay hold of the hips with the forceps, grasp them with gentleness; and if the parts slip from the instrument again and again, so much the better; for that shows you are not using a force too great, and to replace them is easy. If they come away six times, apply them the seventh; and, persevering by little and little, you may at length bring the nates to the outlet. Assisting, then, in one or other of these modes,—by the finger, the handkerchief, the blunt hook, or the forceps,—even in the more difficult cases, the breech may be made to descend. Yet this is not universally the case; for sometimes there is so much narrowness of the pelvis, at the brim especially, that under the breech-presentation the fœtus cannot descend at all.

In a vertex-case, where the head could not be expelled, the practice is to lay open the cranium;—an operation which cannot be performed in a presentation of the nates. What then is to be done? The only practice that remains, is to introduce the hand, to lay hold of the child's legs, and instead of the breech to draw down the feet. In this manner, perhaps, the difficulty may be easily removed. And here, perhaps, some one may be disposed to say mentally,—"I like that thought. I would always adopt that method in breech-presentations. It gives me a command over the child." Is this your determination,—this your intended practice? Then give me leave to tell you, that you are wrong; because you are meddlesome;—because you might rupture the vagina and uterus;—and because you have less chance of abstracting the fœtus alive. For it is worth observation, that *more* children are born alive under presentation of the *breech* than of the *feet*; for in breech-presentations a groove is formed between the abdomen and thighs, where the umbilical cord sometimes lodges,—protected from any pressure which might occasion interruption of the circulation;—an accident liable to occur in crural presentations, where the cord lies naked and undefended.

Thus much, then, respecting the management of breech-presentations. I have entered into the consideration of them at length; for they are cases, on the whole, by no means unfrequent in their occurrence. When the breech presents, do not pragmatically in-

* Cours d'Accouchmens, Maladies des Femmes, et des Enfans; et Medicine Legale relative aux Accouchmens.

† Always *dangerous* for the child, if not *murderous*.

terfere. The natural efforts commonly push the fœtus to the outlet. The natural efforts failing, have recourse to the finger, the handkerchief, the blunt hook, or the forceps. It rarely becomes necessary to bring down the feet by the hand; but if the necessity should exist, proceed in the manner already mentioned.

SECTION 4.—TRANSVERSE PRESENTATION.

When neither the superior nor inferior extremities of the child present, the fœtus is said to lie *across* the pelvis. Presentations of the *arm*,—*shoulder*,—*back*,—*hip*,—*abdomen*,—or *chest*, are so many transverse positions of the fœtus; and these cases, although they differ somewhat as to the presentations, are all conducted essentially on the same general principle. Hence the subject becomes greatly simplified; for if the principle of management in one of those cases be thoroughly understood, it will apply to them all. Of all the transverse presentations which I have just been enumerating, by far the most common and the most difficult is where the arm or shoulder presents; of which, indeed, most frequent mention is made. Therefore, without entering into the consideration of all the varieties of transverse presentations which occur, and which I have seen, I shall confine myself solely to the *presentation of the arm.*

When the arm of the child presents,—provided the woman have reached the full time of gestation,—it is impossible to abstract the child in that position. If, with ferocious ignorance, you lay hold of the arm and pull (the fœtus being of the full size),—torturing the innocent child,—you may tear it limb from limb, like Damien the assassin. But if the fœtus be under the age of six complete months,—the delivery being premature,—then the child is so small and so pliable, that if the pelvis be large or the pains be strong, it will pass under the shoulder-presentation; but, even in these cases, it is wrong to draw the child.

When a child is lying transversely, and, more especially, when it presents by the arm or shoulder, it may sometimes be expelled at the full time of pregnancy,—unaided by the accoucheur,—and under natural efforts, by what Denman has denominated *spontaneous evolution.** The arm of the child ascends a little,—not much, however (as Gooch† has well observed),—and the breech descends into the pelvis; so that the child comes away under the breech-presentation. In general, however, unless the child be softened and relaxed by death, it can scarcely undergo that doubling in the pelvis, which is necessary to allow of its coming forth in this manner. I suppose therefore that, in nine cases out of ten, or it may be that in nineteen

* For a description of "spontaneous evolution," see Pages 48 to 51 of "The Elements of Practical Obstetricy; by Thomas Denman, M.D.; with Remarks on Concealed Pregnancy Infanticide, Legitimacy, and Rape; by R. John Mackintosh, M.D.; with Notes and Illustrations, by Nathaniel Rogers, M.D.," London: Joseph Butler.

† Practical Compendium of Midwifery. By Robert Gooch, M.D. Edited by George Skinner.

out of twenty, where evolution occurs, the fœtus is destroyed; and sorry I am to add that, as a general mode of delivery, it cannot be relied on. How much is this to be regretted! Happy would it be for you, for the mother, and for the child, if, under the arm-presentation, as under that of the nates, the fœtus might be expelled unaided by the accoucheur. Many a vagina would be saved, many a uterus hereafter to be torn would be preserved, and many a death which now must take place in the course of the next few years, would be prevented!

The only cases in which I would deem it advisable to trust to this spontaneous evolution, are those where the turning of the child cannot be effected in the usual way, or where the tendency to evolve is obvious. Make the attempt to turn; and if that fails, then the evolution may be properly essayed. Or, perhaps, examining with care, you perceive the arm moving, or by the side of the arm the thorax or flank beginning to protrude. Perceiving, in this manner, obvious symptoms of evolution, do not interfere. A meddling midwifery is bad; and, the natural efforts being clearly engaged in effecting the evolution, do not obstruct them.

I was called, some few months ago, to a case in the neighbourhood of the London Hospital;—a presentation of the arm, attended by a gentleman of some obstetric tact and talent. In two minutes after I entered the room, with scarcely a complaint on the part of the woman,—the arm presenting,—the child was brought away. As my predecessor had been labouring without success to deliver, this speedy abstraction of the child occasioned no small manifestation of surprise; and when we were apart, my friend asked me how it was possible I could deliver her so easily and speedily, after he had laboured so much and to so little purpose. "To tell the truth," I replied, "I did not deliver her at all; for on reaching the bed-side, I found the spontaneous evolution was nearly completed; and I had only to hold forth my hands till the child dropped into them." I was called to another case, where two practitioners had tried to turn the child and failed; I tried myself, aad failed also. Finding that perseverance would burst the uterus, I determined on waiting, to see what the natural efforts would accomplish; and if they did not effect the delivery, I would adopt further measures; but was resolved not to distrust the powers of nature too soon. In the course of an hour, the child came away under a spontaneous evolution, effected by the natural powers; and the woman did very well; and we all found that we did more service by sitting down to the dinner-table, than by working at the bed-side.

However clumsy, rough, and dangerous the practice may be, yet I am compelled to admit that, whenever a presentation of the shoulder or arms occurs, the best general practice is to carry the hand into the uterus, and bring the child away by the operation of turning. The arm hanging forth, take off your coat, remove the sleeve of the shirt, lubricate the arm, and particularly the hand, and then (*arte*, non *vi*),—with the fear of lacerating the womb before your eyes,—

relentingly,—tremblingly, I had almost said (if, indeed, a surgeon *may* tremble),—carry the hand into the uterus, and draw down the feet of the child. There is always a risk of tearing the genitals; even when you operate in a manner the most skilful and dexterous.

I have already repeatedly observed that, in ordinary labours, care should be taken not to interfere too soon; but here is a kind of exception. Where there is a presentation of the shoulder and arm, and turning is obviously necessary, the sooner it is effected the better; for if there be delay, the womb may contract; and, without using great force, turning may be impracticable. As soon, therefore, as the softer parts are relaxed, and the disk of the os uteri is as large as a crown-piece, and if the hand be small, it may be carried into the uterus without violence; then approach the feet, and perform the operation of turning before the water is discharged; or, at all events, before it has been *long* discharged; and in general, from my own experience, I think I may say (having seen many cases) that the operation may, in such circumstances, be effected easily enough.

SECTION 5.—MEANS OF ASCERTAINING THE POSITION OF THE CHILD.

Our observations on the passage of the fœtus being concluded, I now proceed to treat of the means whereby, at the bed-side, in the living woman, we may ascertain the mode in which the child is descending. For it is evident that all our speculative knowledge respecting the passage of the fœtus can avail but little in practice, unless we can, at the bed-side, when called upon to attend a case, determine in what manner the fœtus is coming away.

The ancients endeavoured to make out the position of the fœtus by means of external examination. Neither would I have the modern accoucheur entirely neglect this manœuvre. Empty the bladder, if necessary, that the situation of the womb may be more easily ascertained; place the woman in a recumbent position, with the shoulders and legs a little raised,—so as to relax somewhat the abdominal muscles; and then carry your hand over the abdomen; in order to know the form of the womb, and, if possible, the position of the child within it.

The modern obstetrician may, however, ascertain the position of the child more certainly, and with greater ease, *by examination*, as it is called; that is, by touching those parts of the child, which lie within reach of the fingers. By this mode, when the vertex presents, it may be known from its roundness,—its hardness,—its sutures,—its fontanels,—and sometimes by a copious growth of hair. If these can be felt, there need be no doubt as to the part presenting. If the large fontanel be discovered lying to the left, then the face will be to the left; if the little fontanel lies to the right, then the occiput will lie to the right; and if the ear be felt, that of course indicates the more clearly the position of the child's head. But it may be asked, perhaps, how are the greater and the lesser fontanel

to be known? Easily; for, at the large fontanel, *four sutures* meet;—it is the only part of the head at which four sutures may be found. Besides, it is *rhomboidal* (*diamond-shape*); is of *considerable extent*; and therefore, when tangible, is easily recognised. But how is the *little* fontanel to be known? In general with facility; because it is of a *triangular form*, of *small extent*, and has *three sutures* concurrent. By feeling the little fontanel, therefore,—of triangular shape of small extent, with a coalition of three sutures,—the situation of the occiput is discovered; and the greater fontanel,—of diamond-shape, of great extent, and the centre of four concurrent sutures,—indicates the situation of the face.

In ordinary deliveries, these nice examinations are not required; but in cases of difficulty, where help is required, these points should be ascertained if practicable; as, without this knowledge, dexterous and scientific assistance cannot be administered. When the face of the child presents, do not confound it with the breech; though such an error has been committed. It is round and soft, and so far it resembles the nates; but then the *nose*, the protuberant *eyes*, and above all, the *toothless mouth* (readily known by those who have been in the habit of feeling this cavity) will easily distinguish the face. The feeling of the eyes, nose, mouth, and forehead, however, will enable one to make out, not only the presentation, but also the situation. The *ears*, when felt, will further assist a diagnosis of the position of the head.

A *forehead*-presentation may (probably more easily than any other) be confounded with a vertex-presentation, when first felt. On examining the forehead, the accoucheur is apt to say to himself, complacently enough, — "O, this is a natural case; I shall soon get away!" But let him examine the case again; let him feel what he took to be the sagittal suture; and, tracing it to the one extremity, he will there find the large fontanel; and, on tracing it to the other extremity, his fingers are conveyed to the eyes and nose; when the nature of the case is obvious enough, and he finds that he has been congratulating himself too soon.

Where the breech of the child presents, this part may be recognised by its roundness and softness, by the cleft between the buttocks, by the genitals, by the anus, and (if the fœtus be a male) by the scrotum. In these breech-cases, where the child is a male, there is sometimes, I suspect, a little water lodging in the scrotum; and some practitioners, thinking they feel fluctuation, may be impelled, perhaps, to tap it;—a meddlesome operation, for which no necessity exists. Do not, therefore, take a lancet to lay open the child's scrotum, at the risk of injuring the testicles. The breech being then made out by these indications,—the roundness, the softness, the cleft between the buttocks, the scrotum, the genitals, and the anus,—it will be easy, with a little further examination, to decide whether the abdomen of the fœtus is lying towards the back or front of the parent. The arm presenting, it is possible for those who are *omnipotent in ignorance and negligence*, to confound it with the leg; and I have known this feat

to be achieved; though, with ordinary care, and in ordinary circumstances, the error is scarcely possible. *Nil mortalibus arduum est.—Cælum ipsum petimus stultitiâ.**

But there is more difficulty in discovering the presentation of the shoulder;—so much so, indeed, that even an experienced and good accoucheur may be deceived here. He feels a roundness and hardness, which he mistakes for the vertex; and it may require no small share of examination and discrimination to distinguish between these parts, when the shoulder is altered by compression. The only way to distinguish with certainty, is by making an extensive and repeated examination; by which means the ribs, the axilla, the arm, and the cleft between the arm and sides may be felt, and the presentation be pretty clearly ascertained. Under a first examination, one may be easily deceived; but it is necessary to make the examination very carefully and repeatedly; for the distinction is of the first importance. If it be a vertex-case, nothing is to be done; if, on the other hand, the shoulder present, it becomes the duty of the accoucheur to turn the child, as soon as its feet can be approached. The best mode of making out the position of the child's legs, in these cases, is by examining the position of the hand. When the hand, for instance, is stretched from the side, intermediately between supination and pronation, the palm is in the direction of the abdomen; the back, in the direction of the back; the thumb lies towards the head; and the little finger to the feet. Now, to apply this to the case before us, suppose that the hand only of the child can be seen; if the palm is lying in front of the mother, then the abdomen must be in front, and the legs too; the thumb lying to the left side of the pelvis, the head is to the left side; the little finger lying to the right side of the pelvis, the feet are there. Knowing this, the accoucheur may carry up his hand directly to the feet; and is not compelled to enter the womb at random; and to roam after the feet, over all the regions of the uterus, for a quarter of an hour, perhaps, before they can be found.

In order that the accoucheur may recognise the child by the parts mentioned, it is absolutely necessary that he should have been in the habit of frequently examining those parts. Now the readiest mode of becoming familiar with the presentation is, to take every opportunity of examining children after birth; and if this be done in the careful manner in which it ought, after having attended only twenty labours, one may by such means be better acquainted with the touch of the different parts, than the man who, in a hundred cases, has been at the bed-side like a pet lap-dog; and who has examined, perhaps, with little more intelligence and attention. If the case be in town, for instance, every time the accoucheur calls, he should take the child into his hands, and examine the characters of the different presentations;—sometimes the head, with its sutures and fontanels;—sometimes the face of the child, with its eyes, nose, and mouth;—sometimes, and with equal solicitude, the other presentations;—the shoulders, the back, the abdomen, and the nates.

* Nothing is difficult to mortals. Our folly rises to heaven itself.

Again, in order that he may examine well and successfully, it is not only necessary to get a thorough knowledge of the tangible parts of the child; but it is necessary further, when the examination is made, that the woman, if possible, should be lying *perfectly quiet*. In many instances, women are so irritable and inflamed,—in cases of difficulty especially,—that they cannot lie still. In these circumstances, take away blood; foment the parts; give sixty or eighty drops of the tincture of opium, or a corresponding portion of Battley's anodyne; and, in a quarter of an hour, or twenty minutes, perhaps, you may make the examination without disturbance. When examinations are made, the posture of the woman may be various. The ordinary obstetric position is, perhaps, on the whole, the best. If it is desired to examine with nicety, let the woman lie on the left side, close upon the edge of the bed; the abdomen facing a little downwards, the bosom thrown upon the knees, the shoulders lying forward, and the loins posteriorly;—the very reverse of the position in which the stupidity of the nurses generally places them.

I would recommend the employment of *both hands*, in making examinations. Nature has given us two; and why not employ them? Make the most of them. When learning, examine with the *right* hand, as often as with the *left*; for there may be cases in which it is necessary to get the equal use of both sets of fingers. But, in saying this, I would add,—what is not an unimportant truth,—that (the woman lying in the ordinary manner) one never can examine so well with the *right* as with the *left* hand; therefore, by all means learn to examine with the left. I am told by practitioners, that they can examine well enough with the right hand; but I have seen the best accoucheurs, and particularly one very able man,—who has been twenty or thirty years in practice, and who has delivered far more women than I have done, or ever shall do,—who could not by any possibility do that with the right hand, which I easily accomplished with the left. Where a woman was supposed to be pregnant, I put *both fingers* into the os uteri, and distinctly felt the head of the fœtus; although, after examination, he remained doubtful of the pregnancy. I am persuaded that the only reason of his failure was, that he used the right hand in his examination, in place of the left. By all means, therefore, use the fingers of both hands; but give those of the left hand a preference over those of the right. He who examines well, may actually carry the *two first joints* of the fingers completely *above* the linea ileo-pectinea; while an awkward accoucheur scarcely reaches the brim. In ordinary cases, this is so much the better; for deep penetration is not required; but in extraordinary difficulties, when nature calls for help,—unable to ascertain the position of the child, —he does not know how to assist her in a scientific manner.

There is another hint I would give, relative to this important operation;—which is, that accoucheurs are not angels; and need not, therefore, give themselves celestial airs,—by affecting intuition. Do not be content with merely sliding the fingers a little way up into the vagina, and then suddenly and smilingly exclaiming,—"O, a presenta-

tion of the vertex!"—for, perchance, it may turn out to be the shoulder, the breech, or the forehead that presents; and to very great discomfiture of the accoucheur, he may find, after all, that he has mere mortal knowledge. *Humanum est errare.** I would therefore advise the propriety, in all cases where there is difficulty, of making examinations repeatedly, and slowly; and so examining every part that lies within reach. It is impossible to feel too carefully, if the examination be really important. If the accoucheur affect this intuitive mode of deciding, at first touch, what is the presenting part, he will be precipitate and err; but if he take pains to examine,—if he insinuate the finger far, and make his examination completely, familiarizing himself with the touch of the different parts of the child, he will come, in general, to a correct conclusion. When examining, some introduce the whole hand (a bad practice), and some a single finger only. Where one will do, that should be preferred; but, as a general mode, the better method is to introduce *two fingers*,—the *first* and *second* of the left hand;—the nails being pared, and lard applied abundantly,—especially about the *knuckles*. The operator should carry his fingers as far as possible into the pelvis. The attempt will not, perhaps, be easy at first; but, by keeping near the front, a deep penetration may be easily accomplished.

These, then, are the principal points to be attended to in making examinations. First, be familiar with the feeling of the different parts of the child. Then, in *ordinary* cases, the examination may be made *carelessly*; but if it is intended to examine with nicety, place the woman on her left side, close to the edge of the bed;—the knees and shoulders lying forward, and the nates posteriorly. Let the parts be prepared for investigation by opiates, fomentations, and bleeding, if necessary. Then, when learning, examine with the left or right-hand fingers; sometimes with both; always with tenderness. Never interfere, except where it is necessary; and where it is necessary, carry the fingers as far up into the pelvis as may be. Do not, in dubious cases, decide hastily, from one examination only; but make repeated and careful examinations.

* Man is liable to error.

PART II.

PARTURITION.

INTRODUCTION.

Having now described the pelvis, the soft parts in connexion with the pelvis, and the child,—so far as the knowledge of these parts is necessary to the comprehension of delivery,—we proceed to the next division of our subject; comprehending *delivery* in all its varieties. We shall commence with a few general remarks.

By the term "*delivery*," is to be understood that process by which the ovum (consisting of the fœtus, and secundines) is pushed into the world. This process, occasionally very brief, is more frequently protracted; and may, therefore, be conveniently divided into distinct *stages*, or *periods*. Different methods of division have been adopted by different accoucheurs. I am accustomed to separate the process into *three stages*;—a division which I find sufficiently minute for practical purposes. The first stage terminates with the complete expansion of the os uteri, the rupture of the membranes, and the discharge of the liquor amnii; the second closes with the expulsion of the child; and the third, with the detachment and expulsion of the secundines (from *secundus*, "next to" or "after").

Of these three stages, in a natural labour, the last is the most important to the general practitioner, and is therefore to be studied with attention; for, if we except flooding-cases, laborious and difficult labours (requiring, in the second stage, more than ordinary skill on the part of the accoucheur) are by no means so frequent as the inexperienced are apt to imagine.

I have already observed that the process of delivery, though (except in extreme cases, where the *Cæsarean operation* may be necessary) always essentially the same, yet varies a great deal in its circumstances in different cases; so as to require a corresponding diversity of treatment. Hence arises the necessity of dividing labours into classes;—not for the sake of making useless and refined distinctions, and wasting valuable time and more valuable intellect in dissertations about method; but in order that plain practical rules may be laid down for the management of different forms of labour. The various forms of parturition may, I think, be divided (commodiously enough) into five classes; and it is this classification which, after some little experience in the art of teaching, I have been accustomed to adopt. All labours, then, may be referred to one of the following five classes:—1. Natural. 2. Preternatural. 3. Flooding. 4. Laborious. 5. Anomalous.

By a labour which is "*natural*," I understand not only those deliveries in which no morbid symptoms whatever occur, but also those

cases of parturition which are upon the *whole* natural; that is, where the head of the child is presenting at the full period, and where the fœtus and the secundines are expelled by the natural efforts; and this, too, within four-and-twenty hours from the decided commencement of the labour. In our acceptation of this term, a labour is deemed natural, provided these characters concur; even though, in place of the vertex, the face or forehead should present.

If it so happen, as it will sometimes, that the head of the child is not presented, but that some other part is found to be over the centre of the pelvis,—the foot for example, or the breech, the abdomen, the shoulder, the arm, or the leg,—the labour then requires to be managed by rules peculiar to itself; and these deliveries are, properly enough, classed together; under the head of "*preternatural* labours."

Labours are sometimes attended with very large eruptions of blood;—these eruptions of blood preceding, accompanying, or following the birth of the child. Peculiar modes of practice are of course required, when great quantities of blood are coming away, and life is endangered in consequence. It becomes necessary, therefore, to constitute a third class of labours; comprising,—not indeed every case in which a small red appearance is observed at the vagina (for this occurs in many cases, if not all); but those cases in which blood comes away in alarming abundance, whether before or after parturition; and these may be denominated "*flooding* labours."

By "*laborious* labours," which constitute the fourth class, I understand those few labours (for, in judicious midwifery, they are few) in which it is necessary to have recourse to instruments, in order to complete the delivery; whether the lever, the forceps, or the perforator be preferred.

Lastly, labours which are "*anomalous* and *complicated*" are cases which (with the exception of extra-uterine pregnancies) are, upon the whole, natural enough; but to which there are superadded some extraordinary symptoms, requiring corresponding variations in the method of management;—cases, for example, where there is inflammation of the head, chest, or abdomen,—creating difficulty; or cases in which there is a rupture of the perinæum, vagina, or uterus; or cases in which there is fever, or plurality of children; or in which the fœtus is lying externally to the womb. Thus much, then, respecting the classification of labours;—so far as I conceive observations on them may be of practical utility.*

* "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; namely,—natural and preternatural. To these two classes may all others be reduced with advantage. Denman divided labours into four classes;—natural, difficult, preternatural, and 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;—'manual,' when the hand is required,—from vicious positions or accidents during labour;—and 'instrumental,' when instruments are required,—from diseases of the sexual organs, monstrosities

[If sent for to a labour, go at once; though there may be no occasion for you. When you arrive, never seem in a hurry to get away again; but make the lady think she is all in all to you, and that you care not a straw for anything else. Chat to her about indifferent subjects;—anything but what you go for. Make yourself agreeable;

of the fœtus, or imperfection of the organism. Dubois, Desormeaux, Boivin, and Lachappelle, agree with Baudelocque; but include face-presentations among the natural. Conquest, Dewees, Blake, and Merriman, divide them into natural (or Eutocia), and preternatural (or Dystocia); and the last-named author, in his learned and excellent Synopsis, has given the following as orders of the second class. 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, labour 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 labours 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; 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, first, eutocia or *natural* labour; which comprises all cases that terminate spontaneously,—whether vertex, face, or pelvis present; and, secondly, dystocia or *preternatural* labour; comprising all labours which require succour.

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

TOCOLOGY—PARTURITION—LABOUR.

Class 1: Eutocia, Natural Labour.—Class 2: Dystocia, Preternatural Labour.—Class 3: Chiragotocia, Manual Labour.—Class 4: 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 in the space of from 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, except 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.

play with the children; but play no monkey-tricks;—such as frightening the friends about her, in order to increase the fee. A talented man requires no such props. In the higher ranks, three weeks before delivery, I like to see the room where it is intended the woman shall lie-in; for they are apt to get into a small bed-room; but I make them get the back drawing-room. Husbands are afraid of

Order V.	D. Transversa; when the infant lies 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.
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. Funicalis; when the navel-string presents.
XVIII.	D. Embryonosologica; when labour is impeded by diseases of the infant; as dropsy in the brain, abdomen, spine, &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 requisite; 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, or to the symphysis pubis, at the brim; or may be turned to the side, at the outlet of the pelvis. The head may present with one or both arms or legs, or with the navel-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, rigidity of the soft parts in advanced age, scirrhus or adhesion of the os uteri, 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), suppression of urine, stone in the bladder, and excrescences or tumours in the uterus, ovaries, vagina, bladder, or rectum."—*Ryan's Manual of Midwifery.*

getting their furniture injured; but I league with the ladies against the husbands, on this subject; and sometimes to procure for them trips to the Continent, &c.]*

When summoned to a labour, and especially if previously engaged to attend, it is advisable, by all means, to see the patient *as promptly* as may be; for although the accoucheur may sometimes be prematurely sent for, and may have to retire, yet procrastination is never wholly unattended with danger; because the labour may proceed more rapidly than he imagined; and there may be floodings, preternatural presentations, or other anomalies, requiring prompt obstetric aid. A child may descend under the feet-presentation; and, in consequence of his absence, the head and body of the fœtus may be retained within the parent, at the time when there is pressure on the umbilical cord; and, the circulation being impeded, the child may be suffocated. To avoid these, and other mischiefs that might occur, it is better, in adherence to the general rule, that the accoucheur in all cases, and especially where he has engaged himself, should attend at the *earliest moment* after the summons is received.

If the case to which the accoucheur is called, be known to be laborious and difficult, he may take the lever, the forceps, and the perforator along with him; —more especially in a country place, where he may have to ride many miles. But, as a general habit, I would strenuously dissuade him from making familiar companions of his instruments; because they are not wanted. Besides "noscitur a sociis;"† and the very fact that an accoucheur always puts the lever into his pocket, when he goes to attend a labour, proves that he is an officious or meddlesome, and (in my mind) a bad accoucheur. Some men seem to have a sort of instinctive impulse to put the lever or forceps into the vagina. Do not needlessly interfere with the natural efforts. It is only, therefore, in those cases where there is every reason to expect difficulty, that he is justified in taking instruments. "Lead" yourselves "not into temptation." If instruments are put into the pocket, they are very apt to slip out of the pocket into the vagina. The only apparatus which I should advise him to take with him, in ordinary, is a case containing the *tincture of opium*, a *catheter*, a *tracheal pipe*, and a *lancet*.‡ The lancet for bleeding is very convenient in the country; especially where the women are robust and plethoric, and were the soft parts are rigid, and demand the relaxation which venesection is calculated to produce. By all means let him carry with him the tracheal pipe;—designed to inflate the child's lungs where it is still-born, in a manner hereafter to be fully explained. Many a child may be preserved by this instrument. Where the bladder is filled, and there is a difficulty in emptying it, the catheter may be required;—hence the advantage of that instrument. A double or flattened catheter should be preferred. Sometimes *during* delivery, but still more frequently *after-*

* Dr. Mackintosh's unpublished Lectures on Midwifery.

† He is known by means of his companions.

‡ From "*lancetta*," the diminutive of *lancea*, "a spear."

wards, opium is required; and the fluid form is of more rapid operation. If a woman has had no children before, and suffers but little after her delivery, opiates are needless; but where there have been two or three children, and it is learned that she always suffers a great deal of pain after delivery, the best method of relieving this pain, is to give her about thirty drops of the tincture of opium, about one hour after the delivery; and to administer thirty drops more an hour after the first, if relief be not obtained.

If the accoucheur be well known to his patient, on reaching the house he will be welcome to her apartment; but if he has not frequently seen her before, or attended her on former occasions I would recommend him not to pass immediately into her chamber; as though not having her full confidence, he might agitate her by his presence; and, in these cases, it is proper to avoid every thing that may produce commotion of the nervous system. It is better, therefore, that the accoucheur should retire into an adjoining room; where he may see his lady-patroness,—the nurse, who has generally a great many foolish nothings to say; all of which he may as well bear with patience and *bonhommie*;*—two useful *obstetric instruments*, which may be fearlessly carried to every labour, and the practice of which may be learned excellently well on the lady in question. When the shower of words has blown over, or when Mrs. Speaker reluctantly pauses to draw breath,—dexterously seizing the auspicious moment,—he may make inquiries respecting the progress of the labour, the condition of the bladder, the state of the bowels, and so on;—questions which, in ordinary cases, may with more delicacy be proposed to the nurse, than to the patient herself. Should he chance not to be "a weak head,"—"a dear man,"—"a pious man,"—"a good kind creature;" or, still worse, should the lady be pettish, and declare him to be "a brute," or "a physiologist;"—so that, for these manifold offences, she never, *never* will,—never *can* see him,—he may remain in the house; for the female "*never*," in these cases, comprises but a small portion of eternity;—perhaps, on an average, some one or two hours; and when caprices and antipathies are a little subdued by the pains, his presence will be cordially welcome.

[It is often difficult to find the os uteri;—owing to the cervix becoming so thin. Patients often feel great anxiety about their situation; and it is for you to dispel it. Indeed, most women think they are to die during parturition. Hence the doctor must not go to them with a long face, or tell them anything unpleasant. I never like to put straw before a patient's house; because it frightens all the pregnant women who may see it.

If there be pain in the head, and other symptoms of cerebral excitement, you may bleed, and act upon the bowels.]†

After having entered the room (the pains being severe) he may make his examination; and if he find the labour is rapidly advancing, he must remain at the bed-side,—lest the child should come into the world in his absence; but if, on the other hand, he is satisfied

* Good-nature. † Dr. Mackintosh's unpublished Lectures on Midwifery.

that delivery is merely commencing, he may use his own judgment; —remaining, or retiring into another room, as little circumstances render expedient. But here let me remark, by way of caution, that the head sometimes comes away very suddenly;—particularly when the pelvis is narrow at the brim. The os uteri may have been open for one or two hours,—the head making no progress; when unexpectedly (under one severe pain, perhaps) the fœtus descends, and emerges, when (it may be) he is on the point of leaving the chamber. Let him, therefore, be on his guard in such circumstances; for otherwise he may, as many others have done, lose the confidence of the patient.

The more quiet the room, the better. The *cooler* the better; but, unless the weather be oppressively sultry, a small fire is advisable; for it tends to ventilate the apartment. There should not be many companions with the patient. The nurse, the accoucheur, some very intimate friend,—a sort of confidante, to whose kind and sympathizing ear she may communicate all her sorrows and anxieties,—these are the only attendants she requires.*

If the labour is not making much progress, confinement to the bed is not necessary. Such confinement, indeed, tends to make a woman solicitous and impatient; because it leads her to expect that the child will soon come away. In the first period, therefore,—when the os uteri is beginning to open, and the delivery is proceeding in a very tardy manner,—the patient may choose her own position;—sitting, standing, or pacing the chamber, as inclination leads; but if the labour is going on rapidly,—as is usual in most cases, where the accoucheur has been called in by the advice of the nurse at the proper moment,—he must then confine the patient to that posture in which the delivery is to be accomplished.

Among different nations and different tribes, different postures of delivery are become in a manner *national*. The German ladies, I am told, are delivered in the *sedentary* position;—well calculated to accelerate parturition, by keeping up the bearing of the child's head on the os uteri. In *this* country our women are delivered usually when *lying on the bed*;—a posture more easy to themselves. In Ireland, those of the plebeian class are frequently placed upon the knees and elbows;—a custom to which some of them adhere when they come over to this country. For ordinary use, however, in British midwifery, I conceive that our national position is the best;

* When I was in France, I attended a French lady, who was married to an English officer. Her father, her sisters, their sweethearts, and all the rest of them, came three days before the accouchement took place; and when I arrived I found them all in the room. I ordered them out, but they would not go. Presently the lady got a pain; and they all patted her, and sung out,—"Courage, mon amie!" I got the people of the house to ring the dinner-bell; upon which they all ran off, and I locked the door. When dinner was finished, they came up again; and finding the door locked, threatened to break it open; but I threatened to kill the first that should enter. In this country no one plagues you by calling; but should you be much troubled with the visits of women, tell one of them it will be a long job; and that will clear them all off.—*Mackintosh's unpublished Lectures on Midwifery.*

because, in general, it is to this posture of the body that obstetric rules are accommodated. In easy deliveries, when the obstetric offices are few, the woman may lie on the left side, near the edge of the bed; with her feet against the bed-post; and with a towel, or long napkin (secured to the same post) in her hands;—so as to give her firm points of bearing during the pains. If the head be not likely soon to reach the outlet of the pelvis, she may vary this posture, as inclination leads. But in those labours which require all the assistance of our art, the posture ought to be composed with greater nicety; and,—the lady lying, as before, on her left side, close upon the edge of the bed,—the shoulders should be thrown forward, and the loins backward; and the spine should be a little incurvated. The knees should fall towards the bosom, the bosom towards the knees, and the abdomen towards the bed.

[Every country has its customs. Only a few years ago, women were delivered on stools, which had a piece cut out in front. In the north of Scotland some women are delivered on their hands and knees; but, in general, in this country, they lie on the left side, across the bed. In France they sit on the edge of a table, with their feet resting on chairs; and the doctor sits before them, with his coat off, a red apron on, and often a nightcap.]*

When patients are, in this manner, placed upon the bed, it becomes necessary to defend the latter by a proper apparatus;—in order to prevent its being injured by the discharges; and this apparatus it is which constitutes what is called "the *guarding*." Among the lower orders of society, it is a frequent custom to roll up the bed, and to interpose a blanket between the patient and the sacking; but in the middle and superior ranks a more complicated contrivance is adopted;—varying according to fancy, but essentially constructed as follows. A skin of red leather is laid on that part of the bed where the woman's hips are placed; and over this one or two blankets, or two or three sheets are laid;—folded so as to form an absorbent mass, which may imbibe the discharges. Over this there is spread out another sheet; which is either pinned to the bed-furniture, or fastened to the post of the bed;—so as to keep the whole of the apparatus in the proper place. The guarding of the bed is the office of the nurse, and with it the accoucheur has little concern; but I am induced to touch on this familiar topic, because, when the accoucheur is of juvenile appearance, nurses will sometimes inquire, *ex insidiis*,† in what manner he would wish the bed to be "guarded." Now if he were at a loss here,—if he were ignorant of the apparatus,—if, surprised, he were to ask what the woman meant;—surlily adding, perhaps, that the only guard necessary was *himself*; she would infer he had seldom been at the bed-side before; and calculate on his being ignorant of more important matters. *Parva leves capiunt animos*; and with minds of that class the bulk of the intellectual world is peopled.

[See the bed made; and if the nurse is not there, you must make

* Dr. Mackintosh's unpublished Lectures on Midwifery. † Quizzically.

it yourself, as I do. It will not lower your dignity, but increase your practice. For my part, I like to wash and dress the baby. Have a mattress over the bed; and an oil-skin, or a dyed sheep-skin over the mattress; and a sheet over the whole. Then fold a blanket twice, and sew it up in a sheet; and put this pad for the woman to lie upon. As it gets wet, you draw it away; and about an hour after delivery, you remove it altogether; and the woman gets on to a dry bed, and is quite comfortable.

While the labour is in its early stage, ascertain that there is in the room a good supply of such things as you may want. I like to hear the tea-kettle singing on the hob; for you may require hot water for a bath. I knew a case in which a child died for want of it; for the heart was beating when it was born. Let there be cold water also; together with brandy, vinegar, and (in good society) wine; and let them all be labelled;—so that no delay may occur in obtaining either when required, and that one may not be substituted by mistake for another. Let there be narrow tape, with which to tie the umbilical cord, and scissors to divide it, and a binder. Dr. Hunter says, it is not a good plan to employ a binder; for cattle do not have one, and it is liable to produce inflammation. But it is not necessary to apply it very tight; and, in cases of hæmorrhage, it is of great value.

Do not let the patient be covered with too many clothes; for they promote perspiration; and take care of the bowels. Do not allow so much spirits as patients of the lower class are generally inclined to take.]*

CHAPTER I.

NATURAL PARTURITION.

Quitting these general remarks, we will now proceed to the consideration of natural parturition; or that form of labour in which the child's head, presenting at the full period, is expelled by efforts which, on the whole, are natural, within four-and-twenty hours after the discharge of the waters. And with the view of making my observations upon this process more distinct, the whole course of it may be divided into two parts; the first of which terminates with the birth of the child, and the second with the expulsion of the secundines.

SECTION 1.—EXPULSION OF THE FŒTUS.

In natural parturition, delivery is sometimes promptly terminated, and with few preliminary symptoms; particularly in the case of a woman whose family is large, whose pelvis is capacious, and whose softer parts are relaxed. A single pain occurs, perhaps, and the child is unexpectedly pushed into the world. More generally, how-

* Dr. Mackintosh's unpublished Lectures on Midwifery.

ever, parturition coming on in a more gradual manner, precursory symptoms occur; and first the patient observes a shrinking of the upper part of the abdomen, which appears to sink down towards the pelvis;—this being produced, I suppose, partly by the contraction of the uterus, and partly from the mass of the uterus, together with the child, subsiding gradually into the pelvic cavity. This sinking may occur two or three days, perhaps more, before active parturition commences. When, too, delivery is about to commence, women frequently have a good deal of irritation about the bladder; and sometimes, the intestines being affected, they are infested with diarrhœa* and tenesmus, together with a frequent desire to pass urine;—symptoms on which we observed before. Sometimes, together with these premonitory symptoms, there is a discharge, consisting of *mucus* tinged with a little *blood*, issuing from the vagina; and this constitutes what is called the *show*, or *token of delivery*. The mucus is from the follicles, numerous and large, which lie in the mouth and neck of the womb; and the blood consists of a small draining from a few capillary vessels, which pass from the cervix uteri to the membranes, and are laid open by the detachment of these membranes, when the lower portion of the ovum descends a little, and the mouth of the womb dilates. Hence it is because the show of the blood is indicative of the dilatation of the os uteri, and the incipient descent of the membranes, that this sanguineous appearance may be looked on as the token of commencing labour. When labour is about to commence, then, all these symptoms may be manifested; and they may be classed together under the head of "preliminary or precursory symptoms;"—the shrinking of the abdomen,—the discharge of mingled mucus and blood,—the irritation of the bladder,—and the disturbance of the intestine. These symptoms are of various duration before active parturition commences;—lasting for a few days, or for a few hours.

Symptoms.—When women have borne large families (ten or twenty children, for example), delivery sometimes commences with but little preparatory suffering. More frequently, however, and in first labours especially, there is a great deal of *cutting*, *sawing*, and *grinding* felt during the first stage,—while the mouth of the uterus is gradually expanding itself, and the ovum is being pushed down. In ordinary cases, those cutting, sawing, and grinding pains,—felt in the back, front, and sides of the abdomen, and in the upper part of the thighs,—attack the patient at pretty regular intervals, of from twenty to thirty minutes. Occasionally, however, we meet with women in whom the grinding and cutting pains are permanent;—the patient complaining and writhing, perhaps, almost incessantly for hours together;—particularly, if she be irritable and sensitive. I the rather notice this, because I have seen practitioners confounded by these severe cutting pains when permanent;—supposing that they must be attributed to some other cause than the efforts of parturition.

* From διαῤῥεω, *to flow through.*

After these pains have continued for a longer or shorter period,—a few minutes, or a few hours,—we then observe the commencement of the bearing efforts; under which the woman draws in her breath, bears down forcibly, and is compelled to make a struggle with all the muscles of her body;—the abdomen, the thorax, and the extremities. Those bearing pains which are accompanied with a sort of groaning, are attended with the descent of the child's head; and are found, therefore, to occur principally in the second stage of the delivery, after the os uteri is dilated, and the waters are discharged.

While those efforts are going on,—whether attended with the cutting, sawing, grinding sensation, and a great deal of bearing, or not,—great changes are produced in the state of the os uteri and vagina. On a first examination, the disk of the os uteri is, perhaps, no broader than a sixpence; but, dilating gradually with uncertain rapidity, it assumes successively the breadth of a half-crown, a crown-piece, and a circle of still larger diameter; and, undergoing these dilatations, it may be very *thick*, *soft*, and *yielding* (which is desirable); or it may be *rigid*, *thin*, and of unwelcome firmness; and then delivery proceeds more slowly; unless, as sometimes happens, sudden changes occur. The examination of the os uteri, also, affords an opportunity of examining the membranes;* and in doing this, the cyst† charged with water may be distinguished. When first an examination is made,—the os uteri being but little dilated, the membranes with the water not protruding,—perhaps the cyst cannot be felt; and, in his obstetric noviciate, deceived by this circumstance, a practitioner may imagine that the water is already discharged. But, as the labour advances, the fluid collects about the mouth and neck of the womb; and first the aqueous cyst is felt within the uterus; and afterwards, tense and overcharged during pain, it pushes down through the dilated os uteri;—forming there, within the vagina, a hemispherical swelling (the "gathering of the waters"), in form like the breast, but without its softness. At this time, when the pains are on the patient, the bag seems as if it were overcharged with water, and on the point of disruption; but touching it again, as soon as the pains go off, it feels relaxed and yielding, as if but partially filled.

When, at length, the mouth of the os uteri is laid wide open, the bag, which seems to be extremely tense, and lies out into the vagina, bursts open spontaneously, or under the touch of the accoucheur; and a large eruption of water (of half a pint or a pint, for example) takes place; and thus, though not feeling the membrane at the moment, the accoucheur may know that laceration has occurred. Here, however, it may be as well to remark, that it is not always a rupture of the membranous cyst, containing the child, that takes place at this time; for we may have a rupture of another receptacle.

* "Membrane" is derived from *membrana*; because it covers the *limbs* (*membra*).
† From κυστις, *a bag*.

This membranous receptacle is made up of *three* thin tunics,* one lining the other; and the water may issue from the bag formed between the *decidua*† and the *chorion* (the two outer linings);—a considerable discharge being produced in this manner. When the eruption is not from the bag in which the child is contained, alarm may be occasioned; but it is groundless; nor do I know that the point is in any way of much importance; though, to prepare your mind for the accident, I thought it proper to mention it. Let me add, that when there is a plurality of children, the number of gushes may correspond with the number of the fœtuses.

When the mouth of the uterus is fully expanded, and the bag is thoroughly laid open, the head of the child passes through the pelvis;—in the various ways already described; and which, therefore, I shall here very briefly consider. The vertex, as usual, presenting in the beginning of the labour, the face ordinarily lies towards the synchondrosis, the occiput towards the acetabulum, and the chin upon the chest; while, at the close of labour, when the head is emerging, the face lodges in the hollow of the sacrum, the occiput under the arch, the sagittal suture on the perinæum, and the chin upon the chest still.

In labours on the whole natural, however, when the vertex presents, the face may lie on the symphysis pubis throughout the delivery;—the chin being thrust forcibly down upon the chest, and the head passing the pelvis, with the shortest of the three axes (that, I mean, stretching from the upper part of the forehead to the lower part of the occiput) lying, throughout the labour, between the front and back of the pelvis. In cases of this kind, formidable difficulties may arise. Sometimes craniotomy becomes necessary;—or, though much more rarely, the forceps; sometimes the head is expelled by natural efforts within twenty-four hours; not however, without much pressure upon the bladder, rectum, and perinæum.

In labours on the whole natural, presentations of the forehead, occiput, and ear, may occur. Presentations of the ear are so rare, that I deem it unnecessary to dwell on them; and as presentations of the occiput require no peculiarities of management, they need no further notice; but when the forehead is lying over the centre of the pelvis, the case becomes a little more important. When the forehead presents, rectification or instruments, as explained already, may in some cases become necessary. But in most instances, I believe, the labour may remain natural enough notwithstanding;—the fœtus being expelled, within twenty-four hours, by the unassisted efforts of the womb; the presentation sometimes changing for that of the vertex, and sometimes for that of the face. When the face of the child presents, rectification may be sometimes proper; or, if the head be large, or the pelvis small, or the parts rigid, the perforator may be required;—the forceps being seldom admissible when instruments are

* "Tunic" is derived from *tunica*; "a *tuendo* corpore" (*from defending the body*);—as a tunic (the ancient Roman dress) did.

† From *decido*, "to fall off,"

really necessary. But in face-presentations, if let alone, I believe the head will generally descend under the natural efforts; though the softer parts,—the rectum, bladder, vagina, and more especially the perinæum,—may be compressed more than is desirable. It seems, then, from this general survey, that in natural labours, as they are technically called, there are various ways in which the head may pass, or attempt a passage;—the vertex-presentations being most frequent; but the more rare presentations of the face, the forehead, the occiput, or the ear, not being altogether excluded.

The Pains.—The passage of the child through the pelvis is attended (as we all know) with a great deal of *pain*; and so certain is this, that the efforts are usually denominated "the *pains*." The sensations are described as of various kinds;—*dislocation*,—*bursting*,—*incision*; and a certain *indescribable* feeling, which it is extremely difficult to render intelligible to our sex. When parturition is going forward, (particularly in its commencement), the woman may have such a pain as would be felt if the sacrum were going to quit its place. This is what I call the *dislocatory* feeling. This feeling leads the woman to call upon the nurse, and bid her bear upon the back;—a practice from which she finds considerable relief. I suppose, therefore, this sensation may be partly produced by the sacrum being put aside a little by the passage of the child. I was once asked by a lady, whether, at the moment of delivery, the back-bone was not actually dislocated. Such was her feeling on the subject; and as there is a relaxation of the ligaments during delivery, some slight displacement of the sacrum posteriorly may be supposed really to occur. Nevertheless, I have strong reason for suspecting,—what I should not have supposed *à priori*,—that this pain in the loins is owing to the dilatation of the *os uteri*; for in some cases where I have been putting my fingers into the mouth of the os uteri, and dilating it, when perhaps I ought not, this feeling of dislocation has been distinctly felt. It is during the passage of the head through the vagina, that the next sensation (that of *disruption*) is perceived; and this sometimes so forcibly, that I have heard patients compare it to a feeling, as if they were torn limb from limb.

The *cutting* and *sawing* sensations, are observed on two occasions; first, when the mouth of the womb is expanded; and secondly, when the head is passing the genital fissure. The perinæum being then forcibly dilated, women sometimes exclaim,—"You are cutting me!"—when, in reality, the accoucheur is merely supporting the part.

The strong contractions of the womb, which expel the child, and which may be called the *bearing efforts*, give rise to the remaining sensation; and that is a very distressing one indeed. It is so severe, as to compel the patient to cry out; and is a sort of feeling women cannot distinctly define; nor can they therefore make you clearly comprehend it. It seems to be produced by the strong *muscular action of the womb*; and may, as to its cause, be of the same nature,

though not of the same feeling, as we experience in the gastrocnemii * muscles, when seized with the cramp.

When the child's head enters the world, very great relief is obtained. Some women say they feel as if they were in heaven; or use other expressions equally glowing and emphatic. This cessation of the pains may be of brief duration only, or it may continue for ten minutes or twenty minutes;—one or two strong pains afterwards supervening, and the body being expelled. In natural labour, after this expulsion of the head, it is wrong for the accoucheur, as a general practice, to lay hold of the child, and pull out the shoulders. He ought to suffer the natural efforts to expel them.

The duration of the whole process, and particularly that of the second stage of labour, varies exceedingly;—the child being sometimes expelled in a few minutes; and sometimes not till after exertion for six, twelve, or twenty-four hours; or even longer. Giving my attention almost entirely to the difficult forms of labour, I have not had much opportunity of remarking those indications which, in natural labour, foreshow its probable duration. I may observe, however, that the more numerous the previous children, the more speedily, in general, labour proceeds. *Cæteris paribus*, the larger the pelvis, the more rapid the delivery;—the smaller the pelvis, the more tardy the delivery. When the softer parts are relaxed, the delivery is facilitated; and where they are rigid, it is delayed. Much depends upon the efforts of the woman. In some women the efforts are sluggish; in others they are very violent. Much, also, depends upon the state of the os uteri. If it be wide open, thick, soft, and yielding,—where a woman is of the ordinary size, and the womb active, and there have been children before,—the head descends quickly enough; but if the disk of the os uteri do not exceed that of a shilling, and if the margin be thin, unyielding, and contracted, then parturition is not so speedily accomplished.

Morbid Symptoms.—In the progress of labours, such as I have described, there are various morbid symptoms;—not, indeed, of much importance; yet not to be overlooked altogether. When the child is about to enter the world, tenesmus is felt;—in consequence of the bearing of the head on the sacrum, perinæum, and rectum. Micturition † will also take place; principally, I suppose, from the pressure of the child's head on the neck of the bladder; and, in the commencement of the labour, this requires no remedy; but the accoucheur ought to leave the room occasionally. Cramps are likely to be produced from pressure on the obturator and sciatic nerves; and, in a natural labour, an attack of the *cramp* is generally favourable; for it chiefly occurs when the head of the child is rapidly descending, and the child is sometimes born soon after the cramp comes on. Again, in natural labours, *vomitings* frequently occur

* From γαστηρ, *the stomach*; and κνημη, *the leg*;—because the muscles in question form the belly of the leg.

† From *micturo*, "to pass urine."

during the first stage; and scarcely require a remedy. If medicine be necessary, the effervescing draught is, perhaps, the best. Four scruples of citric acid may be dissolved in four ounces of water, and five scruples of bicarbonate of potass in four ounces of water; and a table-spoonful of each of these, when effervescing, may be given every quarter or half hour, till the vomitings cease. Very severe *rigors* and *shiverings* are felt, which might create alarm in the novice;—women sometimes shaking as if they were in an ague-fit. If this be followed up by symptoms of pyrexia,* fever is to be feared; if by severe pains in the head and abdomen, evidently not proceeding from the labour, then there is reason to suspect the presence of inflammation. If there be much flushing of the face, throbbings of the carotids, and quickness of the pulse, the approach of convulsions may be suspected. In such cases, abstract blood (twenty, or five-and-twenty ounces) from the arm. These accidents, however, are rare. In general, where these symptoms occur,—without the other signs of fever, inflammation, or convulsions,—they are to be viewed not as alarming, but as auspicious; for they seem to indicate that the labour will be active, and its termination speedy.

SECTION 2.—DUTIES OF THE ACCOUCHEUR.

It now becomes necessary to speak of the duties which devolve upon the accoucheur, in the management of a labour;—duties which, though few, are by no means unimportant. If, when parturition begins, the accoucheur make an examination of the abdomen externally, he may generally clearly enough distinguish the uterus beneath the abdominal coverings;—forming a hard and solid tumour there. If an examination be made within, one or two fingers may frequently be passed into the mouth of the womb; and beyond this opening the cyst, charged with water, may be felt; and sometimes the presenting part may be distinguished. Even where the uterine mouth excludes the fingers, still, if the latter be placed between the os uteri and the symphysis pubis, the child may be felt (just behind and above the symphysis) through the neck of the uterus; so that there can be no doubt that the woman is in a state of pregnancy: and, consequently, it rarely happens that much investigation of this point is requisite. Yet, now and then,—where there is a good deal of pain, resembling that of parturition, but arising from another cause; and where the woman, under error, has supposed herself to be pregnant,—the practitioner is called to cases of *reputed* parturition; when, in reality, gestation has not begun. A gentleman, calling at my house, told me, not without earnestness, that he had under his care a case of labour, about which he was very anxious. "The mouth of the womb," said he, "is beginning to open, and I can feel the child; but the patient is somewhat weak, and labour makes but little progress." On my inquiring how long delivery had been protracted, he replied,—"a few hours;" and added, that there

* From πυρ, *fire*.

was no very pressing symptom. "Meddlesome midwifery is bad," I rejoined; "therefore it is better to wait; and not unwisely and rashly to distrust the best of accoucheurs,—Nature,—the mother of us all." A day or two passed away; after which he called on me again;—observing that his patient, still undelivered, was getting weaker and weaker; and that he wished me to give her a visit. On entering the apartment, I saw the woman lying in state; with nurses, accoucheur, and all the formalities attending a delivery. One little point only was wanting to complete the labour; which was, that she should be *pregnant*; for although the practitioner (one of the omnipotent class) had distinguished the child's head in the uterus, there was, in reality, no fœtus there. A few hours afterwards the patient died; and on examining the abdomen, we found the peritoneum full of water; but the womb, clearly unimpregnated, was no bigger than a pear; and thus it sometimes happens, that we are called to reputed deliveries, when, in truth, the patients are not even pregnant. We may therefore set down, as one of the duties which, in natural labour, devolve on the accoucheur, that of deciding, in dubious cases, whether pregnancy exists or not.

Symptoms during the Early Stage.—When the practitioner is summoned to a labour, there can, in general, be no doubt as to the commencement of parturition. Often he is not called upon till the middle of the process; when the womb is open, the liquor amnii is discharged, and the head of the fœtus is approaching the outlet; so that there can be no doubt respecting the reality of the parturition. As women, however, occasionally have *false pains* in the abdomen,—sometimes of a spasmodic nature, and sometimes inflammatory,—it may happen that he is called to a labour supposed to have made some progress, when, in truth, it has not begun. To decide, therefore in these cases, whether parturition commenced or not, is a second duty which devolves upon the accoucheur; and this he may determine by the following diagnostics. When the pains occur, make a careful examination of the os uteri; and if, after a succession of pains, it is apparent that the mouth of the womb is not merely dilated, but of increasing dilation,—with a disk, at first as large as a shilling, becoming, after a few efforts, as broad as a dollar,—such increasing expansion is a decisive proof that parturition has begun. Mere openness of the os uteri, however, proves nothing. I know, from personal observation, that the mouth of the womb may admit with facility the entrance of two fingers, for a fortnight or more before delivery commences; but when there is not merely expansion, but an *increasing* expansion of the os uteri, the commencement of the labour may be regarded as certain.

Desirous to know whether parturition has commenced or not, the medical attendant must make further observations upon the membranes. If, during the pain, he feel the membranes tense (like an overcharged bladder), and during the absence of pain relaxed (so as to yield readily under the touch of the finger), it may with certainty be concluded that parturition has commenced; or, should the mem-

branes be ruptured, examine the presenting part; which will advance and retreat, simultaneously with the action and inertness of the uterus. Here then are the three principal indications, by which we are enabled to decide, in dubious cases, whether delivery has begun;—the advance and retreat of the presenting part; the tension and relaxation of the membranes; and, above all, the increasing expansion of the mouth of the uterus.

There are other indications of incipient parturition, less decisive but not to be passed without notice. When delivery commences, there is sometimes an openness of the vagina, and a considerable relaxation of its texture. It will be found, too, that the patient usually has those pains before described,—of a cutting, grinding, and sawing character,—returning every ten, fifteen, or twenty minutes. Moreover, when delivery commences, the *show* usually issues from the vagina. This was, formerly, supposed to be peculiar in its nature; but it consists, in reality, of mucus, mixed with a little blood. Lastly, there is, a few days previously to the commencement of parturition, that descent of the abdomen already mentioned;—the abdominal tumour becoming smaller than it was before. All these, however,—the descent of the abdominal tumour, the appearance of the show, the state of the pains, and the relaxation of the vagina,—are to be looked upon as presumptive, and not as decisive signs.

The tension and relaxation of the membranes, the retreat and advance of the presenting part, and (above all) the increasing dilatation of the os uteri;—these are the sole diagnostics in which, in dubious cases, we can confide; and these diagnostics, properly consulted, will preserve the practitioner from needlessly waiting for hours together in order to make the discovery at last, that parturition has not yet commenced; or, perhaps, that the patient after all is not pregnant. These supererogatory services are not quite so glorious in obstetrics as in theology; though some kind friend is seldom wanting to play the recording spirit, and take care that your merits may shine conspicuously in a familiar page of his register:—

> "Me Capitolinus convictore usus amicoque
> A puero est; causâque meâ—permulta rogatus
> Fecit; et incolumis lætor quod vivit in urbe:
> *Sed tamen*"—*

"Poor Wilson!—Poor Thompson!—I have a very great regard for him! He is a very clever man, certainly;—a star of the first magnitude! *But*"—Every blockhead knows how to round off these periods; and so it is that each succeeding generation seems to contain the moral representatives of those who have gone before them; and, Christian or Pagan, man still remains essentially the same!

Rupture of the Membranes.—When parturition has made some little progress, the practitioner may distinctly feel the expanded os uteri;

* Capitolinus made me a companion and a friend from a boy; and, being asked for many things on my own account, he did them; and I am glad he is living and well in the city: but yet—*Horace's "Satires;"* Book i, Satire iv, Lines 96 to 99.

through which, as the waters gather, the aqueous cyst is bearing; and, for the management of this cyst, some rule is required. There are some practitioners, who are in the habit of bursting the membranes as soon as they can reach them; because they think that, in so doing, they accelerate the labour; while there are others,—and I should be disposed to accede to their practice in preference to that of the former,—who always leave the rupture of the membranes to nature; as they conceive it improper needlessly to interfere. To burst the membranes by the finger, instead of waiting for spontaneous rupture, is faulty;—first, because the interference is needless and meddlesome; and secondly, because this cyst of water is the instrument which nature employs, in order to dilate the mouth of the uterus; the opening of which it enters like a wedge;—acting on its margin by expansive pressure. On the other hand, it is not wise, in every instance, to commit the rupture of the membranes to the natural efforts; because, now and then,—in the sixth or seventh month especially,—the ovum tends to come away unbroken, like the egg of an ostrich. When this is the case, much flooding may occur; and the child will, most probably, perish by drowning; as it comes into the world immersed in a bag of water. Again, the membranes are sometimes, though very rarely, morbidly unyielding,—firm as a bullock's bladder; and labour may be delayed for several hours in consequence. These are exceptions, therefore, to the general rule of leaving the rupture of the membranes to the natural powers; and the rule which I would prescribe,—and which, if adhered to will (I conceive) in general keep near the just line of practice,—is the following. In general, commit the rupture of the membranes to nature; and, in nineteen cases of twenty, they will yield, and the delivery will do well. If, however, the os uteri be wide open, and the membranes, pushing down along the vagina towards the external parts have not given way, then rupture them; for, no longer of service in dilating the passages, they may retard the birth; or,—should the laxity of the parts, or the capacity of the pelvis, allow of their transmission entire,—floodings fatal to the mother, and destructive to the fœtus, may be the result. In my museum I have a preparation, consisting of an ovum about seven months of age,—unbroken. In that case, as I learnt, very dangerous flooding took place; and the fœtus, instead of growing up to manhood, has, like Asmodeus in the story, for the last twenty years, been incarcerated in its present abode.

Knowledge of the Presentation.—In labours, generally, it is of very little importance, whether the practitioner knows what is the presentation, or not; because, in general, it is a natural one; and, notwithstanding his ignorance, the child will safely enough come away. Nevertheless, as I have already explained in a preceding chapter,—when treating of the passage of the child through the pelvis,—it may happen that the child lies unfavourably for transmission; and the aid of art may be required. In cases of this kind, an accomplished and scientific accoucheur ought to be prepared to administer the necessary assistance; and as he can do nothing till he knows the pre-

sentation, it is desirable that, in every labour, he should (as early as possible) make out what part of the child is lying over the centre of the pelvis;—so that he may take his measures accordingly.

There are different periods of the labour at which the presentation may be ascertained;—when, for example, the head is about to enter the world; or when the os uteri is fully expanded, and the membranes are broken, and the cranium is on the point of entering the brim of the pelvis; or, lastly, when, the disk of the os uteri, about as large as a shilling, will admit two of the fingers; so that, if the examination be made when the womb is quiet and the membranes are relaxed, the presenting part may be easily distinguished. Not to bewilder the practitioner, however, with discordant practices, I may observe that, in ordinary cases, it is best, on the whole, to make an examination at the time commonly recommended;—that is, when the mouth of the os uteri is laid wide open; when the membranes are broken, and the liquor amnii has just been evacuated. Then the head of the child, lying naked within the brim of the pelvis, and within reach too,—unaltered by compression,—may the more easily be recognised.

In natural parturition,—the mouth of the uterus being open, the membranes broken, and the liquor amnii just discharged,—the vertex of the child may be known by its *roundness*, and *hardness*;—by its sutures, and its fontanels;—often by the adjacent ear;—and frequently by the hairy growth upon the scalp. To ascertain all this, requires some small share of experience and dexterity; but not much; for, with an ordinary share of skill, the practitioner may decide (easily enough) whether it be the vertex, or some other part, that is lying over the centre of the pelvis.

Position of the Woman.—In making this examination, the woman is put into different positions; according to the customs of different countries. The accoucheurs of some countries make the examination in the recumbent posture; of others, in the sedentary; and among the plebeians in Ireland, the patient is examined on the knees and elbows. For the purposes of British midwifery, however, perhaps the ordinary obstetric position of this country is the most convenient;—that, I mean, in which the woman lies on the left side, as near to the edge of the bed as may be;—the bosom approaching the knees; the knees advancing towards the bosom; the shoulders forward; the loins posteriorly; and the feet, if agreeable, bearing against the post of the bed. The position being thus arranged, the first and second fingers of the left hand, as formerly recommended, will be found most convenient for making the examination.

[In making an examination, any coarseness or offence to modesty the patient never forgives. Do not make speeches about it; nor act like Dr. Kellie; who, though a great man, had great peculiarities. He wanted tact; and used to run into the room in a hurry, and plunge his finger at once into the vagina! In the case of a woman who has been long married, and has borne children before, there is no difficulty or delay on the score of delicacy. The nurse brings you towels and hogs-lard at once. (I never use butter; for I could

not eat my breakfast afterwards). But a newly-married woman dislikes and dreads the examination; and, therefore, you sit down by the bed-side, and talk to her about other things. Presently the nurse asks how the baby is lying; and this makes the lady anxious about it. A pain comes on, and you relieve it by putting your hand on the sacrum. When the next pain comes on, introduce one or two fingers of the other hand into the vagina; ascertain that the passages are all right; and the arch of the pubis, and the outlet of the pelvis, natural. Then feel for the os uteri, far back near the sacrum; and you will hardly know whether the head which you feel there is uncovered, or is still within the uterus. Great mistakes have sometimes been made here. A man, half drunk, once rammed a perforator through both sides of the bladder, and through the wall of the uterus, before he got it into the child's head! When you have reached the os uteri, see how far it is open. Wait till a pain comes on; and if its lips then become thinner, and the uterus bears down, labour is commencing. Do not confine the patient to bed in the first stage of labour; for she may be ill for a fortnight. Hence it is not necessary to be constantly in the house, in the first stage. After a hard day's work, I was twice sent for to a case; but I refused to go till the nurse (whom I knew to be experienced) should say it was necessary. They sent for another man; who stayed with her all night, all the next day and night, and delivered her at one o'clock on the day following. I know a student who stayed two or three days and nights with a woman who thought herself in labour; but who was not delivered for six weeks. A gentleman sent for me to attend his lady; but I found it was not necessary to stay with her. He wished to stop me; but I would not submit to coercion; and she was not delivered for seven weeks. Do not stay to *nurse* your patient, either in this case or any other; for it alarms her, and you get bothered. By going into other scenes, the mind recovers its freedom and vigour. In one case, however, vomiting and shivering (which indicate a quick dilatation of the os uteri) came on; and the child was born ten minutes after I was gone. Both the lady and the nurse scolded me; and I never allowed the latter to be employed again with me. The rule, in practice, is not to leave the patient after the os uteri is dilated to about the size of a crown-piece; but I have seen it as open as that a fortnight before the delivery, and once at the seventh month of pregnancy; though the child was carried to the full time. In this case, even a little of the liquor amnii was discharged. At the eighth month, I have found the os uteri open to the size of half a crown; though the labours did not come on till the full time. When, in addition to the os uteri being thus much dilated, the pains are full and strong, the patient must not be left.]*

Situation of the Different Parts.—If it has been clearly ascertained that the presentation is the vertex,—the principal point of examination in natural labour,—perhaps it is better for one young in practice, not to disturb the mind with investigations respecting the *situation* of the different parts; unless, indeed, this be done with a view of acquiring,

* Dr. Mackintosh's unpublished Lectures on Midwifery.

by practice, a more complete mastery of examination; for, in ordinary labours, it matters little whether he is acquainted, or not, with the *situation* of the cranium. Every accomplished accoucheur, however,—entitled to be considered as an adept in obstetrics,—ought to be able, by all means, to determine this point at once; and when he has attended, perhaps, some hundreds of cases, and paid particular attention to this part of the examination, he will find it easy enough. Many accoucheurs fail egregiously; but the fault is not in the art, but in the man; for, if we except some few cases, the situation of the head may be readily made out; provided the practitioner,—not a mere talker in midwifery,—is really a proficient in his art. When it is desirable to discover the situation, first endeavour to distinguish the ear, by interposing the finger between the symphysis pubis and the head of the fœtus; and there, if the accoucheur be skilful, and the condition of the labour natural, the ear may be felt, without difficulty, even in the earlier parts of labour. Again,—anxious to ascertain the position of the head,—examine the ear once more;—taking care not to double the part upon itself. Observe carefully which is the flap of the ear; and which is that part of the ear that is bound down close upon the head; for the flap of the ear lies towards the occiput, as the part which is sessile* lies towards the face. So that where the practitioner feels the ear, and takes care not to displace it, and falsify its indications by doubling upon itself,—observing respectively those parts which are attached and disengaged,—he may make out the situation of the face and occiput with facility and precision. Further,—by examining the sutures and fontanels, (an observation never neglected in my own practice), he may determine what is the situation of the head. Feeling the sagittal suture, he traces it to one extremity; and there discovers a fontanel of small size, triangular shape, and presenting a conflux of three concurrent sutures,—the two legs of the lambdoidal, and the sagittal. By these characters, he knows it to be the *lesser* fontanel; and where the little fontanel is, there is the occiput. Tracing the sagittal suture back upon the other extremity, he will there find a larger deficiency of bone;—the *greater* fontanel; of rhomboidal shape, and having the conflux of four sutures,—the legs of the coronal, the sagittal, and the frontal. By these characteristics, may be recognised the *larger* fontanel; and as the larger fontanel lies near the face of the child, he thereby discovers the situation of the face; so that by examining carefully the ear, sutures, and fontanels of the head, in ordinary labours, the position may be discriminated with great exactitude.

Sometimes the membranes are ruptured before the os uteri is dilated; and, in these cases, an examination may be made as soon as the finger can be introduced. In ordinary examinations, the position of the patient requires no nice adjustment; but if it is desirable to examine with more than ordinary care, the rules of posture already prescribed must be observed. When the vertex is much swelled from compression, it may be confounded with other parts; and more

* From *sessilis*, "sitting close."

especially with the nates; from which, however,—with due care and dexterity,—it may be discriminated readily enough, by the diagnostics already enumerated. Under continued pressure of the finger, the intumescence of the scalp is gradually dissipated; when the sutures and fontanels become clearly distinguishable; or the edge of the parietal bone may be found lying on the margin of its fellow; or sometimes we have, in a copious growth of hair, a decisive indication of the vertex. These obscurities from intumescence, are frequent in consultation-cases; but in cases under the care of the practitioner from the first, they must be of rare occurrence;—provided he adheres to the rule before enjoined, and makes his examinations in the earlier part of labour, as soon as the liquor amnii has been discharged; for, before effusion of the liquor, the cranium can be but little compressed.

In a natural labour, the less the practitioner interferes the better; and therefore, when once the membranes are open, and the position of the head is made certain,—provided he finds the child lying in such manner as not to require assistance,—he has, in fact, little to do;—beyond sitting quietly at the bed-side, and watching the progress of the head to the outlet. If it be a case of instruction, and he is beginning practice, then indeed it is proper that he should examine as frequently as can be done without injuring the woman;—with the view of learning to recognise the different parts of the pelvis and the head. But if the case be managed (as cases generally ought to be) merely for the comfort and safety of the woman,—then the less he examines, in a natural labour, the better; though it is sometimes necessary, during pain, to feign an examination; lest the patient should fancy herself neglected.

As the head is making its progress through the pelvis, there is one point to which the accoucheur should attend; and that is, the keeping of the bladder duly evacuated. When suffered to accumulate, the urine may injure the bladder by over-distention; and, in protracted labours,—as I have already said,—the back part of the cervix vesicæ may be ruptured, and may open into the vagina; of which accident I have now seen two conspicuous cases. In a natural labour the natural efforts are usually sufficient for the evacuation of the urine; nor should the catheter, on any account, be introduced; unless,—the natural efforts failing,—the accumulation of water should clearly require the operation, and there be the requisite dexterity to ensure its safety. When the bladder is obstructed, the less the patient drinks the better; and, within limits, the more she perspires the better. It is desirable, therefore, that a small diaphoresis* should be sustained; and above all, she must not drink copiously;—provided the labour be somewhat prolonged.

Protection af the Perinæum.—When, under the natural efforts,—with little interference on the part of the accoucheur,—the head of the child at length comes down into the outlet of the pelvis, then it is that another and very important duty devolves on the accoucheur; namely, the protection of the perinæum;—a protection that, in

* From *διαφορεω, to carry through.*

some cases, is essentially necessary. If the head of the child be small, or the softer parts relaxed, or many children have preceded, the cranium emerges without difficulty or danger; but if it should so happen that the softer parts are rigid, or the head large, or the outlet of the pelvis contracted, then the head usually comes through in a more gradual manner;—advancing or retreating, as ease and pain reciprocate; till, gaining progress with every effort, the fœtus at length emerges;—in the way already demonstrated. This process may occupy ten, twenty, or thirty minutes, or even more; and when, as in first labours, the parts are rigid, defence of the perinæum becomes very necessary; for it sometimes happens that the part is laid completely open; so that the genitals and anus form one common fissure. The method of protecting the perinæum is simply this. When, in ordinary labour, the fœtal cranium bears on the labia pudendi and perinæum,—dilating these parts as if it would burst forth,—let the left hand be laid naked upon the perinæum, so as to be ready for counter-pressure; and then get a bearing on the vertex with the right. This done,—as meddlesome midwifery is always condemnable,—should the softer parts, during the subsequent pains, appear to be in no danger of laceration, the practitioner may content himself with directing the patient to abstain from forcing; and may suffer the head to advance; but if, from greater tension, rupture be apprehended, he must then, though unwillingly, resist the bearing-forth of the fœtus;—supporting the perineum with the left hand, and opposing the progress of the vertex with the right;—in such a manner, however, as not to delay the emersion longer than the safety of the perinæum requires. At this time the woman ought not to urge voluntarily. If the pains are very vehement, rupture of the uterus may occur, if the birth be too long delayed.

Birth of the Secundines.—When the head is in the world, do not lay hold of the neck and endeavour to draw down the shoulders; for here, as ever, meddlesome midwifery is bad. The natural efforts, if fairly tried, will, in ordinary labour, expel this part of the child; and it is found, that where the efforts are left, in this manner, to expel the shoulders as well as the head, the womb contracts afterwards more kindly and effectually; and the placenta becomes more safely detached. When the child's head has come into the world, therefore, remember that a prudent practitioner ought not to interfere; but must still suffer the uterus to act in its own way; when, by the natural efforts, the shoulders will be expelled.

The Funis round the Child's Neck.—It not unfrequently happens, in labours on the whole natural,—perhaps in one out of five or six cases,—that the umbilical cord is surrounding the neck of the child; —coiled round the part either once only, or repeatedly,—say six or seven times. When the cord surrounds the neck, in this manner, the simplest and best method of detaching it, is to put a finger, or two, into the loop; to dilate it by pressing; afterwards to lay the chin upon the chest; and to bring the loop over the back of the head;—so as to set it at liberty. If the cord cannot be disengaged in this

manner, then open it as before, and suffer the shoulders to pass the loop. If, however, the cord surround the neck two or three times, —and I have heard of one case in which the coils were six, and another in which they were seven in number,—the loops being many, the cord cannot be disentangled in this manner; and then a better method is to leave the cord round the neck until the body is born; when it may be disentangled with facility.

Cutting the Funis.—When the body is expelled, lay hold of the child;—taking care not to draw it away far from the genitals of the mother. In general, the umbilical cord of the human fœtus is about two feet long; occasionally much longer. It sometimes happens, however, though rarely, that the cord is unusually short. Now, in such a case, if the accoucheur were to draw the child away, he would, in fact, make a pluck at the placenta; and if the womb were disposed to become inverted, this displacement might be produced; or, the womb resisting the impulse, he might partially detach the placenta;—producing perhaps a flooding, not without its dangers; so that, to preclude these dangers, it is better to keep the fœtal abdomen close upon the genitals of the mother, until the cord is found to be of full length.

The child in the world, the next office which devolves upon the accoucheur, is that of tying the umbilical funis;—an operation which, perhaps, it might not always be necessary to perform; for I believe that, in many cases, if the umbilical cord were cut through, and no ligature were applied, such is the well provided contractility of the umbilical arteries, that they would close, and dangerous hæmorrhages would be prevented;—particularly if, as in a state of nature, the cord were divided by the *teeth*; as I presume it is among animals, when divided by them at all. Nevertheless, as the safer course is to tie the funis, and as this practice is generally adopted, ligatures should always be applied. In tying the cord, make use of *two ligatures*; the first at the distance of about three or four finger-breadths from the fœtal abdomen. The ligature ought not to be applied close upon the abdomen; first, because a portion of intestine protruding in the way of hernia, might be included in the ligature,—giving rise to strangulation; and, secondly, because (the cord being tender) you might, with the ligature, cut down into the vessels;—occasioning thereby a bleeding, which, as no room would remain for a second ligature, it might not be easy to repress. The first ligature, therefore, is to be put on at the distance of two or three finger-breadths from the abdomen; and the second may be applied about two inches from the first. As to the *kind* of ligature, it may be remarked that a small skein of thread or silk will answer the purpose exceedingly well;—a skein consisting, not of *two* threads only (for these might break, or cut the cord), but of several,—ten or twelve, for example. When applying it, coil the ligature once round the cord, and draw it very tightly. Do not neglect this caution; for, the elasticity of the funis protecting the vessels, they might, by lighter pressure, be but imperfectly closed; and might show a disposition to bleed. Having coiled the ligature

once round the cord, and tied it in a single knot, apply it a second time on the same crease as before, and draw it tightly again; afterwards making a third loop (still on the same crease with the preceding), drawing it tightly also, and securing it now by a double knot. The first ligature being applied in this manner, the second may be put once upon the cord, about two inches from the former; and then, the cord being brought under view, divide with the scissors;—not, however, ambitiously imitating certain great originals in midwifery; some of whom have amputated a finger as well as the cord, and others a portion of the male organ.

The umbilical cord divided, cover the head with a cap; and, on turning round, the accoucheur is perhaps surprised to find near him some fair nymph, who presents a woollen texture called "the receiver;" and to the care of this lovely vision,—the guardian spirit of the child,—the much expected visitant is confided. Respecting the fit moment for applying the ligature to the cord, a difference of opinion prevails;—some advising us to wait till the funicular pulsation ceases; and others recommending a ligature as soon as the fœtus enters the world. Not, however, to enlarge tediously upon this subject, I may remark here, that when the child is vigorously alive,—breathing, crying, struggling, enjoying the full action of the respiratory and vascular system,—I do not scruple to put a ligature on the funis, as soon as it comes into the world. On the other hand, if I find that the vital actions are very weak,—from previous pressure either on the cord, on the head, or on any other part,—I delay the ligature until I am obliged to cut it away, in order to have recourse to the respiratory apparatus, and the warm bath;—of which I shall hereafter treat.

As soon as the accoucheur has delivered the child to the attendant, he should, in every case, make an examination to ascertain whether there be another fœtus in the uterus. Repeatedly has it happened, that the accoucheur has wished the parent joy; has retired from the room; has even left the house; and yet, as soon as he has crossed the threshold, perhaps, a second child has made its appearance;—to the no small gratification of those classical friends, to whose kind offices I was before adverting. Now, in order to avoid so gross an error, he ought, in every case, as soon as the first child has emerged from the uterus, to ascertain whether there be a second. If, as in ordinary labours, no second fœtus be in the womb, on laying the hand above the symphysis pubis, he may there distinguish the uterus forming a mass of varying firmness; not much exceeding in bulk the size of the fœtal head; and when, proceeding with the investigation, he examines internally, sometimes the placenta, sometimes the membranes, may be felt at the mouth of the womb;—never, of course, the parts of a fœtus. But what if there be a second fœtus in the uterus? Why, in such cases, the womb, examined externally, feels as large as in the end of gestation; and when the internal examination is instituted, the cyst charged with water, or the members of the child, may be distinctly felt. Blood collecting in the membranes

of the fœtus which has been expelled, sometimes simulates the watery cyst of another child; but the issue of clots in place of water, prevents a deception here. Water, air, adeps, or a diseased growth of the viscera,—especially of the ovaries,—may produce an abdominal enlargement, which may be confounded by the unskilful with the intumescence arising from a second child; but the scientific and able accoucheur may, I conceive, always distinguish between them, by grasping the contracted womb externally, or by examining the mouth and neck within. Satisfied that there is no other child in the uterus, he may then very carefully wrap up the genitals in well-aired napkins; afterwards bracing the abdomen with a broad bandage, applied over the abdomen externally to the dress of the patient, with a degree of tension sufficient to yield a sense of grateful support. Mr. Gaitskell, of Rotherhithe, has contrived a bandage excellently well adapted for this purpose. The bandage may be followed by a cordial, composed of one table-spoonful of brandy, and three of water; with as much sugar and nutmeg as may be agreeable to the palate of the patient.

Recapitulation.—These, then, are the duties (simple and few) which devolve on the accoucheur, in ordinary labours. I shall briefly recapitulate them:—Rarely is it necessary to ascertain whether the woman be in a state of pregnancy; rarely is it requisite to examine whether parturition has occurred or not. With the rupturing of the membranes, the less you interfere the better;—they are to be broken only when preternaturally unyielding, or when there is a disposition in the whole ovum to come away at once. In every instance, the scientific accoucheur should make out the presentation. In every delivery, it is desirable that the situation of the child be discovered; yet this is by no means peremptorily necessary. The best time for examination is on the discharge of the liquor amnii; and when the labour is found to be natural, the less we interfere the better. When the head is at the outlet, the perinæum must be protected. When the head is in the world, ascertain whether the cord is round the neck, and disengage it if necessary. When the head of the child is born, in ordinary cases, leave the expulsion of the shoulders to the natural efforts. When the fœtus is completely in the world, keep it as near to the genital parts of the mother as may be. If the child be vigorously alive,—breathing, crying, or struggling,—tie the cord soon after birth; but when it is languid, wait till the funicular pulsation ceases. Apply two ligatures; one at the distance of three fingers breadth from the abdomen of the child, and the other at a little distance from the former. The ligature in connexion with the child's abdomen, should be applied very tightly; so as to make it more secure against bleeding after the cord is cut through. Cover the head with a cap; deliver the child to the attendants, to be washed and dressed by the nurse;—examining the end of the cord, so as to satisfy yourselves that it is secure. Ascertain that no other child remains in the uterus. Cover the genitals, and administer some cordial.—These are the duties of an accoucheur.

[We may sometimes feel a puffy tumour of the head of the child; which is owing to effusion under the scalp. The head is pushed down till the vertex touches the plane of the ischium; and there it may rest for some time, till the os uteri becomes fully dilated. Many pains may occur before the face turns into the hollow of the sacrum. When the dilatation of the os uteri is completed, the first stage of the labour is over; though the membranes may not be ruptured.

When the membranes are about to give way, put a towel between the thighs to absorb the liquor amnii. As the fœtus descends, the perinæal tumour becomes very great. When the head is about to emerge, place a pillow between the thighs, to give more room; but do not allow the head to come out in too great a hurry. I do not like it to escape before the third pain; and in order to prevent it, I am often obliged, in first labours, to press very hard against the head with both my hands. Some used to recommend putting in the finger, in the form of a shoe-horn; but such a plan would be very likely to tear the perinæum. I have had only one case in which it was ruptured; but it is not sufficient to support the perinæum alone. The labia require support also. I do not get my hands soiled with feces; for if there should be any in the rectum, I cover my hands with a towel.

Great relief is experienced when the head is born. A few minutes generally elapse before the child gets any further; but you should wait till another pain comes on. It is by far the best plan to allow the natural efforts to expel the child; for if you pull it out, you may empty the uterus when it is relaxed, and thus give rise to hæmorrage. At length the child turns with its face to one thigh, and the shoulder emerges, and is quickly followed by the whole body. The second stage of labour is now over. Get the tape; and, after trying whether it is sufficiently strong, put it round the umbilical cord, and tie it very tightly (with a reefer's knot) at the distance of an inch, or an inch and a half, from the navel. Put another ligature on the cord, about an inch beyond the former, and cut between them. While doing this, you should put your hand between the scissors and the body of the child; for the latter is kicking about vigorously; and one man cut off the penis by mistake. Such an accident as this the mother would never forgive; and the women would tell it from one to another, till you lost all your practice. When the child is separated, place your hand above the umbilicus of the mother; and if you feel the uterus there, you may suspect it is a case of twins. If so, the uterus will feel as hard as though nothing at all had been expelled from it. You then examine the vagina. If I had delivered a woman of *six* children, I would still feel for the *seventh*!

Labour generally lasts only a few hours; and if the nurse be a sensible woman, you are not sent for till it is some way advanced. Some women, however, are delivered in half an hour, or even in ten minutes. If the lips of the os uteri become thinner during a pain,

it proves that the orifice is dilating. If the lips be hard and sharp, it is a bad sign; for it forebodes a tedious case.*]

Management of Still-Born Children.—The accoucheur will sometimes find that children are *still-born*, as it is called;—that is, although they are not *dead*, they do not cry, or manifest other indications of life. This is usually from one of two causes;—first, pressure on the umbilical cord;—and secondly, and more frequently, and more dangerously, compression of the head;—contusing the brain, and perhaps producing a fatal apoplexy.

Of the various practices recommended for the resuscitation† of still-born children, there are two on which I place my principal reliance; and which I would recommend you to employ with diligence;—not, however, excluding subordinate remedies; and these two means are,—artificial respiration, and the warm-bath. Le Gallois, a distinguished French physiologist, after removing the head of a rabbit, secured the vessels of the neck;—the animal, after this operation, lying to all appearances dead. But when, after having prepared the trunk in this way, he resorted to artificial respiration,‡ in a few minutes the heart began to act, and the blood to circulate;§ and throughout the whole muscular system the irritability was renewed;—so that, by means of artificial respiration,—though the trunk was decapitated,—he could keep it in a state of active vitality for one, two, or three hours. No stronger proof can be adduced in support of the efficacy of pulmonary‖ inflation, in renewing and supporting the action of the heart and arteries. When performing artificial respiration on new-born children, I have repeatedly observed, that while respiration was continued, the cord pulsated; and that it ceased to beat in a few seconds, when the operation was suspended. These facts admitted, there can (I presume) be no doubt that, when the fœtus is still-born, artificial respiration should be diligently tried. Indeed, if this and the warm-bath fail us, I know of no other resuscitants on which we can confidently rely. In the still-born fœtus, we cannot execute artificial respiration by pressing the front of the chest upon the spine, and then suffering it to recoil;—in the manner sometimes essayed with adults. In one case, I diligently operated in this manner for fifteen or twenty minutes, without producing resuscitation; and on examining the child, next day, I found that scarcely a particle of air had entered the lungs. Neither can we effectually inflate the lungs (so as to execute artificial respiration well) by blowing the air into the mouth;—even if we previously open the *rima glottidis*,¶ by the insertion of the finger, and close the œsophagus,** by pressing the larynx upon it.

* Dr. Mackintosh's unpublished Lectures on Midwifery.

† From *resuscito*, "to rouse."

‡ From *respiro*, "to breathe." § From *circulo*, "to compass about."

‖ From *pulmo* (from πλευμων), "a lung."

¶ The entrance into the larynx: from *rima*, an opening; and *glottis* (from γλωττα), "the tongue;—" because it lies behind that organ.

** From οιω, to *carry*; and φαγω, to eat;—because it conveys the food into the stomach.

The only mode of performing this operation effectually, is by means of the *tracheal pipe*; which I think every accoucheur should carry along with him to a labour. The tracheal pipe is a little tube of silver, designed to pass into the trachea;—its end closed like a catheter; with a long, broad fissure on either side, to give free vent to air and mucus.* The closed extremity and lateral openings I prefer; because, if a terminal aperture do not exist, there is less risk of injuring the delicate membrane of the trachea. In introducing this instrument, there is some difficulty at first, if the operator does not manœuvre rightly; yet every moment is of the greatest importance; for while he is blundering, the child is dying. My own method of operating is the following. I pass the fore-finger of my left hand down upon the root of the tongue, and into the rima glottidis; and then, using the tube with the right hand, I slide it along the surface of the finger; till, reaching the rima, I insert the tube at the moment when the finger is withdrawn from it;—afterwards feeling, in the front of the neck, whether the instrument is lying in the trachea or in the œsophagus. This done, the operator should take the child into his hands; and, from his own lungs, inflate the lungs of the fœtus; emptying them afterwards by means of a double pressure, by the hand, on the thorax and abdomen;—the latter pressure being necessary in order to urge the diaphragm upwards.† Operating in this manner, he may execute artificial respiration with the best success. There ought to be five-and-twenty, or thirty respirations in a minute;—the new-born child breathing faster than an adult. It may be asked, perhaps, whether it would not be better to use *bellows*. Make the experiment, and the question will not be repeated. When he has performed artificial respiration for a few minutes, he may make his observations on the child. Let him feel the cord; and he will sometimes have the satisfaction to find it pulsate. The best point for examination, is at the very root of the funis,—close to the abdomen. He will sometimes feel pulsation there; when, at the distance of an inch from the abdomen, it cannot be perceived;—the arteries being so contracted, that they do not admit the entrance of the blood. Let him examine the thorax, and feel the heart; and he may sometimes, through the ribs, obscurely perceive its pulsation. Observing the face, perhaps, the cheeks are reddening,—the countenance forming,—the lips quivering. When these marks of returning life are observed, pause for a little; and frequently the child will be observed to make a spontaneous effort at respiration;—a deep sigh is the first breath it draws. In twenty or thirty seconds it breathes again. If, on suspending artificial respiration, the heart continue to beat,—the cord to pulsate,—and the respirations to increase in frequency,—further aid from the tube will not be required but should the pulsation cease in the cord, and the sighs be heard no longer, then this operation must be resumed; and thus, as the

* From μυξα, *the nasal secretion.*

† From δια, *through*; and φραττω, *to divide*;—from its separating the thorax from the abdomen.

case requires, you should at one time try the natural powers of the child, and at another support the respiration by art.

There is yet another practice, proper in these cases; which is,—the use of the warm-bath. When a still-born child is expected, procure a capacious vessel to be in readiness; provide also a kettle filled with hot water, and a ewer with cold; mix the waters, and bring them to the temperature of ninety-seven degrees Fahrenheit; or perhaps higher;—taking care that the water is not so hot as to scald the skin. With your own hand you may judge of the temperature; particularly if you have been in the habit of using it thermometrically.* Then immerse the child in this warm-bath;—the face being kept above the water; and, occasionally, respiration has been restored by such means, even when artificial respiration has failed. I conceive this, therefore, to be a very valuable remedy. The object of the bath is to excite the system; and especially to procure the circulation of the blood. This bath, however, requires to be used with some science. Sir Anthony Carlisle has found, that if he plunge a hedge-hog into water, at the temperature of thirty-eight or forty degrees of Fahrenheit's thermometer, he may keep it submersed for thirty minutes; and, on removal, the animal may survive; but if he submerse it in water of ninety-four degrees for eight minutes, it dies;—so that the animal appears to drown much faster in *warm* water, than in *cold*. Sir Anthony is supported by a previous and analogous experiment, performed by Dr. Haighton, upon the kitten; which, as he ascertained, will drown sooner in *warm* than in *cold* water. If this be correct, it is highly important in managing the bath for the child. When respiration and circulation are proceeding, the heat, by exciting action, tends to support the vital principle; but, if neither circulation nor respiration proceed in the bath, then the heat will tend to exhaust and destroy. The practical inference I would draw from this, is very important. If, on immersing a child in a warm-bath, it neither breathes nor circulates, it ought not to be kept there; for, in so doing, the duration would destroy it. He may leave it in for half a minute, and then take it out, and try the artificial respiration again; but if it appears to improve in the warm water, then he may let it remain in the bath for five, ten, or fifteen minutes,—more or less. If deemed proper, it would be easy to execute artificial respiration while the child is in the bath.

There are subordinate remedies which ought not to be forgotten. Errhines† (snuff, for example) may be put into the nose; or you may rub the thorax, strike the nates, or introduce a little brandy into the stomach. For this purpose, put the tracheal pipe into the œsophagus; and, taking about a tea-spoonful of brandy into your mouth, impel it into the child's stomach through the œsophagus. Brandy, given by the mouth, in the usual manner, may get into the trachea, and produce inconvenience. Wash the pipe before inserting it into the trachea.

* From *θερμη, heat*; and *μετρεω, to measure.*

† From *εν, in*; and *ριν, the nose.*

Never hastily despair of the means of resuscitation. Many a fœtus is laid aside as dead, when, by a diligent use of resuscitants, it might have been saved. A woman, run over by a stage-coach, was carried into St. Thomas's Hospital, and died in a few minutes after admission. This woman was in the end of pregnancy. By my friend, Mr. Green, I was requested to assist in the Cæsarean operation. In thirteen minutes from the last respiration of the mother, the child was taken out. In fifteen minutes from the last respiration of the mother, I began the artificial respiration. I continued it during fifteen minutes longer; ultimately resuscitating the child completely; and, had due care been taken, it would probably have been living still. Mr. Tompkins, of Yeovil,—a gentleman formerly of this class, and very accurate in his observations,—used resuscitants for an hour and five minutes, before obvious signs of life appeared. The child recovered, however, at last; and lived, I believe, for some time afterwards.

SECTION 3.—BIRTH AND MANAGEMENT OF THE SECUNDINES.

I shall now proceed to speak of the birth and management of the secundines (the placenta and membranes), in labours, on the whole, natural.

If the womb happens to be more than usually active after the birth of the child, it sometimes very promptly expels the placenta. More generally, however, after the child is come into the world, the womb reposes for fifteen or twenty minutes; after which contractions occur; and sometimes, though rarely, the placenta (as I have myself seen) is completely expelled from the vagina. Sometimes, and more frequently, it is pushed into the upper part of the vagina, or is in part expelled from the uterus;—so that it lies partially in both cavities; and sometimes it may be pushed down to the mouth of the uterus; so that the insertion of the cord may be easily felt at the os uteri. This expulsion of the placenta, more or less complete, is usually attended with a discharge of blood; varying in quantity, but seldom exceeding a few ounces. A gurgling noise, perhaps, indicates when the blood comes away. I mention this in order that, being on his guard, the accoucheur may be prepared for the accident; and may not feel needlessly alarmed when the hæmorrhage occurs.

Those contractions of the uterus which, occurring after the birth of the child, expel the placenta, are of no small importance; and the effects which are produced by them may, therefore, be worthy of our consideration. First, it may be observed that, when the uterus contracts, in consequence of the diminished extent of its surface internally, detachment of the placenta is produced; in the same manner as, under the contraction of one's hand, a handkerchief will separate from the fingers which contain it;—the palmar surface diminishing, while that of the handkerchief remains unchanged. Again, the uterus, in contracting, does not merely detach itself from the pla-

centar surface; but (as I have already said) more or less completely expels that organ;—pushing it beyond the os externum, or into the mouth of the uterus, or into the cervix uteri; where it may be felt lying behind the disk formed by its mouth. To these two effects of uterine contraction, a third (sarcely less important) may be added;—I mean the security which it gives against the risk of inversion.* If the womb be in an uncontracted state,—its cavity large, its parietes thin, its substance soft and flexible,—and the placenta (without previous reflection) be drawn down, there is a great risk, lest the uterus should be (to use an expressive illustration) turned inside out. But if, when the placenta is taken away, the womb is contracted in every direction,—its cavity small, its sides thick, its substance hard,—in these circumstances an inversion is not only improbable, but perhaps impossible. So that, among the advantages arising from the contraction of the uterus, we may enumerate, not merely the detachment of the placenta and the exclusion of the placenta, but the security against uterine inversion, which this contraction best affords. A fourth advantage (not to be overlooked) derivable from uterine contraction is, that it diminishes the risk of hæmorrhage from the womb. There are a number of blood-vessels shooting into the placenta. These vessels (arteries and veins) are of very large capacity. Why then is it that, when the placenta is taken away and all these vessels are laid open, there is not always a large eruption of blood? Much, perhaps, may be ascribed to the concretions which form in the mouths of these vessels; still more to the uterine contractions; for, where the *womb* contracts, its *muscular*† *fibres* contract; and, when the *fibres* contract, the *vessels* are contracted also; for, as the vessels ramify among the fibres, these fibres, when contracted around them, close the vessels, venous and arterial, like so many ligatures. I will not assert (for that is unproved) that, if the placenta be withdrawn while the womb is in the uncontracted state, hæmorrhage must always occur. Now and then, where the circulation is low and the vascular orifices are closed by the sanguineous concretions, *abundant* hæmorrhages may *not* be produced. But certain it is that, unless the womb be thoroughly contracted, there is always a risk of bleeding;—a risk which, as explained already, is very materially diminished by the contraction of the muscular fibres. For various reasons, then, it is very desirable that, after the birth of the child, the full contraction of the uterus should be obtained; for it is this contraction which detaches and expels the placenta, secures the womb against the risk of inversion, and the vessels against formidable and fatal eruptions of blood.

State of the Uterus after Delivery.—If the womb be examined (as ought to be the custom) immediately after delivery, there are four very different conditions in which it may be felt. Sometimes, it is large and lax; and nearly as big as the adult head. Sometimes, it is small and soft; not bigger than the head of a full-grown fœtus;—

* From *in*, "in;" and *verto*, "to turn."

† From *musculus*, the diminutive of *mus*, "a mouse;"—from the resemblance of a muscle to that animal when flayed.

and yielding, like the breast, under the touch. Sometimes it is found in a third condition,—very different from the preceding;—it is small and rounded, and as hard as a piece of cartilage, or as the head of the fœtus. Sometimes, again, it is found in a fourth and intermediate state;—very hard at one moment, and very relaxed at another. In all these four conditions, which it may not be amiss to recapitulate, the womb may be found after delivery;—large and soft;—small and soft;—contracted, rounded, and very hard;—or contracted and rounded, with occasional induration, and occasional relaxation.

These tangible conditions of the uterus are to be made out, solely, by an examination, above the symphysis pubis, carefully instituted; and every scientific accoucheur ought to be able to determine, with certainty, in what condition the organ lies. He will generally find,—on applying his hand above the symphysis pubis, feeling there, and grasping the uterus, as felt through the abdominal coverings,—that he may, readily enough,—especially when rounded and hard,—determine the state in which it is. If, however, he find a difficulty in feeling the uterus, and no hæmorrhagic symptoms occur, he may wait; and, by-and-by perhaps,—examining a second time above the symphysis pubis, when the womb is more contracted, rounder, and more indurated,—he may feel it obviously enough. Should he, however, still seek the womb in vain, though desirous to ascertain its condition, he may then pass two fingers (the first and second of the left hand) to the mouth of the uterus;—an operation easily accomplished, as the passages have been laid open by the child; and thus, getting a bearing on the uterine mouth, he may throw the womb forward; and then, undoubtedly, the hand being applied externally through the coverings, and above the symphysis pubis,—the womb may be felt; for it is, in fact, thrown by the action of one hand into the hollow of the other.

Of these four conditions of the womb after delivery, there is one only which is to be looked upon as perfectly healthy, and altogether desirable. The woman may do well under the three other states of the uterus; but that is alone secure, in which it feels (like the head of the child) contracted, round, and permanently indurated; for it is this contraction of the muscular fibres, which secures the uterus against the probable risk of flooding or inversion. If the womb be large and pulpy,—if, though contracted, it feel soft and yielding,—if, lastly, its condition alternating, it seems at one time soft, and at another indurated;—although the woman may be perfectly well; and although, no dangerous symptoms appearing, very active practice may not be required;—yet the accoucheur ought to look upon the condition of his patient as at best uncertain, till that permanent rounded contraction, assimilating the uterus to the head of the full-grown fœtus, be observed.

It may be asked, perhaps, whether there are any gentle means which may be employed, in order to secure a contraction of the womb when torpid. Something may be done by the administration of a

cordial;—a table-spoonful of brandy, for example, with two or three table-spoonfuls of water; to be given immediately after the birth of the child. Some advantage is obtained, by suffering the uterus to expel the child by its own efforts;—in the way already recommended. After the birth of the head, as meddlesome midwifery is bad, do not seize the head, and drag forth the body of the child; but rather leave the expulsion of it to the natural efforts; for, the womb being stimulated in this manner to more complete contraction, the expulsion of the placenta will be more easily accomplished.

It assists this contraction of the womb, to lay the hand above the symphysis pubis, to feel the uterus, to grasp it in the hand (but not so violently as to occasion pain), and to roll the hand about upon the uterus;—this rolling of the hand, and irritation of the uterus, appearing sometimes to operate as a useful stimulus to the womb. So that, by the application of these simple means (which can do no injury, even if they produce no benefit),—by the compression of the uterus,—by the rolling of the hand,—by allowing the child to be expelled by the unaided efforts of the womb,—the uterine fibres may be stimulated; and there is reason to believe that the susceptibility of the uterus may be augmented by the administration of some cordial, as soon as the child makes its appearance in the world.

Injudicious Removal of the Placenta.—Where the placenta is rudely and injudiciously torn away by the hand of the accoucheur, the worst consequences may be expected to ensue. Floodings,—tremendous lacerations,—inversions of the uterus,—such are the effects of ferocious obstetric violence;—that insatiate and gory Moloch, before whose bloody shrine so many thousands have been sacrificed; to be succeeded, in future years, by still more numerous victims! Observing these awful consequences, resulting from the artificial separation of the placenta, Ruysch first, and afterwards Denman and Hunter, recommended that, in all cases, after the birth of the child, the expulsion of the placenta, like that of the fœtus, should be committed to the natural powers; for they added,—"the same natural powers which are adequate to expel the *child*, are surely adequate to expel the *placenta* also." If our women, *ferino more*,*—unaided by art,—were committed to their natural powers altogether, like the females of barbarous hordes, there is no doubt that, in the great majority of cases, the placenta would come away; but experience is said to have shown,—and from the decision of experience there is no appeal,—that, when the placenta is left to be expelled by the natural efforts, fatal consequences sometimes occur. Many cases are said to have occurred, in which floodings have taken place; and some in which the placenta, long retained, could not afterwards be abstracted; and where, remaining unexpelled for two or three days, the greatest injury has been inflicted, from the procrastinated use of means to extricate it from the uterus; so that the practice, twice brought to trial,—once in Holland, under the authority of Ruysch, and once in this country, by the advice of Dr. Hunter and Denman,—has

* After the manner of brutes.

now been laid aside;—probably not without good reason. It seems, therefore, to be pretty well agreed on, among those who are competent to form an opinion, that, though we are not injudiciously and rudely to tear away the placenta, it is, nevertheless, requisite that some artificial assistance should be given; and the greatest and nicest, perhaps the most important of all questions, in the management of a natural labour, is the discrimination of the moment at which this assistance ought to be interposed. Shall we interfere immediately? Shall we wait for an hour? Or shall we delay still longer, before the placenta is brought away?

By different practitioners, different rules have been prescribed; and as they have their excellencies as well as their defects, I shall now briefly explain them. Some there are, and I think Dr. Hunter was of the number, who recommend that we should take our rule from *time*; and this has the advantage of being a rule of easy and exact application; for the chronometer* becomes our oracle. "Wait," they say, "till four hours after the birth of the child. If the placenta come away before the four hours have elapsed, it is well; if, on the other hand, it should still remain in the cavity of the uterus, manual interference become necessary.

There are others who judge by the pains; without any regard to the time at which the woman has been delivered. "Pains," they say, "accompany the contractions; the contractions expel the placenta; the pains, therefore, indicate the time at which artificial assistance should be interposed." These practitioners, therefore, after delivery, seat themselves at the bed-side of the patient;—refraining, for one or two hours, from manual interference, if no pains occur; but as soon as the pains commence,—following in the track of Nature, our best instructress,—they lay hold of the umbilical cord, and endeavour to bring the placenta away. Nor is this rule to be despised.

There are other practitioners who follow a very different rule;—a rule not without its excellence; determining whether they shall or shall not assist the birth of the placenta, by the *situation* of that viscus; without regard to the pains, or to the time which has elapsed since the delivery. If, on examination, they feel the placenta lying in the upper part of the vagina, and through the os uteri; and, more especially, if they feel the union of the cord with the placenta,—they do not hesitate to remove it; while, on the other hand, if the umbilical cord ascend high into the uterus, and no part of the placenta can be felt, they wait. Of the three rules here enumerated, I think on the whole, that the last is to be preferred. In ordinary cases, the medical attendant never can err in abstracting the placenta, when it lies, in a great measure, out of the uterus; while there is always risk in its removal of this organ, when it lies in the fundus of the uterus; and not only a risk, but a difficulty. Lastly, there are some, who,—without regard to the situation of the placenta,—without regard to the pains,—without regard to the time that has elapsed

* From χρονος, *time*; and μετρεω, *to measure*.

since the delivery,—determine whether they will, or will not, assist the birth of the placenta, by the feel and condition of the uterus; and though I am not solely guided by this indication, it has great influence with me. Examining the uterus above the symphysis, and finding it large and soft,—or even contracted, yet pulpy,—they consider that the contraction of the womb, so much to be desired, has not as yet occurred. If, on the other hand, feeling the uterus, they find it forming the much wished-for mass,—globose and indurated; and not only so, but that, on keeping the hand there for five or ten minutes, the induration remains permanent,—they consider that a thorough contraction has taken place, and that the placenta may be removed in safety;—whether it lie forth into the vagina wholly, or only in part. Not, however, to dwell too much on single indications, I would recommend a practice formed under the influences of all these considerations;—a rule of "the composite order."

Before the accoucheur thinks of removing the placenta, it becomes his duty to ascertain whether another child be lodging in the uterus; for, as a general practice, it is always improper to remove the secundines of former children, until those remaining in the uterus have been expelled. Rupture of the funis,—suffocation of the unborn fœtus (in consequence of the premature abstraction of a placenta common, perhaps, to both),—not to mention those floodings which we shall hereafter contemplate,—must in some cases ensue, where this caution is unwisely neglected. We ought therefore to investigate this point, as before recommended, with the nicest care, before the removal of the placenta be attempted. Again, in order to guard against a grand error, which may occur in early practice,—I mean the removal of the placenta too soon, when the uterus is yet uncontracted,—I would recommend the young practitioner, by all means, unless there be more hæmorrhage than ordinary, to wait for half an hour before he operates; for, at the end of that time, he will generally find that the womb has reposed itself, that its fibres are contracted, and that the placenta may be safely taken away. Before the placenta is removed, I would further advise him to examine, with nicety, what is the condition of the uterus; for, as already observed, the scientific accoucheur will always be able to decide which of the four states we have mentioned, is the condition of the uterus; and if he find that the womb is contracted, globose, and indurated, he may extract the secundines with more confidence. But, no flooding forbidding, he had better delay the delivery even beyond the hour, if the womb, whether contracted or capacious, is found to be soft and pulpy.

There is one other point which should be investigated before the removal of the placenta; and that is its situation. I will not venture to assert, that we may never remove the placenta after delivery, where the insertion of the funis cannot be distinguished, and when the body of the organ cannot be felt lying forth (partially or wholly) in the cavity of the vagina; but, as a general practice, it is not good to remove this viscus, unless these preparatory conditions exist. If

we find the placenta lying so low that we can lay hold of its body,—the half-hour being expired,—we may remove it with promptitude; but perhaps it is better to delay the removal, even though the glass be run out, provided the placenta be still lying beyond the touch of the finger.

Here, then, are the four cautionary points which ought to be remembered. Before abstracting the placenta, always ascertain that there is no other child in the uterus. Wait for half an hour after the birth of the fœtus,—no particular symptom forbidding; be satisfied that the womb is permanently contracted;—always remembering that it is desirable to feel the insertion of the funis, or the body of the placenta, before that viscus is taken away. I could wish that these cautions should be ever before the mind; presenting themselves to the recollection importunately and uncalled;—like the captivating notes of some favourite melody; or (to speak a language more generally intelligible) the no less captivating traits of some favourite face.

Manner of Removing the Placenta.—If, agreeably to these rules, the accoucheur interferes in the extraction of the placenta at the proper moment, he will generally find that the removal may be easily accomplished in the following manner. The woman being placed on her left side, lay hold of the umbilical cord with your right hand; and, the substance of the placenta lying forth, secure a bearing on it with the fingers of the left hand. Having secured a hold, if there are pains, by all means wait for them, and co-operate; for I have found, in slighter difficulties, that, in removing the placenta, the pains assisted effectually; and, perhaps, that the placenta could not have been abstracted without them. If pains be wanting, it would be advisable to take advantage of the expiratory* descent; an epithet not inappropriate, perhaps; for often, with every expiration,† we find the cord descending a little;—the placenta being, by degrees, pushed forward; so that if, at each point of descent, its retraction is prevented, by little and little the burden is brought away. In many cases, perhaps, it may matter little in what direction it is pulled; though a man of plain good sense, knowing the axis of the pelvis, would wish to draw in a line tending, on the whole, from the umbilicus to the coccyx. If there is a difficulty in abstracting the placenta, the operator should continually elevate his hold as the placenta advances, and seize on that part which is last emitted from the uterus; and not continue to grasp that portion of placenta which first escaped, lest he should tear it away. Do not *haul* out the placenta; do not *jerk* out the placenta; do not *tear* out the placenta;—leaving, unobserved, one half of it in the cavity of the uterus. Do not lacerate the membranes, and leave them to form afterwards a

* Or rather "*in*spiratory;" for it is by the descent of the diaphragm, which occurs in *in*spiration, that the uterus is forced towards the external parts. See page 65 of Dr. Rogers's edition of Denman and Mackintosh's Elements of Practical Obstetricy.

† From *expiro*, "to breathe forth."

receptacle for clots, or to alarm the patient by their unexpected appearance. "Arte non vi" must, as usual, be the obstetric motto;—lead,—coax,—seduce! In this gentle, cautious manner then, substituting gentleness and skill for force and brutal violence, remove at once the placenta and the membranes; and the removal being accomplished, I would recommend, by all means, the three following cautions.

Necessary Cautions.—First, if there have been difficulty in abstracting the placenta, be sure that no inverson of the womb has taken place; for practitioners have sometimes unconsciously inverted the uterus, and left it in that condition;—an accident which need never happen, provided the practitioner forbears to remove the placenta till the womb be contracted. One may, however, sometimes doze at the bed-side; and, in these torpid and forgetful moments,—carelessly abstracting the placenta,—may produce inversion. As, therefore, the neglect of this accident is of serious consequence in all cases, and especially if the secundines be withdrawn with difficulty, make it a rule to ascertain, afterwards, whether inversion has been produced. Of the characters marking inversion, we shall hereafter treat more largely; remarking, at present, that, if in its natural position, the womb may be felt in the usual situation above the symphysis; while it is wanting at this part, when inversion exists, and forms a tumour, like the child's head, in the vagina.

A second point deserving of attention, is that of ascertaining whether the whole of the placenta has been removed from the uterus; and this is to be learnt, not by thrusting the fingers into the uterine cavity (a practice to which I must remain decidedly hostile), but by taking the placenta, laying it out upon a napkin, examining both surfaces, and raising the membranes; so as to ascertain whether the placenta, and the annexed involucra,* be complete. If any part be wanting, the cause of this deficiency should be ascertained; if the whole be there, then of course there is none remaining latent in the uterus. Tenacious of this caution, do not (like some of the *omnipotent* practitioners) leave, without knowing it, one quarter or one-half of the placenta in the uterus;—the patient, in some rarer cases, sinking; or becoming the subject of vomiting, flooding, and alarming pains; with, perhaps, the expulsion of the mass, nine or ten days after the delivery was supposed to have been completed. Adhere, therefore, to this practice,—so simple, so easy, and so beneficial to the patient; and, having abstracted the secundines, be thoroughly satisfied that the whole mass, fleshy and membranous, is removed.

There is one other caution,—a third point,—never to be forgotten;—the risk there is of bleeding, both before and after (but especially after) the abstraction of the placenta. These bleedings, as some melancholy cases prove, may be incautiously overlooked by the accoucheur; and really not always with much blame. Though often more alarming than dangerous, these bleedings are never to be

† From *in*, "in;" and *volvo*, "to wrap up."

despised. I have been called to two women in one night, who have died from these floodings; if however, the rule of interfering at the proper moment be rigidly adhered to, fatal hæmorrhages,* connected with the birth of the placenta, will rarely if ever occur; for they are highly improbable, if the womb be well contracted. When these bleedings are external, they can scarcely be overlooked;—the patient feels, and perhaps the practitioner hears, the flooding, as the blood falls upon the floor. But let it be remembered, that there may be *internal* hæmorrhages;—all the blood collecting in the cavity of the uterus;—known by an alarming tendency to deliquium; bulkiness of the womb; and by a copious eruption of the blood by gushes, when the uterus is compressed. Remember too that, when the patient reposes on a large bed, a pool of blood may form in the centre of that bed, without your being aware of it. If, therefore, faintness occur, and the body become cold, and the strength collapse, and the respiration be short, or deep and spasmodic,—examine the uterus; and if there be accumulation in that cavity, then inspect the hollow of the bed.

Here, then, are three cautions which I would wish to impress indelibly on the minds of all engaged in obstetric practice;—their recapitulation being justified by their importance. After the placenta has been removed, be satisfied that the whole has been abstracted; ascertain, in the more difficult cases especially, that inversion has not been occasioned; and, on all occasions, guard against those floodings (external, internal, or on the bed) which are often attended with little danger, if the patient be well managed; but which, if neglected, will sometimes very suddenly and unexpectedly destroy. Let me add, in terminating this part of our subject, that although floodings may now and then occur long after delivery, yet they are most to be apprehended within a few minutes after the birth of the child;—not unfrequently making their unwelcome attack when the accoucheur is performing his ablutions, and is about to retire.

I may close my remarks on this topic,—tedious perhaps, yet necessary,—by pointing out, in a summary manner, the errors which, in managing the placenta, are liable to occur.

I am afraid that some, notwithstanding these cautions, will hereafter heedlessly remove the placenta when there is another fœtus in the uterus. He smiles;—he bows;—he retires;—another child is born! Who would like to signalize himself by such dangerous negligence?

I am afraid, again, that some will forget that, in ordinary cases, when the placenta is taken away, he ought to ascertain whether the uterus be globose and indurated. Watch, therefore, and be careful never to bring away the placenta without first examining the condition of the uterus. With urgent earnestness, I recommend this caution. Let the accoucheur get into the habit of invariably laying his hand above the symphysis pubis in all cases. Till this is accomplished, his duty to the patient has not been discharged.

* From *αιμα, blood;* and *ρησσω, to break out.*

I hope that no one will needlessly thrust his hand into the uterus; yet I have my misgivings. After all I have said of the tearing, and lacerating, and sloughing of these parts, I hope you will never *needlessly* have recourse to this barbaric practice. Some of my obstetric friends, whose talents I esteem, fall into this error. They grate my ears, by boasting how frequently they have carried the hand into the uterus; and with what facility the placenta has been removed. That this operation may be easily effected, I have no doubt; that it is sometimes necessary, I shall hereafter show; but depend upon it, if the hand is carried into the uterus on every occasion, to get away the placenta, some woman will die at last;—and die the victim of mismanagement. At this moment, perhaps, some amiable but ill-fated creature blooms,—the light and life of her admiring circle; who must hereafter fall an untimely sacrifice to such cruel and ruthless management! Who would like to be the author of such an atrocious deed?

To tear the placenta, and leave a portion unobserved in the womb, is another error likely to occur; especially if, instead of *seducing*, you *haul forth* the placenta. If, in every case, you (as it were) seducingly *allure* away the placenta, the accident of tearing it can scarcely ever occur; but if you proceed with negligence and violence, large portions of the placenta may remain within the uterus;—as I have myself seen.

To suffer the patient to flood unperceived,—whether into the bed or the uterus,—is another error against which all ought to guard. The majority of these cases ultimately do well, it is true; but be prepared for the worst. In ninety-nine cases this caution may be needless; but, perhaps, you will look a little grave upon the hundredth.

Inverting the uterus, unconsciously at the time, and not observing the accident till hours afterwards, is another error to be deprecated. If inversion be observed immediately, the uterus may soon be replaced; but if it is not known within a short space, reduction becomes impossible. I suppose it would be difficult to find, in the annals of midwifery, one case, where a womb has been inverted, and remained so for four-and-twenty hours, in which reduction was afterwards accomplished.

Sometimes the womb is thin, flexible, and of easy inversion;—especially when paralytic, and softened from the loss of blood. In this condition of the uterus, the placenta is not to be taken away. Where the womb is contracted, the cavity small, the textures thickened, the substance indurated,—hard as a bit of cartilage, no inversion can occur. You will observe, too, that, where the womb is contracted in this manner, the placenta is detached from the surface, and must be in a great measure expelled from its cavity; and this is the condition of the uterus when the placenta may be safely removed.

If you look at a preparation of the uterus in the uncontracted state, and observe the inner surface to which the placenta cohered, you find there is a number of large unclosed vascular orifices; yawning, as it were, destruction on the patient. Now such a preparation

shows the condition in which the vessels are, if you tear away the placenta before the womb is contracted;—exhibiting the formidable openings at which the effusions of blood occur. But in a *contracted* uterus, if you look at the blood-vessels, you will find them all closed by the abbreviation of the surrounding fibres,—as by so many ligatures; and this is the best preservation against hæmorrhage. It is *Nature's tourniquet*;*—her system of living ligatures;†—which, *as yet*, no art has imitated. You will then see that it is not without good reason that I am so anxious, before you abstract the placenta, that you should secure the contraction of the womb.

Do not needlessly thrust the hand into the *uterus*!—Do not needlessly thrust the hand into the *vagina*!—Do not needlessly thrust the hand into the *genital fissure*! Such are the voices that issue from many a preparation.—"He that hath ears to hear, let him hear!" Ah! that violence of an ignorant and savage hand! Is it too much to assert that, in obstetrics, a thrust of the hand is more dreadful than a thrust of the bayonet? Could the field of Waterloo exhibit injuries more dreadful than a museum can show?

Such, then, are the general rules which I would prescribe for the management of that most important stage of parturition,—the birth of the secundines;—"the delivery," as (perhaps, by way of eminence) it has been denominated by our Gallic neighbours. When, from large experience and much reflection, you have formed for yourselves better rules of guidance; then, by all means, and not till then, let these now given be laid aside as superannuated and defective. Nothing can be more abhorrent from my wishes, than to exercise over the mind any influence which does not emanate from truth and reason. Be that far from both you and me! There is not, perhaps, any intellectual habitude more certainly preventive of our progress in solid knowledge, than that which leads a man indolently to neglect the exercise of his own observation and reason; and to adopt servilely the opinions of those who have gone before him. Observe for yourselves!—Think for yourselves! He is surely "less than the least of all" philosophers, one who is not "worthy to be called" a philosopher, who does not often inculcate these maxims! Think for yourselves, then!—Not arrogantly;—not inconsiderately;—not invading those regions of thought which lie beyond the sphere of human understanding; but on topics within your reach,—with observation and reflection, deep and broad,—think for yourselves!—Never bury in indolence that inestimable gift of nature,—so much insulted and disparaged,—Reason;—*lux lumenque vitæ, divinæ particula auræ*;‡—the fair mother of philosophy;—the brightest and noblest inheritance of the human species!

* From *tourner*, "to turn." † From *ligo*, "to bind."
‡ The lamp and light of life;—an emanation from the Divine Spirit.

SECTION 4.—EFFECTS PRODUCED ON THE SOFT PARTS BY THE PASSING OF THE CHILD.

When parturition occurs, certain effects are more or less liable to be produced on the various soft parts which are involved in the process. I shall now, therefore, enumerate and explain some of the most important of those effects.

Dilatation of the Parts.—When delivery occurs, there is an extensive dilatation of the parts in question. The os uteri, when contracted, will scarcely admit the catheter; but when dilated, it becomes so widely expanded, as to allow the passage of the head with facility. The vagina, small in its capacity, relaxes gently and softly under the pressure of the cranium;—so as to sustain the transmission without injury; while a further softening prepares the genital fissure, in such a manner as to fit it for the emersion of the head. We may, therefore, set down, among the effects of parturition,—softening and relaxation of the genitals,—expansion of the os uteri,—and dilation of the vagina and genital fissure;—not to mention the yielding of the levator ani; for, as the vagina passes through this muscle, it must of course yield when the head passes.

Lacerations and Contusions.—Where the parts are yielding (as they ought to be), and where the first impregnation is effected at an early age (as nature intended), contusions and lacerations are rarely found to occur. But if it so happen,—from the customs observed in society, or from any other cause,—that the first impregnation is too long delayed, then such rigidity may subsist, that,—if the head be large, the pelvis small, the efforts vehement, or the accoucheur officious,—lacerations and contusions of the most formidable kind may be produced. Sometimes the body of the uterus, more frequently the neck, is torn. Sometimes we have lacerations of the vagina; or lacerations of the perinæum; or lacerations of the back part of the cervix of the bladder;—causing a communication between this viscus and the vagina; in a manner easily to be conceived, from observing the situation of the bladder with respect to the vagina. These lacerations, as before observed, may be produced in various ways:—by the needless introduction of a rude and ignorant hand;—by the officious and rough insertion of the lever or the forceps;—or, when these instruments have been already introduced, by the too rapid abstraction of the head. The head is secured; the womb is acting; cheerily the accoucheur advances with the labour,—comforting himself with the expectation of a speedy emersion of the child; when, in an evil moment, forgetful of the perinæum, he ruptures it from end to end; and cripples his patient for the remainder of her days. Lacerations of the genitals may occur spontaneously, or without much interference on the part of the practitioner. The parts are rigid; the pains are vehement; the practitioner is absent; or, the woman starting from her position and losing his protection, the perinæum yields; and suddenly the child's head bursts into the world. Against this accident the accoucheur should always be prepared;

but it must, in candour, be confessed, that laceration may occur, when little blame can be attached to the accoucheur. The back part of the neck of the bladder also may be easily torn;—in a way which a little attention on his part may readily prevent. Suppose, for example, the bladder to be charged with urine, to the amount of one or two pints;—suppose, further, that the child's head, passing the pelvis and bearing on the symphysis pubis, divides the bladder into two parts or chambers; one portion lying above the brim, the other portion below, before and beneath the head; so that it receives, during transmission, the full pressure of the cranium. In these circumstances, should the fœtus descend rapidly while the bladder is loaded, disruption of the cervix will pretty certainly occur.

Inflammations and Suppurations.—It sometimes happens, during parturition, that inflammations and suppurations of all the viscera within the pelvis are produced. When the pelvis is small, the head large, and the labour difficult, all the pelvic viscera are liable to be contused;—the vagina especially. Indeed, the violence of labour considered, it really appears surprising, that inflammation of these viscera does not occur more frequently; but the Creator has wisely adapted those parts to the force they are destined to sustain. The neck of the bladder, however, with the urethra, the rectum, and the parts adjacent, are all obnoxious to inflammation; to which the cellular web, already mentioned, is particularly exposed;—matter sometimes accumulating in consequence, to the amount of six or eight ounces. A frequent pulse,—a foul tongue,—a heated surface,—a general irritability of the system,—a tenderness of the parts in the vicinity of the symphysis, on compression, or from jarring the viscera, by striking or giving concussion to the pelvis;—these are the leading characteristics by which their condition may be known. Where matter is collected, *hectic* occurs. The patient may have shiverings,—sweatings,—vomitings,—purgings,—wastings; and be carried off in the course of a few days; or, if she be of more vigorous constitution, and live in a purer atmosphere, the abscess may open and discharge its contents; either into the rectum, vagina, or, perhaps, the bladder itself. In one of the last cases of suppuration brought under my notice, where the patient recovered, a good deal of matter came away (apparently from the urethra) along with the urine; and I have a strong persuasion that, in this instance, the pus and urine were mingled in the cavity of the bladder; into which the abscess was presumed to open.

These inflammations and suppurations may sometimes be the result of mismanagement; and, of course, must fix unpleasant reflections on the mind of the accoucheur. If the medical attendant has been examining the woman too often; if he has been sillily thrusting his hand into the vagina when there was no need; if he has been pragmatically using the lever or the forceps; and if it so happen that the woman be of phlogistic habit, though he use but little force,—he may contuse,—lacerate,—destroy! And sometimes, without any blame on the part of the accoucheur, when the head is

large and the pelvis small, laceration, and all the consequences of compression, may occur;—more especially if the delivery have been too long delayed. Indeed, in anomalous labours,—notwithstanding the best management,—these accidents will now and then occur.

Sometimes (nor must this effect of labour be forgotten), from pressure of the head, *sloughs* of an extensive kind will occur in the soft parts. The inner surface of the perinæum, or the labia pudendi on either side, may slough; and (what is more to be dreaded) the sloughs may occur in the upper part of the vagina; by which that canal may be laid open into the rectum on the one hand, or into the bladder on the other.

These sloughs may be occasioned by a rude midwifery. If the accoucheur have needlessly thrust his hand into the vagina; if he have been *foolishly* (for that is the proper term) distrusting the natural efforts; and if (reversing the motto) he have been drawing down instrumentally "*vi*, non *arte*," instead of "*arte*, non *vi*;"—he may bruise the parts, so as to produce slough. They, without doubt, may also be occasioned by the spontaneous pressure of the child's head; and I have been called to such cases, where little violence has been used. The child's head may be pushed into the cavity of the pelvis, and remain impacted there,—so as neither to advance nor recede;—constituting what is called the *incarceration* of the head. When the head is incarcerated, if the pelvis be somewhat large, or the cranium rather small, it sometimes comes away spontaneously; but if the pelvis be small, and the head large, the cranium may become firmly impacted between the front and back of the pelvis; and sloughs may be the consequence of long-continued and forcible compression. To prevent such accidents, when the head is incarcerated attend to the state of the *pulse*; and if the pulse is rising, and approaching one hundred and thirty in the minute, there is reason to suppose that mischief is doing, and that a destructive pressure may exist; while a continuance of the pulse at the natural level, is a pretty certain proof that the parts are not subjected to dangerous compression. When, too, the head is incarcerated, the accoucheur may make his observations on the degree of pressure; and if the urine flow, the urethra admit the catheter, and the finger can be passed between the cranium and the symphysis pubis, the probability of slough is small; but the danger of slough is imminent, if the fingers and the catheter cannot be passed up, and the flow of the urine along the urethra be suppressed. In general, when the head is impacted in the pelvis,—neither advancing nor receding,—it is unwise to let it remain there more than five or six hours; but if the compression be slight, and the pulse unfrequent, this term may be prolonged; and it must be abbreviated if the opposite symptoms are observed.

There is yet one other mode in which sloughs may be occasioned; and that is in consequence of the detention of the head above the brim. When the pelvis is contracted, the head large, and the pains

are vehement, the cranium, being detained above the brim, is forcibly pushed upon the bones by every effort of the uterus; and in consequence of those repeated descents upon the bones, at last such bruising takes place, as occasions sloughs of the bladder and the higher parts of the rectum. But such sloughs will rarely occur, if the practitioner adheres to the general rule already recited,—*ad tædium usque.** If there be no dangerous symptoms, and the woman have not been in labour for twenty-four hours after the discharge of the liquor amnii, try the natural powers; if dangerous symptoms appear, referrible to the protraction of the delivery, or if the woman have been in strong labour for twenty-four hours after the discharge of the liquor amnii,—the head making no advance,—try the lever or the forceps; and if the lever and forceps fail, and dangerous symptoms demand delivery; or if the pains have continued without effect for forty-eight hours after the amnial gush,—then you may have recourse to the perforator. Above all other symptoms, mark the pulse;—counting it by the watch with the nicest care. So long as the pulse, between the pains, remains under a hundred, there is no danger of sloughing; and whenever the pulse mounts above this level, approaching one hundred and thirty, be vigilant and guarded.

These sloughs then may be occasioned,—not merely by thrusting up the hand, or by thrusting up obstetric instruments rudely, or by suffering the head to remain incarcerated among the bones of the pelvis,—but also by allowing the head, when detained above the brim, to be too frequently and forcibly pushed down upon the bones; and knowing, in this manner, the most frequent causes of these sloughings, it is easy to know, also, the most probable means of preventing them.

Among the effects produced on the softer parts, during parturition, a frequent desire to pass water deserves especial attention;—resulting, I suppose, partly from *pressure* by the child's head on the neck of the bladder, and partly from *irritation*. In more laborious cases, too, it will sometimes be found that the bladder is shut; so that neither the urine nor the catheter can be passed;—this closure being occasioned, partly by the *pressure* of the child's head on the urethra, and in part by its becoming displaced and distorted. Now, accumulation in the bladder is always to be deprecated; for lacerations of the body or neck of that organ may be produced by it;—in the manner already explained. When the urine has collected, it is not always in our power to introduce the catheter, even though the head be a little repelled. In order, therefore, to prevent this accumulation, as much as possible, the patient should be directed to pass water while she retains the power; to drink but sparingly; and, in preference, to use those warm drinks which tend to increase perspiration.

Incontinence of urine, arising from various causes, is sometimes observed. It may be produced by much pressure on the cervix of the bladder,—independently of dissolved continuity,—in consequence

* With tiresome frequency.

of mere weakness;—the retentive powers returning spontaneously, in slighter cases, in the course of two or three weeks. When the injury is more serious,—the debility remaining for weeks or months afterwards, perhaps for years,—it is said that a *blister* on the lower part of the back will do good; and this may be tried. Incontinence of urine, occasionally, results from rupture of the neck of the bladder, torn open during delivery;—in the way before demonstrated. In cases of this kind, after the delivery, let a catheter be inserted into the bladder, and kept there: and let a *sheep's bladder*, or any other convenient contrivance, be connected with the under extremity of the catheter;—so as to receive the urine. Keep the parts quiet; improve, as much as may be, the general health of the patient; and, now and then, these rents, large enough perhaps to admit two or three of the fingers, will become closed up.

A woman, in the neighbourhood of Guy's Hospital, was delivered with much force, by the use of the lever. On examining her, with great care, a few days afterwards, I found that there was, in the neck of the bladder, a rent so spacious, that two fingers passed into it without difficulty. Of course, no doubt remained as to the nature of the accident. As this case was ushered into a court of judicature, and a subpœna was served, I instituted another and very careful examination, some few weeks after the former; in order that I might give evidence with greater certainty respecting the state of the parts; —when I had the satisfaction to find that,—under the use of the catheter, and the improvement of the general health,—the wound was closed so completely, that not even the vestige of a cicatrix* was clearly distinguishable. I must not omit to add, that it was to the skill of my able friend, Mr. Gaitskell, of Rotherhithe, that the cure was to be attributed.

Incontinence of urine may also be produced in consequence of sloughing. A week or two after delivery, there come away from the vagina pieces of a membranaceous aspect, and a blackish grey tint;— leaving, in the neck of the bladder, smaller or larger apertures; which, when capacious, are (I suspect) never closed. For, in these cases, there is not, as in the former, a mere solution of continuity; but a positive loss of substance. On the treatment of these sloughy apertures, I may hereafter make a few remarks; but it may not be amiss to observe here, that the way of preventing *them*, is to prevent the *sloughs*;—by adhering to those rules which have been already prescribed.

When the head passes the pelvis, the nerves may be compressed;— more especially if the cranium be large, or the pelvis small, or the lever or the forceps be employed. The trunk of the obturator, and the origins of the sciatics, are the nerves of the pelvis which are most exposed. Numbness and spasms of the lower limbs occur, when the head enters the pelvis. Perhaps the patient exclaims,—"I've the cramp!"—and relief may be obtained by friction, and compression of the affected part.

* From *cicatrizo*, "to heal up."

After parturition, in general, but little inconvenience is felt; yet, now and then, torpor and debility remain for months; and, more rarely, the patient is quite lame. I once had a patient (a hawker), accustomed before delivery to pedestrian exertion (walking ten or fifteen miles daily), who, for some few days after parturition, could scarcely cross her chamber; yet in the course of a few months she recovered, in a great measure, the power of the limbs. Kosciusko, the celebrated Polish general,—who, I think, fought the last battle for the independence of his unhappy country,—sustained a division of the trunk of the sciatic nerve, from the thrust of a Russian bayonet; and remained lame for some years afterwards; ultimately recovering, however, (if I am rightly informed), the use of the limb; and exhibiting, in his own person, a striking proof of the restorative power of those parts. When the nerves are injured, therefore, recovery (though tardy) may be expected. If severe cramps are produced by instruments, it is better to lay the latter aside. Cramps appear to be occasioned by the entrance of the head into the pelvic cavity; and therefore, when resulting from pressure, are prognostics of approaching delivery.

By the bearing of the cranium on the rectum and perinæum, tenesmus is produced;—an accident worthy of a transient and cautionary remark. Moved by feelings of delicacy, the patient may request her attendant to quit the bed-side; but he must beware of being misled by her solicitations. It is when the head is pushing through the outlet, that this sensation is most troublesome; and were the accoucheur to quit his post at that moment,—the head suddenly emerging when the perinæum was unsupported,—a dreadful laceration of that part might, perhaps, occur.

I have several illustrative preparations of this accident. One preparation is of the perinæum, lacerated so as to lay the genital fissure and anus into one aperture;—probably occasioned by the rude introduction of the hand, or the rapid emersion of the head. I have another preparation, which is truly awful. In it there is a tremendous laceration in front of the vagina, and another behind;—probably occasioned by attempts to turn the child. What must be the feelings of any man, on finding that any female of his own circle, or in whose fate he felt more than a friendly interest, had been treated in such a manner? There is such a thing as an obstetric *rack*, formed by ignorance and presumption; of which, in conjunction with violence, it is the offspring! I have another laceration of the uterus alone, without the vagina. When using the hand or obstetric instruments, let the fear of such preparations as these be always before your eyes. I have also a preparation exhibiting a rupture of the bladder, occasioned by accumulation of the urine. The accident is rare; but deserves attention.

CHAPTER II.

PRETERNATURAL LABOURS.

Cases of preternatural parturition, may be commodiously separated into two orders; namely, those in which the operation of *turning* becomes requisite, in order to bring away the child; and those cases in which this operation is not required. I will commence with those simpler cases, in which turning is not necessary to the delivery.

Preternatural cases not requiring the operation of turning, consist principally of presentations of the *feet*,—presentations of the *breech*,—and those presentations which are of a *mixed* nature, and partially partake of the characters of both.

SECTION 1.—FOOT, OR CRURAL PRESENTATIONS.

When the feet of the child are lying over the centre of the pelvis, the presentation can be made out with certainty only after the os uteri has been thoroughly expanded, and the membranes have been broken, and the liquor amnii has been discharged. If at this time the accoucheur examine with a moderate degree of attention, the feet (naked under the touch) may be recognised with facility; unless, indeed, with all-powerful ignorance or negligence, he confound the hands and arms with the legs and feet; to which when swelled they bear some resemblance. Even before the disruption of the membranes, and the complete expansion of the os uteri,—if he make an examination during the absence of pain, when the membranes readily recede under the touch (although, perhaps, the disk of the os uteri do not exceed the surface of a shilling);—if one or two fingers be passed into the os uteri, the feet of the child may, I believe, be frequently detected. From examinations of this kind, however, it is better to refrain; lest the membranes be prematurely torn.

When it has been ascertained that the feet are lying in the mouth of the uterus, then proceed to determine the proper moment at which manual assistance of delivery ought to be interposed;—a point of the utmost importance. Mere manual operations are easy enough. A mere novice in obstetrics may often, with facility, abstract the fœtus in crural presentations; but to determine the exact moment at which this assistance should be given, requires a nicety of judgment; and, accordingly, different teachers and practitioners have prescribed different rules.

Some practitioners there are who take their indications from the laxity of the softer parts, and the openness of the os uteri; and if they find that the mouth of the womb is wide open, and that the softer parts are thoroughly relaxed,—so that they feel satisfied that no resistance will be opposed to the passage of the shoulders or head,—they then lay hold of the legs, and bring away the fœtus as speedily as may be: and, on the whole, this rule is by no means to be despised. In general, where the mouth of the womb is expanded, and the softer parts are relaxed, the child, under the foot-presentation, may be safely brought away.

By Denman and others, we have been advised, in these cases of crural presentation, to take the indications for manual interference from a very different circumstance;—I mean the elevation of the breech. When the breech is lying out beyond the external parts, they lay hold of the legs, and accomplish the delivery; but when the breech is lying above the brim of the pelvis, they wait until the natural efforts have pushed the nates to the outlet. The reason of this rule is twofold. In the first place, it is said, that where the breech has passed the outlet of the pelvis, the head and shoulders of the child will generally be found to come away with facility; and, secondly, so long as the breech is lying above the brim of the pelvis, the umbilical cord will not be subjected to pressure; and therefore we may wait, without danger to the child, so as to allow of its further descent. When the breech is pushed beyond the external parts, and the cord is compressed in the vagina, unless the child be promptly abstracted, it will probably die suffocated;—much in the same manner as if, after delivery, it were to be wrapped up in a blanket, or thrown into water. Hence the necessity of a prompt abstraction from the pelvis.

There is yet a third indication, by which some determine the moment of interference in crural presentations; and that is, the condition of the umbilical cord. If the cord pulsate strongly, it is said, we may wait, and trust to the natural efforts; or that assistance, if we give any at all, may be administered with much gentleness, and little activity. If, on the other hand, the pulsation of the umbilical cord is becoming obscure,—if it is interrupted for a time (the child being still living, though in danger),—then it is said, we should promptly extricate the fœtus; otherwise, the circulation being weak, and pressure on the cord continuing, the flow of blood along the umbilical vessels may be interrupted so long, and so completely, that the life of the child becomes extinct.

For myself, however,—as on former occasions,—I would recommend the accoucheur to take his indication of delivery, not from one of these circumstances singly, but from a combination of them. Called to a crural presentation,—before he lays hold of the feet, and begins to draw down,—he should ascertain, by a careful examination, whether the os uteri is open, and the softer parts are relaxed, or not. If the mouth of the womb be in a great measure closed, or if the softer parts be unusually rigid, he had better not draw down; for, doing this, he will find (when he has got away the feet) that the head and shoulders cannot be abstracted; or should he extricate them, by overbearing all resistance, he will bruise and lacerate the softer parts, and perhaps detach the head from the body. On the other hand, if he find the softer parts thoroughly relaxed, so that they yield in every direction under the pressure of his finger, or if he find the mouth of the womb wholly or in a great measure open, so that the passage of the head and shoulders is not opposed, he may then be considered as so far justified in having recourse to

manual assistance. I would not advise him, however, to lay hold of the legs, and draw down, merely because he may find the os uteri expanded, and the softer parts relaxed. On the contrary, I think it would be better to observe the rule already prescribed by Denman and others; which is, that manual operations ought to commence if the nates are lying in the outlet of the pelvis; and further, that they ought not to be attempted if the nates are at the brim; because in midwifery, unless there is a clear necessity for it, manual interference is improper; and this necessity does not exist when the breech is lying in the upper part of the pelvis; for the umbilical cord is not subjected to pressure, and neither the mother nor the fœtus incurs much risk.

In determining when it is proper to give assistance, in a delivery of this kind, I would further recommend him not to neglect the state of the umbilical cord;—a circumstance of considerable importance. If he find it pulsating strongly, he may wait a little longer,—even if the nates are beyond the external parts; for they may come down somewhat lower, and the delivery may be further facilitated; but if he find the pulsation interrupted, then (as it is clear the action of the heart is disposed to cease) the sooner the fœtus is brought away, without injury to the mother, the better.

These, then, are the principal considerations to be carefully revolved in the mind before proceeding to lay hold of the feet, and extract the fœtus. Beware of laying hold of the feet and drawing without reflection, merely because those parts are lying within reach. Before you draw, ascertain that the os uteri is expanded, and that the softer parts are thoroughly relaxed. Before you draw, let the nates be pushed down to the outlet of the pelvis, or a little beyond it; and, where the umbilical cord is pulsating strongly, be less prompt to interfere;—recollecting that it is necessary to be more speedy in the operation, if pulsation be disposed to cease.

Method of giving Assistance.—The method of giving assistance, in crural presentations, is exceedingly simple; and, indeed, if the accoucheur adhere to the rule of not interfering too soon, he will rarely find any difficulty. If the feet of the child present, and the abdomen is lying upon the back of the pelvis, he may assist in the extraction of the child in the following manner.—The nates lying in the outlet of the pelvis, or beyond the external parts, wrap a handkerchief or napkin round the limbs;—laying hold with the interposition of this texture; as it renders the grasp more secure. A hold being thus obtained, draw down;—swaying the child a little from side to side, forward and backward, or obliquely; according as the one or other movement facilitates the descent. In so doing, be very careful not to injure the perinæum. When the trunk of the child is passing the pelvis, slide up one or two fingers, first on the one side, and then on the other; promptly, but not with hurry; and if one of the arms (a rare accident) be disposed to descend with the body, taking the hand, you may draw the arm forth, and lay it flat and close against the

side. If this operation be neglected, the arm may start out at an angle over the brim of the pelvis, and obstruct the descent of the child; or, should the difficulty be borne down with impatience and violence, fracture or contusion may be produced. Further, when drawing the thorax through the cavity of the pelvis, I would again recommend the propriety of sliding one or two fingers into the pelvis, to feel for the arms; and of taking care to press them, as far as may be, upon the promontory of the sacrum. I consider this hint to be of no small importance. For it sometimes happens, when the child is descending, that one or both arms become fixed behind the head, between the occiput and the symphysis pubis;—so firm an obstruction being produced in consequence, that the accoucheur is labouring, perhaps, for ten or twenty minutes, before he can get the arm away.

The axillæ being at length, with this precaution, brought to a level with the external parts, and the arms being deposited in the back of the pelvis, you will find that you can extricate them easily enough; nor must this operation be neglected. In many cases, indeed, if the pelvis be large, and the head small, the arms and head might be brought away together;—not however without difficulty; for, thus combined, they occupy much room; and a corresponding delay and compression of the softer parts is produced. In general, therefore, it is better, to extricate the arms before the head; and, for this purpose,—the axillæ being brought down to a level with the external parts,—throw the body thoroughly out of the way;—placing it in the attitude most favourable for the introduction of the fingers, and the intended descent of the arm; and then, laying all the four fingers if practicable (if not, one or two only) in the bend of the elbow, resolutely, but without violence, bring down the arms, with a sweep over the face. You should be careful to lay your fingers into the bend of the elbow; for, if you plant one or two fingers on the middle of the humerus, there will be a risk of fracture;—which, at this early age, is produced by very slight causes. Having got one arm down, the other is, in turn, to be extracted by a similar operation; nor does it matter which of the two is first extricated. Time, however, must not be futilely wasted by indecision; nor must you amuse yourself by attempting the extraction, first of one arm, and then of the other. Remember the apologue of the frogs;—while you are fooling, the child is dying.

When the arms have been extricated in the crural presentation,—provided the accoucheur has observed the rule of waiting till the os uteri is wide open, and the softer parts are thoroughly relaxed, and the nates have been pushed to the outlet,—the escape of the cranium usually becomes easy. Now and then, however, if the pelvis be small, or the head large,—or if he has unwisely begun to operate, when there has been some little rigidity of the softer parts, there may be some difficulty in abstracting the head. The first object, in these cases, should be, to acquire a power over the positions of the

cranium; and, for this purpose,—with both hands bearing on the shoulder,—put one finger (if practicable) on each side of the occiput; and, with one or two fingers of the other hand, act upon the chin. If the head be in the brim of the pelvis, the occiput should lie toward one side, and the face toward the other; so that the long diameter of the head may correspond with the long diameter of the superior aperture;—the chin of the child, where this can be accomplished, being brought down upon the chest; so that, of the three longer axes, the shortest may bear on the long diameter of the brim; because the head, in this position, occupies the least room. This effected, draw down in a line tending from the navel to the coccyx;—that is, in the axis of the superior aperture; swaying the head, however, a little from before backwards, till it approaches the outlet; when the face should be laid on the sacrum, and the occiput on the pubes;—the chin still resting on the chest; so that, the long measures of the head being again put into correspondence with the long diameters of the aperture, the cranium may emerge commodiously.

In crural presentations, we sometimes find that the abdomen of the child is placed in *front* of the pelvis, instead of lying on the *back*; and there are two ways in which such a case may be conducted. First, without changing the situation of the abdomen, the fœtus may be extricated according to the rules already prescribed. On the whole, however, I think it will be found that the fœtus does not descend so commodiously when the abdomen is lying anteriorly, as when it is placed on the back of the pelvis; more especially because, in this position, much difficulty is to be apprehended in abstracting the arms, shoulders, and head. Hence, in crural presentations, when the abdomen lies anteriorly, it is deemed, on the whole, better to throw the abdomen of the child to the back of the mother, as soon as the operation can be performed. This may be attempted on different occasions. For instance, it may be done after the operator has drawn the head and arms into the cavity of the pelvis; but he will find it very difficult to be accomplished at this time; as the head and arms become impacted. Or he may attempt this operation as soon as he has laid hold of the feet;—succeeding sometimes, though he may not infrequently fail; in consequence of not possessing sufficient command over the body of the child within the uterus. As on many other occasions, so here, μετρον αριστον;*—the turn will, in this case be best accomplished when the thighs make their appearance; the nates lying just below the superior aperture; and the head, shoulders, and body above. As soon, therefore, as the nates approach the outlet of the pelvis, and the thighs lie within his grasp, the turn should be attempted. For this purpose,—laying hold of the thighs close upon the outlet with the left hand, and spreading on the back when practicable the fingers of the right,—draw the child backward upon the sacrum; so as to bring the axis of its body nearly in a line with the axis of the brim;—taking care, however, not to injure the peri-

* A middle course is the best.

næum;—and, preparation being thus made, by the operation of the two hands, change the situation gradually,—with gentleness, yet resolution; transferring the abdomen of the fœtus, over the side of the pelvis, from the front to the back.

In the management of crural presentations, the following are the principal errors against which the accoucheur ought to guard. Mistaking the arm for the leg;—the extraction of the fœtus, without previously ascertaining whether the moment of interference is arrived;—neglecting to turn the abdomen upon the back of the pelvis;—forgetting, when one arm is disposed to descend with the trunk, to lay this arm flat along the flank of the child. One may err also, as the head descends, in suffering the arms of the fœtus to become impacted between the occiput and the symphysis pubis; or in using such force as may contuse or tear the softer parts, or fracture the humerus* of the fœtus, or its clavicle,† or the vertebræ of the neck. *Festina lente*‡ should be his rule. Hurry is inadmissible; a cautious haste is proper. In general, when the cord pulsates strongly, he may proceed more leisurely; when feebly, more promptly. To the security of the mother, the life of the fœtus must always, if necessary, be sacrificed. If there are pains, so much the better; but do not, when once the cord is under pressure, delay the delivery, by awaiting the pains; for the death of the child will be the result of procrastination.

SECTION 2.—BREECH-PRESENTATIONS.

In preternatural cases, the accoucheur will sometimes find the breech lying over the centre of the pelvis;—on the whole, a case more favourable than the preceding; as the child is oftener born alive under the presentation of the nates, than when the feet present. When the breech of the child presents, even before the membranes are broken, an accoucheur, skilful in examination, may form a probable opinion of the presentation, by carrying his fingers to the os uteri during a pain, and waiting with the fingers in the os uteri till the womb relaxes; and then, through the yielding membranes, examining carefully the characters of the nates. I do not, however, recommend early examinations of this kind. They lead to early interference with the membranes; and might, with rudeness, occasion a premature rupture;—which is very undesirable in cases of this kind; as, in preternatural labours, the rupture of the involucra should, for reasons already assigned, be delayed as long as possible. The best time for making out this presentation is certainly later in the labour;—when the os uteri is expanded, the membranes have been ruptured, and the liquor amnii has been discharged. It may then be felt with facility, lying naked under the touch; and known by its roundness and softness,—the cleft between the thighs,—the genitals,—the

* From ωμος, *the shoulder*.
† From *clavicula*, the diminutive of *clavis*, "a key;"—from its shape.
‡ Hasten carefully.

anus,—and a portion of the thighs. In male children, the scrotum may generally be felt, like a fluctuating bag,—not to be punctured. In presentations of the nates, the meconium * frequently comes away.

The nates presenting, we are not hastily to infer that manual interference is necessary. Nor are we rashly to thrust the hand into the pelvis to lay hold of the presentation, or to thrust up the blunt-hook or forceps, or to have recourse to any artificial measures. As usual, meddlesome midwifery is bad. Interference is justified by inexorable necessity alone; and, in general, the same powers which detrude the head in natural labour, will also, and perhaps with greater facility, push the nates to the outlet of the pelvis. In these cases, therefore, a principal duty of the accoucheur is to wait. Let him put his hands into his pockets, and not into the vagina. "*Pazienza*" † (the familiar ejaculation of the Italian) may be properly adopted by the accoucheur. Some practitioners, when the nates descend, are accustomed to place one or two fingers over the bend of the thigh, right and left;—alternately operating as with a hook; carefully drawing during the pains;—a practice in which perhaps there is little harm, if cautiously effected; but really, on the whole,—adhering to the general rule,—it is better to abstain altogether, unless interference be obviously required. By the natural and unaided efforts, then, the nates may generally be pushed upon the outlet; and, when this has been accomplished, as the cord is liable to compression, assistance becomes necessary. For this purpose, grasping the hips, and co-operating with the pains, draw carefully down; and, in drawing, (the abdomen of the child lying on the back of the mother), carry the loins of the fœtus ‡ forward, and towards the mons veneris;—so that the legs may of themselves drop forth; when the case becomes footling. As a general rule, it is good not to pull forth the legs;—indeed, not to meddle with them at all; but to leave them to drop forth spontaneously; for fractures are to be feared.

It sometimes happens, in breech-presentations, that, instead of lying *behind*, the abdomen is situated *anteriorly*, or to the one or the other *side*;—all which is easily ascertained, by examining the situation of the thighs and genitals.‖ When the abdomen is lying in front, or in the lateral position, it seems on the whole to be a good practice, as soon as possible, to throw the abdomen of the fœtus on the sacrum; for in this position, as I have observed already, the head and shoulders will be more easily extricated.

This rectification may often be accomplished without difficulty; and the proper moment for attempting it, is when the nates have reached to the external parts. I would not recommend a rectification when the nates are at the brim; because, to effect it then, the hand must be carried into the uterus;—an operation to which a good accoucheur is exceedingly averse. Neither would I advise him, be-

* From *μηκων, the poppy.*
† Patience.
‡ From *feo,* "to bring forth."
‖ From *gigno,* "to beget."

fore rectification, to wait till the feet have escaped from the pelvis; for, when the shoulders are in the cavity, the arms frequently become impacted between the bones of the pelvis and the head; and the whole mass becomes so firmly fixed, that the turn cannot be effected. The most favourable moment for the purpose of rectification, perhaps, is when the nates* are pushed thoroughly down to the outlet, and the hips begin to appear. Grasping the part with ease at this time, by little and little, with well-mixed gentleness and resolution, endeavour to transfer the abdomen to the back of the uterus; and, failing in this attempt, take the case as it presents itself; suffering the abdomen to lie, throughout the parturition,† anteriorly.

Manual Assistance.—As the head of the child is not always expelled by the unaided efforts of the uterus, so also the descent of the nates may be obstructed;—more especially if the breech be large, or the pelvis small; so that the aid of the accoucheur becomes necessary. Of the various helps to which we may have recourse in these cases, one of the simplest consists in using the fingers as a blunt-hook. One or two fingers are inserted into the bend of the thigh; and, drawing down, you co-operate with the pains;—performing the operation alternately on either side, right and left; till at length the nates reach the outlet of the pelvis. It is of the utmost importance to co-operate with the pains; for without their help, it is of little use to draw. If the accoucheur has not power enough with the finger, he is advised to make use of the blunt-hook; an instrument that (like an ignorant, meddlesome accoucheur) has no feeling for the mother, or her offspring; and to which therefore I am exceedingly averse. In careful hands, indeed, it might be of service; but in coarse and rough hands, it may prove a most destructive weapon;—even tearing the limbs from the body. Should this instrument be necessary, let two fingers be placed over the fold of the thigh, and, under the direction of these fingers, pass the hook into the same situation; afterwards drawing down, with mingled gentleness and firmness, so as to bring the hip somewhat forward. This accomplished, operate on the other side in a similar manner;—acting alternately on either hip, till the nates make their appearance at the outlet; and always watching for the co-operation of the pains. It is preferable, however, to abstract the child by means of a handkerchief;—a method which I have repeatedly tried; and find, on the whole, to succeed very well; though it requires some dexterity to use it. For this purpose take a handkerchief (of silk, if possible), and, sliding it up on the outer surface of the hip and thigh, pass it over the bend of the thigh, and bring it afterwards down between the limbs; then adjust it, so that it may lie in the fold formed by the limb and the abdomen; and not rest on the middle of the femur, lest it occasion fracture. In the same manner, apply a handkerchief to the other thigh; and then, the two together

* From *nato*, "to flow;"—because the excrements are discharged from them.
† From *pario*, "to bring forth young."

giving a complete command of the part, co-operate with the pains, and draw down the nates to the outlet.

There is yet a fourth mode in which the descent may be assisted; and that is by means of the forceps.* Taking one of the blades of this instrument, cautiously slide it over the flank of the child; afterwards applying the other blade, with caution and apposition, to the opposite flank;—in these cases securing the *nates* with the forceps, just as (in ordinary cases) the *head* is seized. If the forceps be used with violence,—ferocious, atrocious violence,—it is possible to inflict much injury;—to damage the abdominal viscera, or break the osseous structure of the pelvis; for there is a choice of mischief; but if employed with gentleness, they are safe;—the security and success of the instrument depending on the way in which it is employed. Mons. Capuron has designated it as,—"toujours dangereux, sinon meurtrier, pour l'enfant;"—and so it certainly is, unless very gently and carefully employed.

But it sometimes happens, when the nates are very large, or the pelvis is very small, that none of these modes of delivery will succeed. The fingers, the blunt-hook, the handkerchief, the forceps,—all have been tried without success. In this difficulty, what is to be done? Why, in cases of this kind, and in these cases only, are we justified in sliding up the fingers, and bringing down the feet;—thus exchanging the presentation of the nates for that of the feet. I have said that it is only in those cases, where it is impossible to bring down the breech otherwise, that we are justified in having recourse to this operation; for, as a general practice, though adopted by some, it should (I think) be reprobated; and that for two good reasons. First, because more children are born alive under the breech, than under the crural presentation; and, secondly, because where, in this way, the feet are brought down, it is necessary to carry the hand into the cavity of the uterus. Now, over and over again, have I condemned this practice; and if, in defiance of warnings, any one of my pupils should still addict himself to these malpractices, let him take the consequences! My hands are free; whatever may befall the patient! On his head be her blood! Do not draw down the nates, unless dangerous symptoms require it; or unless the womb has been in action for twelve or twenty-four hours after the discharge of the liquor amnii. If the cord pulsate strongly, the child is in no danger; if there has been no pulsation for an hour, it is dead. The birth, in neither case, need be accelerated. If the pulsation of the cord begin to fail, this is an argument for interfering; provided the nates can be brought away without the smallest risk to the mother. These remarks may meet the interrogatory,—"When ought we to interfere?"

Errors in Management.—The grand errors to which an accoucheur is obnoxious, in the management of these cases, are (I think) the following. Through making a careless examination, he may con-

* From *ferriceps*; from *ferrum*, "iron;" and *capio*, "to take;"—as being the iron instrument with which we seize any thing.

found the nates with the facial presentation;—like my friend, whose instructive error I formerly recorded. Meeting with a breech-presentation, he may deem it his duty to draw the breech towards the outlet, without further consideration. Remember that this practice is erroneous; and that, in most cases, the breech will descend of itself, without the help of the accoucheur. To draw down the legs without need,—converting the presentation of the nates into that of the feet,—is another great error to be avoided. Remember the risk of lacerating the genitals; and the danger of destroying the child. To use force in the delivery is a very fatal error. Contusions, lacerations, fractures, death;—such are the results of force! A disposition to violence is your evil genius; and wo be to the woman whose accoucheur is haunted by it! *Arte, non vi*!

SECTION 3.—MIXED PRESENTATIONS.

Among preternatural cases, we sometimes meet with mixed presentations; and on those I shall next remark. Sometimes one leg only presents; sometimes the knees. If, however, the management of breech and crural presentations be thoroughly understood, according to the rules just prescribed, those cases of mixed character are very easily managed. The knees presenting, suffer the uterus to act of itself; and, the legs descending, the feet will protrude;—what was a presentation of the knee becoming crural; so that no peculiar practice is required here. If the presentation is of a single leg, I believe the best practice, on the whole, will be to wait, as in a breech-case;—giving a fair trial to the natural efforts, which will most probably push the nates to the outlet of the pelvis. Then grasp the hips, as in the presentation of the nates; and the rest of the delivery may be easily accomplished.

SECTION 4.—EXTRAORDINARY DIFFICULTIES IN PRETERNATURAL PRESENTATIONS.

In the abstraction of the child in crural presentations, it sometimes happens that unusual difficulties occur; when the *abdomen*, the *arms*, or the *head*, are brought through the pelvis; and to the consideration of these difficulties I shall now proceed.

The abdomen is sometimes considerably enlarged;—the bowels being tympanitic. This rarely occurs, however, without putrescence* of the fœtus; indicated, perhaps, by the desquamation† of the cuticle,‡ and other changes of those parts which lie under the eye. Lowder once met with a case in which the peritoneum of the fœtus contained a gallon of water; and I have a fœtus in my possession, the abdomen of which contained two or three pints, that had accumulated in the urinary bladder.

Meddlesome midwifery is bad. When the abdomen is enlarged, it does not follow that active operations are necessary. Though the fœtus, in Lowder's case, contained a gallon of water, it came away

* From *putresco*, "to rot." † From *desquamo*, "to scale off."
‡ From *cuticula*, the diminutive of *cutis*, "the skin."

unopened. The pelvis may be large; the powers may be great; the fœtus may be yielding. Co-operating with the pains; taking care not to lacerate the perinæum (the part most in danger); carrying the fœtus from the sacrum towards the abdomen of the mother;—humouring,—leading,—the child is got away. When, however, the pelvis is small, or the parts are rigid, or the abdomen is bulky in the last degree, or the pains are feeble, reduction of size may become requisite. If there be dropsy,* the swelling must be punctured; if inflation, perhaps the abdomen must be laid open more extensively; but accumulated gas† can but rarely, I conceive, require the operation. We may *presume* that the child is dead when the cord is flaccid and cold, and has been for an hour or more without pulsation; we may *infer with certainty* that it is dead, when the body has begun to decay. In general, when the enlargement is gaseous, it can be justifiable to lay open the abdomen only in *dead* children. The blood chills and curdles at the thought of tearing out the intestines‡ of a *living* fœtus! By the people of England,—the censor and monitor of nations,—wild beasts are caged; but, worse than these, the accoucheur,—meddlesome and violent, yet responsible to none,—has been unwisely let loose upon society; with all his instruments of destruction about him!

"Qualè portentum neque militaris
Daunia in latis alit esculetis;
Nec Jubæ tellus generat,—leonum
Arida nutrix!"§

When bringing the child into the pelvis, be very cautious to keep the arms in the back of its cavity, and as near to the face of the child as may be. Where this rule is neglected, and sometimes from other causes, the arms may become fixed in the pelvis;—most frequently between the symphysis pubis and the head. In difficulties of this kind, it ought to be our first endeavour to extract the arms in the ordinary manner;—the different parts of the operation, however, being performed with more than ordinary nicety and energy. In doing so, bring the axillæ to a level with the external parts; throw the body thoroughly out of your way (an operation of much importance); giving it, at the same time, that position which may favour the descent of the arm athwart the face. Then placing all your fingers on the arm, about the bend of the elbow, you may bring down the arm with tolerable facility; provided the obstruction is not unusually great. But what is to be done in those more difficult

* From *hydrops*, derived from *ὑδωρ*, *water*.

† From the German *gascht*, "an eruption of wind."

‡ From *intus*, "within."

§ "Such a monster as warlike Apulia does not contain in its wide-spread beech-woods; nor can the parched land of Juba, the nurse of lions, exhibit."—*Horace's Odes*: *Book* 1; *Ode* 22; *Lines* 13 *to* 16. The "monster" was a wolf which the author unexpectedly encountered in a wood; and which fled, overawed by his *innocence*! "Daunia," or "Apulia," is now called "La Capitanata;" and is part of the kingdom of Naples. "The land of Juba," or the land where Juba reigned, was Mauritania; a part of Africa.

cases, where attempts of this kind fail? Here, I conceive, the only remaining resource is, to lay open the cranium with the perforator;—when the arms will become liberated by the collapse of the bones. This operation, however, can never be necessary, till it has been ascertained (by repeated, well-directed attempts) that extrication by the fingers is impracticable. This operation, too, can never be necessary till the child is already dead;—the death being easily ascertained by the coldness and flaccidity of the cord, which lies immediately under the touch; and, above all, by the total cessation of the pulse in it. To perform this operation, take the perforator* (unfortunately of too easy use); and, planting two fingers on the occiput, by way of a director, perforate the cranium; and afterwards separating the blades, enlarge the opening as much as possible. This accomplished, pass the crotchet into the cranial vault; move the instrument in every direction; lacerate the membranes and pulpify the brain; so that, soft as panada, it may readily issue at the opening; then, on pulling with the crotchet, the head will generally descend without previous abstraction of the arms; though on the whole, perhaps, it is better,—pursuing the general practice,—first to extricate the superior extremities, and then to bring away the head.

Abstraction of the Head.—In the abstraction of the head, in these cases, unusual difficulties sometimes occur. They are divisible into four classes. Those in which the obstruction arises from an unfavourable position of the head; those in which it is produced by a *slight* deficiency of room in the pelvis; those in which the deficiency of room is more considerable; and, lastly, those in which the head is pulled away from the body; the cranium lying detached in the cavity of the uterus;—a rare occurrence in British and well-conducted midwifery.

Where the pelvis is small, or the head large, or the practitioner unskilful, it sometimes happens that the abstraction of the head, in consequence of its unfavourable position, is attended with much difficulty. In speculation, cases of this kind might be multiplied *usque ad nauseam*;† but, in practice, they may be reduced to three principal varieties; with all of which the practitioner ought to be acquainted. When the head is at the outlet,—the face and occiput lying on the sides of the pelvis,—the chin may lodge on one set of sacro-sciatic ligaments, and the occiput on the other. In cases of this kind,—if the pelvis be large, or the cranium small, or the uterine efforts frequent and powerful,—the child may escape notwithstanding; but if the pelvis be small, and the head large, not understanding the nature of the difficulty, you may go on pulling till you actually tear the head from the body. Whereas, if you turn the face into the hollow of the sacrum, and the occiput to the symphysis pubis, and draw the chin a little downward and forward upon the chest, the whole difficulty vanishes at once, and the head passes easily enough. Again, when the head is at the brim of the pelvis, it sometimes happens that the chin of the child lies over the symphysis, and the occiput

* From *perforo*, "to pierce through." † To a sickening extent.

over the promontory;—the long diameter of the head lying over the short diameter of the brim; so that, unless these diameters be greater than ordinary, the head cannot be brought away. Understanding the nature of these difficulties,—which are easily ascertained, by examining the position of the body, as it lies through the outlet, under the eye of the operator,—it is by no means difficult, in some cases, to remove it; provided the accoucheur be resolute and dexterous. Grasping the body with the left hand, and then conveying the abdomen of the fœtus gradually to the back of pelvis,—acting on the head through the intervention of the neck,—endeavour to turn the chin to one side. In doing this, however,—as the tender compages* of the neck may suffer from contusion, if the bearing there be too forcible,—it is better, if practicable, to lay the fingers of the right hand on the side of the cranium; and, with well-directed pressure there, to assist the movement of the face to the side;—the two hands mutually co-operating. Should rectification, however, by gentle means, be impracticable, then endeavour to abstract the head, by raising the occiput, and depressing the chin upon the chest; so that, of the three longer axes of the head, the shortest (little exceeding four inches) may be brought to bear upon the short diameter of the brim. In this position, if the pelvis be capacious, the head may descend; with the face, throughout the labour, upon the symphysis pubis; or, if delivery cannot be accomplished in this manner, then lay open the cranium at the occiput. This tremendous and heart-sickening operation, however, can never be necessary in such cases, till the fœtal life is extinct. "Thou shalt do no murder!" These words cannot too often tingle in obstetric ears.

The passage of the head is sometimes obstructed in consequence of the operator not drawing in the axis of the pelvis, when the cranium is at the brim; and as this is an error which the young practitioner is very likely to commit when off his guard, I am the more anxious to impress it indelibly on the mind. The head may be in a position favourable enough for the passage of the superior aperture;—the occiput lying on one side of the pelvis, and the face upon the other; but if the head be large, and the pelvis small, and he is seated near the feet of the woman,—consoling, encouraging her, of course,—in drawing the child, he urges it downwards and forwards on the symphysis pubis. In these circumstances, if the head be small, or the pelvis large, the cranium may pass notwithstanding; but, if the head be large, or the pelvis small, the head cannot be brought away. Ignorant midwifery is a *comical tragedy*! The whole difficulty is of his own making; for it arises from drawing out of the axis of the brim. But quit the feet and approach the loins; and,—drawing in the axis of the superior aperture, downward and backward towards the coccyx, (taking care not to injure the perinæum),—the head comes away easily, and safely enough. An unlucky case!—An unfortunate case! Like the two Amphytrios in the comedy,† Mis-fortune and

* Joints;—from *compingo*, "to put together."

† "Amphytrion; or the Two Socias." By Dryden.

Mis-management are so like each other, that their nearest acquaintance cannot always distinguish the one from the other!

In bringing away the head of the child, the operator has, sometimes, to contend with difficulties at the brim;—arising, most frequently, from want of room between the front and the back. To the consideration of these I will next proceed.

Eight or ten crural presentations, with deficiency of room at the brim, have fallen under my notice;—the want of space being ascertained, in these instances,—not by nicely measuring the pelvis,—but by the detention of the head at the superior aperture;—notwithstanding that the position was favourable, and a full abstractive force was employed. When the feet present, and the head is lying in the brim, the body being thrown out of the way into a commodious position, a dexterous operator might, I have no doubt, apply the long forceps (or even the lever) to the head of the fœtus, and draw down with great effect. Steel, however, like the nerves of a rude accoucheur, is apathetic, and has no sympathies.* The steel of the instrument-maker is sometimes as fatal as the steel of the armoury;—and Laundy† and Perkins‡ may perhaps vie with each other. In difficulties of this kind, instruments are not, in general, needed; and therefore, I conceive, they ought not to be employed. The delivery, in many cases, may be effected in the following manner.—Availing himself to the utmost of his knowledge of the forms of the head and the pelvis respectively, agreeably to the principles so often stated, the operator places the head at the brim, with the face and occiput in the sides of the pelvis, and the chin upon the chest;—taking care to draw in the axis of the brim; that is, in a line extending from the navel to the coccyx.

To secure the command of the head, when practicable, place two fingers on the chin;—the rest of the hand bearing on the shoulders and chest in front; while, the other hand resting on the shoulders and chest behind, pass a finger as high as may be on either side the occiput, obtaining that bearing on the child which is required. The child thus secured, request an assistant to take his place at the bedside, near the loins of the patient; and (with the interposition of a cloth) grasping the body of the fœtus, to draw as you direct. These preliminaries observed, when a pain occurs draw down in co-operation;—perhaps swaying the body a little from front to back (careful of the perinæum, however); till, the head brought to its bearing, you say to your coadjutor,—"Stop!—Lie on the pull!—Let us suffer the head, under moderate compression, to mould itself.—Let us wait for another pain!" Look at the countenance;—count the pulse;—reflect! After pausing in this manner for one or two minutes, draw as before (during a pain, if there be any);—advancing the head a little further, and again pausing, with the same caution as before;—thus allowing the head to become further moulded and compressed. Proceeding in this manner,—pulling at one moment,

* From *συν, with*; and *πασχω, to suffer*.

† A surgical instrument-maker in St. Thomas's Street, Southwark.

‡ The inventor of the steam-gun.

pausing at another,—you gradually work the head through the brim; when further difficulty does not usually occur. As the head may slip suddenly through the brim, be prepared to relax as suddenly when pulling; or the head may dash through the outlet, and tear the perinæum. Decapitation will be the effect of sudden pulling or jerking; but, if the cranium be a little softened by putrefaction, it is possible, without rupturing the neck, to exert (in a gradual manner) so great a force, that the vertex opens and the brain escapes. These higher degrees of force, however, are in general neither safe nor justifiable. The safety of the mother is paramount; and is better secured by the use of the perforator. The birth of the child, though not to be hurried, must not be needlessly procrastinated; for the cord is under pressure, and death must ensue. Under the best management, most of these children are still-born.

The pelvis may be contracted in a higher degree; when the abstraction of the fœtus must be attended with difficulties still greater. These are to be surmounted by laying open the cranium;—the operator proceeding in the method before described. When the head is laid open, and the brains have been pulpified, the fœtus frequently descends with facility; — the cranial bones becoming collapsed. Notwithstanding this reduction of bulk, however, the descent of the head may still be impeded; and then it becomes necessary to observe the following cautions.—Make the opening into the cranium as capacious as may be;—by the action of the crotchet, diligently employed, let the celebral mass be pulpified with more than ordinary care;—in drawing, place the basis of the skull parallel with the symphysis pubis; and (which you may easily do) bring down the occiput as the most depending part. The cranium, consisting of the facial bones and basis, with the bones which form the upper part in a state of collapse, though thus reduced in size, when placed to the plane of the brim, nearly fill the aperture and pass with some difficulty; but it drops readily through the pelvis, when the basis is placed parallel with the symphysis pubis. If the basis lie against the symphysis pubis,—the face being the part most dependent,—the facial bones and neck (a large mass) must pass the contracted pelvis together; but if as advised,—and as, indeed, will be found the most easy,—the occipital bone be drawn down by the crochet, the facial bones will pass the pelvis alone;—the occiput and neck of the child descending through the contracted pelvis in one mass, of a bulk by no means considerable. Before proceeding to operate, the death of the child may be known by the continued want of pulsation at the root of the cord;—not to mention the desquamation of the cuticle, and the putrescence of the limbs; and I repeat that it never can be necessary to perform this horrid operation while the fœtus is alive.

The decapitation of the fœtus is not, I think, a common occurrence in well-managed British midwifery; but, in a few rare cases, in general perhaps ill-conducted, the head becomes detached from the body; and this constitutes the fourth difficulty of which I proposed to treat. To get the command of the head is, in these cases,

the principal difficulty; and there are different instruments contrived for this purpose. The courtly St. Amand (I think it was) contrived a net to inclose the head when in utero. I am not sure that he called his invention "the obstetric fool's-cap;" but the designation would not be very inappropriate. Spreading it over your fingers, you carry it into the cavity of the uterus, *if you can*; in doing this, you avoid bursting the vagina or the uterus, *if you can*. There is always danger; and here you have your choice. Then, having got thus far, you are to lay the cap over the child's head, *if you can*; and ultimately, by means of this invention, you are to abstract the head, *if you can*. Throughout the operation, this inauspicious impedimental ("if you can") meets and embarrasses you at every turn.—The rats, in council, resolved that some measure should be taken to secure them from their arch enemy, the cat. An orator, garrulous and much applauded, conceived it would be advisable to append to her neck a bell;—silver and chased, of course, and of a form at once classical and elegant. "Aye, *if you can*!"—exclaimed a Phocion of the assembly; and demolished the orator.—Levret contrived an instrument for the purpose, on which Smellie suggested an improvement, that admits of a more ready application to the cranium;—being more obedient to the operator. An instrument, probably preferable to either, has been contrived by Gregoire. Bearing on the firm margins of the foramen magnum occipitale, this instrument, properly applied, gives a secure hold of the head; nor do I think that the annexation of some two or three vertebræ to the head, would preclude the introduction of the blades; neither would it be difficult, if necessary, to pull these vertebræ away, by means of a proper instrument.

Meddlesome midwifery is bad. When, by mismanagement, or otherwise, the head becomes detached from the body, the unaided efforts of the uterus will sometimes push it away; and, therefore, unless the contracted state of the pelvis show that such hope is vain, these efforts should be fairly tried. When, however, the detached head is to be abstracted by the accoucheur, he may first endeavour to fix it in the brim of the pelvis, by well-directed pressure from the hand of an assistant, applied above the symphysis pubis; and then, taking a large strong perforator, he may either enlarge the foramen magnum, or make a large opening through the occiput;—abstracting the brain at the aperture, and afterwards drawing down by the crotchet; for the head readily descends, after its bulk has been reduced. Should pressure on the uterus, above the symphysis pubis, be insufficient to fix the head firmly, we must then obtain a command of it, by means of one or other of the instruments just mentioned.*

* "If, however, the head is separated from the body, a folded cloth should be placed upon the abdomen of the mother; a strong, but skilful man should then, standing on the left side of the patient, place his two hands, one over the other, on the lower part of the abdomen, and press firmly. In this way, the head is forced to the mouth of the womb; and is to be extracted by the crotchet, in the manner already mentioned."—*Celsus*; *Book* VII; *Chapter* XXIX.

SECTION 5.—TRANSVERSE PRESENTATIONS.

When neither the superior nor inferior parts of the child (the *head*, the *nates*, the *knees*, or the *feet*) are lying over the centre of the brim,—the fœtus lying across the pelvis,—further difficulties arise. To the consideration of these we will next proceed.

In Burns's excellent work, I find reference to a very extraordinary case; in which, the womb and abdominal coverings becoming torn open, the child was spontaneously expelled at these apertures;—the woman ultimately recovering. More frequently, when the birth of the fœtus is obstructed, the uterus gives way; the fœtus escapes into the peritoneal sac; and, lying there for the rest of life,—forty or fifty years for example,—becomes converted into a mass of bone; and occasions little further inconvenience, except that which results from its bulk and weight. A case of this kind occurred to Dr. Cheston, a very distinguished practitioner. The woman lived subsequently forty or fifty years. After death, he found that the fœtus was ossified; and this preparation may now be seen in the Museum of the College of Surgeons, under the direction of the very able and obliging conservator, Mr. Clift.

In transverse presentations, it still more frequently happens that,—the uterus being disrupted, and the child having escaped into the peritoneal sac,—the latter is brought away through the pelvis, by the operation of turning. Carrying his hand into the peritoneum, through the lacerated opening, the accoucheur, careful not to lay hold of the intestines, seizes the feet of the child, and draws them over the centre of the pelvis. A case very similar to this has fallen to my own care. It was not, indeed, a transverse, but a vertex-presentation. The pelvis was narrow; and the womb spontaneously gave way. I carried my hand through the opening in the front of the neck of the uterus, opposite to the bladder (which was uninjured). Cautiously and slowly the feet were drawn down; the child was abstracted dead; but the mother ultimately recovered. That there was a rupture of the uterus, and that the child had escaped into the peritoneal sac, there was no doubt. I felt the contracted womb; I felt the intestines; I felt the large pulsating arteries; I felt the edge of the liver;—and this during the progress of my hand towards the feet, which lay near the ensiform cartilage. Nor, though curious, is this case by any means singular.

Brachial Presentations.—When the presentation is brachial, there is yet another way in which the fœtus may pass;—occasioning but little anxiety to the accoucheur. The pelvis being large, the fœtus small, the womb active, and the fœtus under six months of age, the child may be pushed away without his interference. Understand clearly, however, that where the fœtus and the pelvis are both of standard-size, it is impossible to succeed by this method of abstraction. I have seen fracture of the arm, and disruption, in consequence of rude attempts to bring away the child in this manner;—

and this, too, by the fair and gentle hands of a female accoucheur !* The only cases in which it is proper to confide the delivery to the natural efforts of the uterus, are those where it is obvious, from examination, that the child is coming down into the pelvis. Examining the first time, a small descent is observed; examining a second time, it has descended a little further; examining again, further descent is observed ;—the fœtus advancing, perhaps, with every pain.

There is, also, another principle from which our indication may be taken. I mean the age of the fœtus;—ascertained by the "calculation" or "reckoning," as it is called, and by the dimensions of the protruding member;—allowance being made for that enlargement which results from compression and intumescence. In general, if the pelvis be of standard-capacity, the fœtus cannot, if more than six months old, be transmitted under the brachial presentation; if less, it may pass. Pelves, however, may exceed or fall below the standard-dimensions; and the rule must, of course, be modified accordingly.

Spontaneous Evolution.—When the child is lying transversely, it is worth our knowing that evolutions sometimes occur; and more especially in brachial presentations;—a truth, for the knowledge of which we are particularly indebted to a very amiable and very excellent man, Dr. Denman. Under this evolutionary descent of the nates, Denman supposed that the arm ascended; but Gooch, a practitioner full of talent, has shown that, in some cases at least, the arm scarcely rises in the uterus at all. For my part, after being present at two or three spontaneous evolutions, I am persuaded that, in most if not all cases, the arm (as Gooch has suggested) remains at the same, or nearly the same elevation;—pushed a little to the side of the pelvis; while the body of the fœtus, being relaxed and softened,—sometimes during life, more generally in consequence of extinguised vitality,—under strong and repeated uterine effort, is gradually evolved. First, the thorax of the child, then the abdomen and flank, and ultimately the hip and breech, are urged through the brim;—the parts successively following each other into the pelvis; not without incurvation of the softened body. Observing these "spontaneous evolutions," as he significantly called them, and unwilling to interfere during parturition without need, Dr. Denman advised that, in arm-presentations, we should always confide the delivery to the natural efforts;—abstaining from the introduction of the hand into the uterus. When, in conformity with this opinion, these presentations were trusted to the unaided efforts of the uterus, in many cases, no doubt, the expected evolution did occur; but in some (perhaps I may say many) cases too, the evolution failed, and turning became requisite.

To this may be added the fact, that, under spontaneous evolutions, the children were almost invariably born dead;—nine out of ten, for example; or nineteen out of twenty. For the purposes of practice, this fact in itself is sufficient; and it constitutes some objection to

* Dr. Blundell here made an allusion to Sir Anthony Carlisle's "Observations on the Impropriety of Men being employed in the business of Midwifery."

Denman's recommendation; but it may not be amiss to add, in the way of explanation, that the death of the fœtus is rather the preparative, than the effect, of the evolution. In order that the fœtus may be evolved, flexibility is necessary; and this flexibility, in general, does not exist, unless the child is wholly, or in great measure, dead. Now, on both these accounts,—because the fœtus is so often born dead, and because there is a fear that the powers of nature may fail,—it is improper, as a general practice, to confide delivery to spontaneous evolution; but if the tendency to evolution be shown by the ribs or abdomen descending, or if attempts have been made to turn the child without success,—either from want of skill, or from the insurmountable difficulties of the case,—then, indeed, this mode of delivery should, I think, be fairly tried. I was once called to a case, in the neighbourhood of London, where two or three accoucheurs of talent had attempted to turn the child, but could not succeed; and, on trying myself, I failed too. Under these circumstances, we deemed it prudent to wait; and, in the course of two or three hours afterwards, the child came away by spontaneous evolution.

Ordinary Method of Delivery.—In the transverse presentation, however, the ordinary method of delivery is by means of "turning;"—to which I have so often referred. This operation may be attempted in different ways. Laying hold of the cranium, we may endeavour to bring the head over the centre of the pelvis;—or, laying hold of the breech, we may bring down the nates;—or, laying hold of the knees or legs, we may draw down by these parts;—so that the operation of turning may be divided into *three varieties*;—the turning by the head, the turning by the breech, and the crural turning. Of these three varieties, the cranial turning is the safest for the child; because, if we can bring the head over the centre of the pelvis, there is no danger lest the umbilical cord be compressed, and the child is born in the usual manner. Though desirable for the child, however, this form of turning is unsafe for the mother, because difficult for the accoucheur; for the head (large, rounded, and slippery) escapes from the hand; and the repeated endeavours to grasp it, are not without danger of laceration. Next to the cranial turn, is the turning by the nates; and I have already said that more children are born alive under the breech-presentation, than the crural. In the breech-presentation,—the lower limbs lying on the abdomen,—there is a groove formed between the thighs; in which the umbilical cord lies, and is secure from pressure. In introducing the hand to turn the child, perhaps the nates constitute the first part on which the fingers may fall; and this part may be brought over the centre of the pelvis. Like cranial turning, however, that of the nates is, on the whole, not easy for the accoucheur; and hence, though safer for the fœtus, it is less secure for the mother; and, as a general practice, ought not to be adopted. When we turn by the feet or knees, the umbilical cord is exposed to continued and fatal pressure, during the passage of the head and shoulders; yet,

notwithstanding this objection to the crural operation, and though in some anomalous cases we may, perhaps with advantage, turn by the nates or the cranium, this method of operating by the feet is, on the whole, to be preferred.

Cæsarean Section.—In transverse presentations, it has been proposed to bring away the child by the Cæsarean operation; and, after what I have seen of the difficulties and dangers arising from these presentations, I would frankly acknowledge that cases do now and then occur, in which I conceive it would be less *painful*, and on the whole not more *dangerous* to the mother, to have the child taken out by the Cæsarean operation (improved as it may be hereafter), in preference to any other mode. But if we once admit the obstetric principle, that the Cæsarean operation may be performed in transverse cases as a substitute for turning, there would, I fear, be no end to the abusive adoption of this operation by the rash and adventurous; and the greatest mischief might ensue. Against such use of the operation, therefore, in the present state of knowledge, I feel it a duty to raise my voice. In transverse presentations, I cannot allow that the Cæsarean incisions are ever justifiable; and the man who, in such circumstances, rashly performs them, would render himself awfully responsible for the result. Ye men of genius (if such I am addressing), with minds formed, not merely to *talk* about the profession, but to *improve* it, never shrink from your duty for fear of the blockheads! Formidable as they may appear at the first onset, if left to themselves they will soon collapse into their natural insignificance!—

> "Quali dal vento le gonfiate vele
> Cageion avolte poiché l'alber fiacca."*

Remember, however, that firmness and rashness, though they approximate, are as different from each other as vice and virtue; and that from the reproaches of our own conscience, it is no cowardice to shrink.

Mr. Scott, a very intelligent practitioner of Norwich, met with a case in which, although the os uteri was torn off, and came away from the vagina, the woman recovered. Although, for reasons stated at large in my "Physiological Researches,"† I feel persuaded that

* As the sail, swelled by the wind, causes the mast first to bend and afterwards to break.

† "Of severe injuries of the abdomen, with their results, the following may be adduced; as having, with few exceptions, fallen under my own notice, or that of my friends; and as possessing an authenticity, on which, where there is no observation to the contrary, I can thoroughly rely. 1. Mr. Scott, of Norwich, a very intelligent practitioner, met with a case in which the os uteri was torn off, and came completely away. Large bleeding, and collapse were produced; but the patient recovered. Dr. Merriman is now, I believe, in possession of the preparation. 2. Mr. Harrison, of Greenwich, obliged me with the relation of a case, in which, from defective formation of the external genitals, the child's head could not readily pass. It forced its way into the rectum, and was born at the anus; occasioning three large rents;—two laterally, and one forward. The woman recovered without any very pressing symptom. 3. I have notes of four cases of chronic

the division of the os uteri would not necessarily prove fatal, nevertheless, as a remedy in obstructed transverse parturition, in the present state of experience, it ought (I think) to be reprobated, as both dangerous and inefficient. If an incision were made, on introducing the hand the opening would, most probably, become enlarged by laceration; and even though the hand passed into the womb with facility, the main difficulty would still remain;—I mean, the conveyance of the hand along the body of the uterus into the fundus, where the feet commonly lodge.

Embryotomy.—In transverse presentations, I have never yet had occasion to remove the child from the uterus by *embryotomy*;—having always hitherto found that, with patience and management, delivery could be otherwise effected. Having therefore, personally, but little knowledge of the operation, I forbear copiously to enlarge on it; though a few remarks may be allowed.

inversion of the uterus, in which extirpation by ligature was performed at different times. The first was under the care of Mr. Chevalier;—the second was under the care of Mr. Newnham;—the third was communicated to me by Dr. Hall, of Manchester;—and the fourth was a case of my own. 4. Two cases (the only ones within my knowledge) may be mentioned, in which the human spleen was removed successfully. One was the case of a soldier at the battle of Dettingen;—the other was recorded by Dr. O'Beirn of Edinburgh in his Inaugural Dissertation. 5. Three cases may be cited, in which a dropsical ovary was rent, probably extensively, from external violence. They all terminated favourably. 6. Two cases may be mentioned, in which an opening was made into the abdomen, with the view of extirpating a diseased ovary. In the first the patient died;—apparently from cachexia produced by the dropsy, and for want of reaction in the system and wound;—in the second, recovery was complete. 7. Five cases of laceration of the uterus or vagina, during parturition, have been brought under my personal notice; though I was present in only one case, when the accident occurred. In four cases death was the result;—the fifth recovered. 8. Mr. Barlow, a friend of the late Dr. Haighton, has performed the Cæsarean section three times; once successfully, when the abdominal wound was healed completely by the sixth day. The other two cases terminated fatally.

"Such is the small collection of facts, *favourable* and *unfavourable*, which, with limited opportunities, I have been able gradually to accumulate in the course of the last five or six years; and which, to me, seem calculated to throw some additional light on the probable success of more enlarged abdominal surgery. From these cases, few as they are, I feel conscious that no *certain* inference can yet be drawn; though *presumptive* inferences certainly may; and they seem to me to be the following.—1. That small wounds of the peritoneum (as in tapping, hernia, &c.) do not, in general, induce fatal peritonitis, or other destructive effects.—2. That extensive divisions of the peritoneum are *certainly* not necessarily fatal, whether by inflammation or otherwise; and *probably* not generally so.—3. That the womb, spleen, and ovaries may be removed, *certainly* without of necessity destroying life, and *presumptively* without generally destroying it.—4. That the womb, when developed by pregnancy, may be torn open; the child may escape into the peritoneal sac, among the viscera; and the os uteri be torn off;—not indeed, so far as these cases may be relied on, without great danger; but, twice in seven times, without death.—5. That the peritoneum and abdominal viscera, though very tender in the human body, will, without fatal consequences, bear more injury than, from their modes of practice, British surgeons seem disposed to admit.—6. That all the above inferences, from observations on the human abdomen, are in unison with those drawn from observations on the rabbit;—the one set of inferences mutually supporting the other."—Condensed Extract from Dr. Blundell's "Physiological and Pathological Researches."

In performing embryotomy, it should (I conceive) be our first endeavour, by accurate observation, externally and within, to ascertain, as clearly as may be, the position of the fœtus. This point obtained, we may attempt the abstraction of the child in two ways;—by decapitation,—or disruption of the different cavities. For opening the cavities, the best instrument, I suppose, is a long and large perforator; to be introduced at the thorax, in the arm-presentation, which is the most common;—the viscera being afterwards removed at the opening, so as to make room for the introduction of the hand, and the seizure of the feet. But although a fœtus may be removed in this manner, I suspect that extraction by decapitation, when this can be accomplished, is decidedly to be preferred;—a practice first recommended by Hoorne, and recorded, I think, by Heister.* For this purpose, I should prefer, to a semilunar knife with cutting edge, a blunt hook of soft iron (not of steel), mounted on a stem;—firm yet flexible; so that, in operating, the curve might be accommodated to the situation of parts. This hook is to be fixed over the neck; and then, by drawing resolutely but rationally, the head is to be torn from the body. The body of the fœtus is then to be abstracted by the arm; and the head afterwards removed from the uterus separately. These operations, calculated to fill the feeling mind with disgust and horror, can never (I conceive) be necessary, unless the fœtus be dead; and it would be still more satisfactory to operate when putrescence has begun; as this would facilitate the dissolution of the junctures. In brachial presentations, the putrescence is known by the state of the arm;—easily ascertained as it lies under the eye of the operator.†

It may be asked me, perhaps, in concluding the subject, how it is that transverse cases terminate, when committed entirely to nature; the accoucheur,—forbidden by the patient, or being incapable of accomplishing the delivery,—forbearing to interfere. When the child lies across in the pelvis, it so rarely happens that these cases are committed to nature, that we have really little opportunity of knowing their natural termination; but it is highly probable that, in some few cases, the women would die undelivered; while in others,—perhaps in most cases,—the fœtus, softened by putrefaction, would come to pieces in the cavity of the uterus, or be pushed away by spontaneous evolution;—the mother either ultimately recovering, or sinking in consequence of lacerations, contusions, exhaustion, or the like.

* See page 47 of Dr. Rogers's Edition of Denman and Mackintosh's Practical Obstetricy.

† "If it be transverse, and cannot be got into a proper direction, a crotchet must be fixed in the arm-pit, and gradually pulled. In this case the neck is generally doubled, and the head turned back upon the body. The remedy is to cut through the neck, that the two parts may be brought away separately. This is done by a crotchet, which resembles the former, save that it is sharp all along the internal part. We must then endeavour to bring away the head first; after that, the rest of the body: because generally, when the largest part is extracted, the head slips back into the womb, and cannot be extracted without the greatest danger."—*Celsus*; *Book* VII; *Chapter* XXIX.

SECTION 6.—PRESENTATION OF THE FUNIS.

[When the funis presents, it feels, previously to the rupture of the membranes, like a ridge extending across the os uteri. In this stage, the funis will most probably not be recognised; but when the membranes burst, the liquor amnii escapes;—carrying with it the cord into the vagina. When this occurs, the labour is attended with danger to the child, but not to the mother; for if the funis be compressed, the child suffers asphyxia.* As the head descends, the circulation through the cord is arrested; and if the child be long in the passage, it will be still-born. What is to be done? We are not justified in the adoption of any measure, that has for its object the preservation of the child, at the risk of the mother's life. Do what we will, it is most probable, the child will be lost. There are three modes of treatment proposed:—first, to turn the child and deliver;—secondly, to return the funis, and keep it up till the head descends; which will then effect the latter purpose;—thirdly, to apply the forceps. If we detect a presentation of the funis, when the os uteri is nearly dilated, the membranes entire, and the parts in a relaxed state, no one would hesitate to turn and deliver; as it may be done with ease and safety. It will be best, in this operation, to employ the left hand; as the feet will, most probably, be in the posterior part of the uterus. If it be attempted to turn in less favourable circumstances, nothing will be gained; for the delivery will be protracted, the life of the child consequently lost, and that of the mother placed in some danger. But some,—the os uteri dilated, the membranes ruptured, and the head, with the funis before it, descending into the pelvis,—endeavour, if possible, to return the funis; and to keep it up until the head descends beyond it, by a continuance of the pains. It is easy to push up the funis, by the fingers; but it requires to be kept there during several pains. I once had a funis-presentation, when the life of the child was of great importance. I took a sponge, and pushed it up after the cord into the uterus. The sponge being of large size, kept up the cord; and the head descended properly. We may carry up the cord, and hang it on a limb, if practicable. On the Continent, they place the descended loop of the cord in a bag, in which it is pushed up beyond the head; and, when once up, the bag is too large to permit its descent. If the membranes are ruptured, and the head is descending rapidly, nothing can be done; but if the head is low down, and descending slowly, apply the forceps immediately, if other circumstances are favourable. If the funis has been down so long as to have become flaccid and destitute of pulsation, the child is dead, and the labour is to be left to nature.]†

* From *a*, *without*; and *σφυξις*, *a pulse*.

† Gooch's "Compendium of Midwifery—Edited by G. Skinner, M.R.C.S."

CHAPTER III.

THE OPERATION OF TURNING.*

In turning, as in most obstetric operations, it is a point of no small importance rightly to determine the proper moment of interference; for, like repartees, obstetric operations must be exactly timed, in order to produce their effect. Entering, therefore, on the consideration of this important operation, I may commence by making some general observations upon those indications which will enable the practitioner to discriminate here.

Different Indications.—It is asserted by some, that turning ought never to be attempted, unless the os uteri be widely expanded; or, at all events, relaxed in such a degree, that it will readily dilate under the pressure of the finger; nor is this rule to be despised. Generally, when the mouth of the womb is wide open, the hand may be introduced with safety; and this being the case, the sooner it is passed into the uterine cavity the better;—while, on the other hand, if the os uteri be rigid, or if it be in a great measure shut,—the disk not larger than that of a shilling, for example,—the introduction of the hand is unsafe.

By some practitioners, again, the indication for turning is taken

* "The design of the physician is, that he may change the position of the fœtus, from an arm [presentation] into that of the head or feet;—should it have been otherwise placed. And if there be nothing else [to interfere], the [position of the] body is to be rectified, by seizing the hand or foot; for the hand [being laid hold of] converts it into a head [presentation], and the foot into a crural [presentation]. Then if the head is nearest, a crotchet, which is perfectly smooth and has a short point, ought to be introduced, and properly fixed in the eye, ear, or mouth, or sometimes even in the forehead; then, being drawn, it brings away the child. The child ought not, however, to be extracted at any period of time [indifferently]; for if it be attempted when the mouth of the womb is contracted, and will not permit the escape of its contents, the fœtus gives way, and the point of the crotchet slips on to the mouth of the womb;—producing convulsions, and great danger of death. It is necessary, therefore, to rest while the mouth of the womb is contracted, and to draw when it expands; and so gradually to bring away the child, by [availing yourself of] these opportunities. Drawing the crotchet by the right hand, the left (being kept within) ought, at the same time, to draw the child, and direct it [in its progress]."—*Celsus*; *Book* VII; *Chapter* XXIX.

"In former times it was the custom,—in every kind of labour, except those in which the head originally presented,—to return the part presenting, and to bring down the head; and if this was found impracticable, directions were given to bring the child away by the feet, or in any manner its situation would allow, or the exigencies of the case might require. But we learn from Ætius, who lived probably about the fifth century, that Philomenes (whose writings, except those preserved by Ætius, are now lost) discovered a method of turning and delivering children by the feet; and this method, with some alterations and improvements in the operation, has been practised ever since his time; and is considered the only one by which the child can be extracted, and the life of the mother preserved."—*Denman's Introduction to Midwifery.*

"In former times, they used to shake the woman in a blanket, in order to make the child change its position; and a case has recently occurred, in which the same thing was done; although I thought all such coarse treatment of the female sex was at an end."—*Mackintosh's unpublished Lectures on Midwifery.*

from the laxity of the softer parts; and if the os externum, the os internum,* and the vagina, are all of them tense and unyielding,—so that the entrance of the hand, perhaps of large size, would be attended with bruising or laceration,—we are told to refrain; while we are advised to introduce the hand, even though the os uteri be undilated, provided the softer parts, thoroughly relaxed, yield under the pressure of the fingers. This rule is not without its excellence; for, when the parts are rigid, the hand certainly ought not to be introduced; but where they are thoroughly relaxed, a gentle operator, having a hand of small size, may often, with proper caution, securely enter the genital cavity; and we may be told, perhaps,—not without show of reason,—that the sooner he operates the better.

There are some practitioners, who lay their principal weight on a third indication;—I mean, the condition of the membranes; and if they find that the membranes, unbroken and still full of water, are pushing through the mouth of the uterus, they refrain from turning; considering that, so long as the water is retained, there is no risk of the child becoming incarcerated in the uterus, so as to prevent the access of the hand. But if, on examination, they perceive that the membranes are lacerated, and that the liquor amnii has been discharged, then, without much regard to the laxity of the parts, or the expansion of the os uteri, they are anxious, as speedily as may be, to perform the operation. The latter part of this rule lies open to decided reprobation. Admitting (as those who have experience must do) that, after the discharge of the water, an early extraction of the child is desirable; we must also admit that, so long as the os uteri is shut, and the parts are unyielding, dreadful lacerations may result from rash attempts to introduce the hand. To the former division of the rule,—which declares that it is not necessary to introduce the hand so long as the membranes are untorn, and the liquor amnii is retained,—I do not much object; because I agree that, while the liquor amnii is not discharged, there is no danger of the fœtus becoming compressed and incarcerated; and consequently there is no danger, lest the access of the hand should be debarred.

The rules which I observe, in discriminating the proper moment for commencing the operation of turning, and which, being useful in my own practice, I recommend to others, are the following. I lay it down as a principle, in which I think every practical man will agree, that,—provided the operation of turning can be performed without more than ordinary risk of bruising, tearing, or other injury,—the sooner it is executed the better. If, then, I deem the operation safe and necessary, I do not needlessly delay it an hour, a quarter, I had almost added a minute, or a second; and this, more especially, if the membranes are broken, and the liquor amnii discharged; because, while we are delaying, the womb is generally becoming more active, and more contracted;—the dangers and difficulties of the operation contiually thickening in consequence.

* The "*external* mouth" (*os externum*) is the entrance to the *vagina*; the "*internal* mouth" (*os internum*) is the entrance to the *womb*.

Indelibly, therefore, let this principle be impressed on the mind. Never turn without need;—never rashly have recourse to the operation, without considering whether it be, or be not safe; but if fully satisfied that turning will not be attended with more than ordinary danger, and if further satisfied that there is no reasonable hope of the child's coming away in any other manner, the sooner the operation is performed the better.

But it may be asked, perhaps, when we are to consider the introduction of the hand as unattended with greater danger than ordinary; or, to put the question in a more practical manner, when are we to consider, that the danger of turning is no greater than we are justified in imposing? I consider that the hand may be introduced with such a degree of safety, as may justify the operation, provided the os uteri to be as broad as a dollar; and provided it is found, on pressing in different directions, that the softer parts are thoroughly softened;—the patient, perhaps, heing the mother of many children; or relaxed by copious floodings. The rule, then, may be given in few words, as follows:—In ordinary cases, if the mouth of the womb be as broad as a crown-piece, and if the softer parts be relaxed thoroughly, the introduction of the hand is not exposed to greater risk than usual. There seems to be no circumstance preclusive of the operation; and the sooner we commence the better.

Before turning is attempted, the bladder should be evacuated. This, in general, may be effected by the natural efforts. If, however, the urinary organs be in such a condition that the patient cannot discharge the urine by the natural efforts, provided but little water be collected, the catheter is unnecessary; but if, on making investigation above the symphysis, the accumulation is found to be large, the catheter may be introduced.

The operation resolved on, unless the rectum be loaded, I would not advise the administration of injections, in the way that some have recommended. They clear the intestines, indeed; but they also stimulate the uterus, and bring on the pains; which every one who has had experience of these cases, will be solicitous to avoid.

Position of the Patient.—The patient may be placed in different postures when we are going to perform the operation of turning; but though it is not necessary always to turn under the same position, it will be found, for ordinary purposes, most convenient to put the woman in the usual obstetric posture;—on the left side, close upon the edge of the bed-frame (if difficulty be anticipated);—with the shoulders forward, the loins posteriorly, the knees upon the bosom, and the abdomen towards the bed. Nurses, as formerly observed, are apt to place the patient with the shoulders posteriorly, and the loins in front;—a position which is exceedingly incommodious for the operation under consideration.

Position of the Operator.—As to posture, the operator will find it convenient sometimes to kneel at the bed-side;—a pillow being provided; and sometimes to sit in a very low chair;—his position varying as the operation proceeds. The position of the uterus and

fœtus, and especially of the feet of the child, ought to be clearly known before commencing the operation. I have already observed what I now repeat;—that the uterus, in the end of pregnancy, lies entirely above the brim of the pelvis; occupying about two-thirds of the abdominal cavity. The abdominal coverings and loaded bladder are before it; the intestines and other viscera are above and behind it; and the womb leaning forward, its axis lies parallel with a line stretching from the coccyx to the navel; the fundus pushing forth beyond the ensiform* cartilage; and the mouth, seated at the brim, inclining toward the lower extremity of the sacrum. Nor must we forget the ordinary position of the fœtus; which is commonly placed, in these cases, with the shoulder over the os uteri, the head on the cervix, and the feet in the fundus; with the loins and lower limbs carried, along with the fundus uteri, towards the front of the abdomen; and the thorax, head, and arms, lying behind. Do not neglect these hints. To acquire ideas as correct and distinct as may be respecting the position, both of the fœtus and the uterus, is of the greatest importance in this operation.

Ascertain the Position of the Feet.—Before commencing the operation of turning, we ought to ascertain with nicety the position of the feet;—whether they are in the *front* or the *back* of the uterus, at the *left* side or the *right*;—points best determined by examining the presenting part. As the arm-case is the most common, and as it is unfortunately the most difficult of management, I will describe the method to be observed in that case. Let us suppose, then, a brachial presentation;—the arm lying forth beyond the external parts. We are, by examination, to ascertain the position of the feet, in order that we may reach them in turn. For this purpose it should be observed, that,—when the arm is extended, and the hand is placed intermediately between supination† and pronation,‡—the *palm* of the hand takes the direction of the *abdomen*, the *back* of the hand takes the direction of the *loins*, the *thumb* lies towards the *head*, and the *little finger* towards the *feet*. Applying these principles to the case in question, the palm of the hand lying to the sacrum, I know that the abdomen of the child, with its legs, is on the back of the uterus;—the thumb lying to the right, I know that the head is to the right;—the little finger placed to the left, I know the feet are to the left also; and thus, without inspection,—merely by paying a little ordinary attention to the presentation,—I am enabled to ascertain that the feet are lying on the back of the uterus, and towards the left side. To repeat, then. Before commencing the operation of turning, consider what is the bearing of the uterus itself, the position of the child, and (more especially) the position of the feet. This accomplished, no preceptor is required to admonish as to which hand is to be preferred. Knowing the situation of the child and the feet, together with his own method of operating, the ope-

* From *ensis*, "a sword;" and *forma*, "resemblance."
† From *supinus*, "placed upwards."
‡ From *pronus*, "with the face downwards."

rator will discover, on a moment's reflection, whether the right or left hand be the more commodious in any individual case under his care. If he thinks he will be able to reach the feet more readily with the left hand, by all means let this be employed; if otherwise, let him employ the right. Without intending to prescribe any fixed rule, I may remark that, the woman lying on her left side (the usual position), he will generally find the *left* hand more convenient if the feet are in the *back* of the uterus, while the *right* may prove commodious, provided they lie in *front*. Some practitioners always turn with the left hand, and some always with the right; but from the reflections just made, it is obvious that you ought to acquire, if possible, the dexterous use of both.

After a good deal of observation on the operation of turning, I have been induced to divide turning cases into those in which it is *easy*,—those in which it is *difficult*,—and those few cases in which it is *impracticable*,—either for a time, or permanently; so that you are obliged to resign it altogether.

SECTION 1.—CASES OF EASY TURNING.

If the wholesome principle, formerly announced, be adhered to, and the operation of turning be commenced as early as the safety of the patient will admit, it will generally, I believe, be found easy of execution. The woman is as yet unexhausted; the softer parts are relaxed; and the vagina and womb are free from inflammation and tenderness. The cavity of the uterus, capacious and uncontracted, admits the ready approach of the hand of the operator to the feet of the child; and allows an easy evolution afterwards.

In operating in these easy cases, it should be our first office to make choice of the hand with which we mean to act; and knowing, as before advised, the situation of the feet, it is easy to determine which of the hands will most readily reach them; and to prepare accordingly.

In the Gallery of the Louvre, I once saw a painting of the Feast of Belshazzar,—*magnifique*,* of course,—in which the Divine hand was graced with a ring and ruffle. I have heard of a French accoucheur, of finished exterior, who lost in the uterus a very valuable jewel. It is better to leave "*ces gentillesses*;"† to our ingenious and lively neighbours; and if we make use of such ornaments, it may be as well to remember that there are occasions when they are better away.

Steps of the Operation.—The hand being chosen, then, take off the coat, remove the shirt-sleeve and rings, and, with cold-cream or lard (best fitted for the purpose), lubricate abundantly the arm, back of the hand, and knuckles;—avoiding the palm and inner surface of the fingers; as this is the part with which you are to lay hold of the child. Having thus prepared the hand and arm, throw the fingers into a conical form, and pass them through the os externum upon the promontory of the sacrum;—being very careful not to lacerate the peri-

* Magnificent. † These pretty tricks.

næum. The passage of the knuckles occasions the principal pain and danger; which are greater if the woman have not borne children before. The transition may, however, be facilitated by using the fingers as dilators; and the operation should proceed with mingled firmness and gentleness. When the knuckles have cleared the os externum, and the whole hand is in the cavity of the vagina, it becomes necessary, in the next place, to enter the uterine cavity; for which purpose, again give to the fingers the conoidal form, and slowly enter the uterine cavity,—passing the mouth of the womb; which is always in a great measure dilated, before the operation can be properly begun.

If the membranes have been broken, and the liquor amnii discharged, the hand readily enters the cavity of the ovum; but operating early, it will sometimes be found that the membranes are not yet ruptured; and in order to enter them laceration becomes necessary. Whatever is worth doing *at all*, is worth doing *well*. Let this part of the operation, though simple, be carefully executed. The most favourable opportunity for breaking open the cyst, is when the membranes become tense, under the action of the uterus. Be careful to put the hand into the cavity of the ovum; as the interposition of the hand between the womb and the external surface of the membranes might give rise to flooding, by detaching the placenta; and throughout the whole of this part of the operation, bear in mind the awful specimens of vaginal and uterine laceration which continually occur.

Suppose, now, that all these measures have been carefully executed;—that the cyst has been opened, and the hand has been insinuated; that the os uteri has sustained neither contusion nor laceration;—the hand being passed thus far above the brim of the pelvis, and lying in the uterus, the operator may promptly, tenderly press forward towards the fundus, so as to bring the brawn of the arm into the vaginal cavity;—preventing, by this plug, the escape of the waters; if they are not already discharged. In this way the hand lies, perhaps, in the midst of the waters; or if the womb be lax and capacious, the hand may be moved about with facility, though the waters have been discharged. Knowing the position of the feet, advance (during the absence of pain) directly to this part of the uterus, usually the fundus;—slowly or rapidly, as the parts may bear; taking care not to lacerate the womb or vagina; and remembering that, at this moment, a thrust of the hand is contusion,—laceration,—destruction,—death! The third stage of the operation completed in this manner, and the hand approximating to the feet, the arm in general lies in a line stretching from the umbilicus to the coccyx;—the bend of the elbow approaching the key of the pubic arch; the hand lodging in the top of the uterus; and the brawn of the arm taking its place in the cervix uteri and vagina. At this part of the operation pause for a little;—repose, and reflect!

Preparation being thus made, the fourth stage of the operation commences with the seizure of the feet;—care being taken to ascertain clearly that they *are* the feet, and not the *hands*; and further,

that they are *both* the feet, and not a foot and hand together, mistaken for them. Having made sure of the feet, grasp them in any convenient way; but it will be found not inconvenient to place two fingers (the first and second) on the back of the legs; so that the forefinger may rest above the projection of the heel;—the thumb and two remaining fingers lying on the legs in front. In this way a pretty firm hold of the legs may be secured; the hand not occupying much space. Having then in this, or any other more commodious manner, acquired a firm hold, draw slowly, smoothly, and without jerking;—throwing the abdomen of the child upon the back of the uterus; so that, at the end of the operation,—the legs hanging forth,—a transverse presentation is converted into a presentation of the legs;—the front of the fœtus lying upon the sacrum; so that the arms and head may be easily got away.

The legs being brought down in this manner, the head and shoulders must next be extricated;—a part of the operation which may require delay; as the intromission of the hand, of small compass, may have been accomplished with facility and safety, although the parts are too rigid to give passage to the head and shoulders; more especially if they are bulky. Before the head and shoulders are abstracted, therefore, examine the softer passages; and if they are lax enough to transmit the child without injury to either, let this part of the labour be completed immediately; but if there be rigidity of the vagina, or a partial closure of the os uteri,—so that immediate delivery becomes obnoxious to contusion, fractures, or lacerations,—wait. While the cord pulsates, the fœtus is in no danger; if the beat of the cord languish, danger may be apprehended. Remember, however, that the safety of the mother is paramount;—come what may, her person is to be preserved unhurt. This is a pre-eminent maxim of British midwifery; and if this require that the delivery be procrastinated, however fatally to the fœtus, the birth must be suspended. In our own families, the life of the child would never be put into competition with that of the mother; nor can we err here in adhering to the maxim,—equally admired by the saint and the philosopher; and to be found alike in the writings of Confucius, and in records more venerable,—"Whatsoever ye would that men should do to you, do ye even so to them."

[*Pulsation of the Fœtal Heart.*—When your hand is in the uterus, for the purpose of turning the child, you have a good opportunity of counting the fœtal pulse, by means of the cord. I have often had my hand in the uterus, and have never found the pulse of the fœtus above seventy-five; while that of the mother, at the same time, was perhaps a hundred and twenty; although the stethoscopists say the pulse of the fœtus is twice that of the mother.*]

* Dr. Mackintosh's unpublished Lectures on Midwifery.—Since these observations were delivered, the views of stethoscopists on this subject have been greatly modified. The majority now coincide with Dr. Mackintosh. See some remarks in corroboration by Dr. Moir, in the Second Part of Dr. Hamilton's "Practical Observations on Midwifery."

Error to be avoided.—The grand error to which the practitioner is obnoxious,—the error against which I have cautioned my pupils so often, on other occasions,—is the use of too much force. *Arte, non vi*! Ferocious, atrocious violence, is to be exploded from midwifery! Contusions,—inflammations,—lacerations,—fractures,—decapitations;—these are the tremendous consequences resulting from this error;—consequences at once fatal to the mother and the child! Do not offer up their blood to Moloch;—that gory Moloch, obstetric violence! Laceration of the womb, laceration of the vagina, extensive laceration of the perinæum,—one or other of these will with certainty occur, if you operate rudely; and now and then, perhaps, even when turning is performed with the nicest care. Those make a mock of turning who have never seen its dangers. It is, at best, a fearful operation!

[It was Ambrose Paré who introduced the plan of turning. It is not an easy thing to accomplish; for the introduction of the hand gives great pain; and the woman runs a risk of having the uterus ruptured, and of other accidents. The French speak of changing hands, at different steps of the operation; but that is unnecessary. Before you begin, you must ascertain whether the os uteri is dilated, or dilatable; for if not, you must postpone the operation. If you can previously ascertain the position of the child, the latter will determine whether the right or the left hand is to be introduced. If, for instance, the arm presents, by laying hold of the hand of the fœtus, you can tell the position of the child; and that will save much painful examination. I beseech you often to feel the hands and feet of a new-born child; for it is not easy to tell the difference between them in the uterus. Take off the coat, and lubricate the arm. Introduce the hand slowly, as far as the os uteri; and, if a pain should come on, stop till it is over. Then carry the hand into the uterus, without rupturing the membranes; feel all the parts of the child; and, till you have done this, be sure not to burst the membranes. Dewees recommends that the latter should be ruptured at the top of the uterus; in order to prevent the escape of the liquor amnii; but the arm in the vagina is a very good cork. When a pain comes on, keep your hand flat; or the uterus may burst over your knuckles. Get hold of a foot; and when you have obtained it, take care to secure it; for it once happened to me to lose one foot, while seeking for the other. Having grasped both feet, when a pain comes on you pull them down, with a kind of shaking motion; but be sure the external parts are well dilated, before you bring them down much. Do not bring out the feet with the toes pointing either to the sacrum or to the pubes;* or the long diameter of the child's head will be turned to the short diameter of the pelvis. You turn the toes, therefore, to one side.†]

* Dr. Hamilton's very excellent rule on this subject, is that the toes should point towards the sacro-iliac synchondrosis of one side.

† Dr. Mackintosh's unpublished Lectures on Midwifery.

SECTION 2.—MORE DIFFICULT TURNING.

Though always more or less dangerous, the operation of turning may often be accomplished easily enough; provided it be performed sufficiently early, and circumstances be favourable. Hence you will sometimes hear your obstetric acquaintances triumphantly exclaiming,—"For my part, I always turn without any difficulty!"—a declaration, by the way, which evinces, not their superior skill, but their small experience in the nicer and more dangerous parts of practice. In consultation, especially, we sometimes meet with cases of turning embarrassed with difficulties and dangers. The body of the uterus is constricted about the fœtus; the mouth and cervix are more or less firmly contracted around the presenting part; the passages are swelled, inflamed, and dreadfully irritable; the patient, wearied with exertion, and desperate through suffering, cannot be persuaded to lie at rest upon the bed; and thus sometimes, though rarely, a case is created which might try the nerves and the muscles of even those minions of obstetric fortune, to whose superlative skill all difficulties give way!

Called to cases of this kind in the middle of the night, it should be your first care to rouse your drowsy faculties; and to consider, with your associate, the difficulties which you may have to encounter. A French author somewhere asserts, that there has been more wit in Europe since coffee was introduced. In cases of difficulty and drowsiness, a cup of strong tea is not without its utility. If green and hot, it is a sort of tenth muse; and has, I am persuaded, in modern times, excited thoughts, less sparkling perhaps, but not less judicious, than the inspirations of those much-vaunted draughts of Helicon; or of the still more poetic cup of coffee and champaigne, which

> "Chatouillant les fibres des cerveaux
> Y portent un feu qui s'exhale—en bons mots.*"

In cases of dangerous and difficult turning, you will sometimes find the patient in a state of excitement; and at others collapsed, from extensive laceration or contusion;—not always recollected by your predecessor, when giving an account of the previous occurrences! Before you turn, therefore, carefully examine the general condition of the patient. Look at the countenance; investigate the pulse; and consider the pains. If the pains are ceasing; if the pulse is one hundred and forty; if death is in the face (a strong expression, which you may hereafter understand);—from one cause or another, extensive and fatal injury has been inflicted; and your prognosis must be given accordingly. But if the countenance, though flushed, is animated; if the pulse, firm and round, remains about one hundred and twenty in the minute; if the efforts of the uterus are repeated and violent;—the energies are still unbroken, and much may yet be accomplished.

* Tickling tho fibres of the brain, raise there a fire which exhales in smart sayings.

Further,—before you proceed to the operation of turning, in cases of this kind, you should prepare the passages for the introduction of the hand, by relieving them from the inflammation and irritability. With this view, sixteen or twenty ounces of blood, on an average, you may take away. From eighty to one hundred drops of the tincture of opium,—for we give large doses in these cases,—may also be administered with advantage; and the softer parts may be soothed with the decoction of poppies or warm water;—the decoction of poppies being preferable, however; after which you often find that the parts sustain the passage of the hand, though previously they could not bear a touch. Before you engage in manual measures, take means for the relaxation of the womb,—its mouth and body; for from the constriction of these the principal difficulty is to be expected. For relaxing the genitals, the tobacco-clyster* would, I have no doubt, be found of all remedies the most effectual; and it is much to be regretted that its effects are so dangerous. Of all relaxants the most powerful,—it is of all relaxants the most perilous; and although I can readily conceive certain anomalous cases in which its use might be justifiable, yet, in the present condition of my information, I have not courage to recommend it to your employment; even in those higher difficulties now under our consideration. In puerperal hospitals, the warm-bath might, I conceive, be used with advantage;—the patient being kept there till deliquium† approaches. From the excitement of the bath, flooding might, perhaps, be apprehended by some; but a previous venesection‡ would diminish the risk of this; or, should an eruption§ occur, it would prove rather beneficial than otherwise. A very effectual relaxant is the abstraction of blood from the arm;—say to the amount of twenty or thirty ounces; or, rather, in such a quantity as may give rise to deliquium. That the relaxant has great power, is sufficiently shown by what takes place in placenta-cases; for in those cases where three or four pints of blood have been lost, the hand may in general be carried up with perfect ease;—the uterus, passive and unresisting, giving way before our pressure. In a dozen cases or more, I have had occasion te operate myself; and never do I recollect to have met with any considerable resistance to entering the uterus. It is much to be regretted that large bleeding, or bleeding ad deliquium, is a very rough remedy; and a remedy not, perhaps, wholly without its dangers; and which, therefore, becomes justifiable only when the emergency is pressing.

Though the womb is an involuntary muscle, there seems to be no doubt that it may at length relax in consequence of becoming *weary*; so that although, in the morning of the day, you are unable to introduce the hand, yet in the evening, perhaps, it enters the uterine cavity with facility. Although, therefore, the first effect of delay is an increase of the difficulties of the operation, the ultimate conse-

* From κλυζω, *to cleanse.*
† From *delinquo* "to leave."
‡ From *vena*, "a vein;" and *seco*, "to cut."
§ From *erumpo*, "to break out."

quence may be a facilitation of it; so that it really seems better either not to procrastinate at all before you turn, or else to procrastinate as long as may be. The risk of spontaneous uterine disruption, and the protracted pains and anxieties which are the results of this delay, constitute the principal objections to it as a general practice. Nevertheless, in those cases in which bleeding, bathing, and other remedies, have been tried without effect, this measure may be thought of;—a measure which recommends itself to the most inert accoucheur; as it simply requires him to sit still.

In order to relax the womb, you may give opium* (by injection or otherwise) in large doses;—eighty or one hundred drops of the tincture†, for example; or a proportionate quantity of solid opium;—the remedy deserving a fair trial. Of the atropa belladonna‡, I have had little experience. It is asserted that the extract§, if rubbed on the upper part of the vagina, will relax the os uteri; but, till further observation, I cannot pledge myself to the truth of this opinion. I once applied a scruple to the mouth of the uterus, in a case of dysmenorrhœa‖; and no ill consequences ensued. Beware of giving an over-dose.

Such, then, are different expedients to which you may have recourse, in order to relax the uterus before you attempt the introduction of the hand;—the belladonna; the larger doses of opium; the weariness of the uterus; the abstraction of large quantities of blood from the arm; the warm-bath; and (most effectual of all, though most unsafe) the tobacco-clyster.

Not to bewilder you, however, with a multiplicity of remedies, it may be well to remark that, of these remedies, there are two on which I rely, in my own practice; and these two are the abstraction of blood, and the administration of opium. I usually abstract twenty or thirty ounces of blood from the arm; giving also eighty or one hundred drops of the tincture of opium; and if that quantity do not produce the desired effect, I repeat smaller doses of twenty or thirty drops; administering these until some indication of its effect become apparent;—intoxication, drowsiness, or a diminution of the uterine efforts and pains.

The woman being prepared in this manner, you proceed to the manual part of the operation;—a proceeding of great nicety; requiring a mixture of tenderness, firmness, and no small share of ambidexterity. The passage of the os uteri will be the first difficulty with which you have to contend;—the hand being opposed by the contraction of the womb about the presenting part; and it may be that you operate for fifteen or twenty minutes, before you make a safe transition into the uterine cavity. For this be prepared. Beware of impatience and violence! Beware of lacerations! Have

* Probably from *οπος, juice.* † From *tingo,* "to dye."

‡ "Atropa" is derived from *Ατροπος*, the goddess of destiny;—from the fatal effects of the plant; and "belladonna," from the Italian *bella donna,* "handsome lady;"—because used by the ladies of Italy, to set off their complexions.

§ From *extraho,* "to draw out."

‖ From *δυς, with difficulty;* and *μηνορροια, the menses.*

mercy upon the patient! Again I say, have mercy upon her! Remember that a thrust of the hand here, is as fatal as a thrust of the bayonet! Wounds more dreadful were not inflicted on the bloody field of Waterloo! Wombs and women are not to be taken by assault! When the hand is carried through the os uteri, you may find it necessary to repress a little the presenting part. To push the fœtus back *hastily* and *extensively* is fatal;—you must not even think of it! You would tear the vagina;—lacerate the uterus;—do both perhaps;—how easily too! But could you afterwards repair them? To repress the presentation a little, however,—an inch, for example,—so as to allow the fingers to pass,—may be allowable, because necessary. Even this repression, however, is always more or less dangerous; and it is best to attempt it when there is no pain. Your hand in the cavity of the uterus, you have not yet obtained your victory. The great difficulty still remains;—I mean the access of the hand to the feet of the child; during which you have to contend with the following obstructions. When the womb is contracted about the body of the fœtus, your hand is much incommoded. It becomes numb, cramped, partially paralytic, and unfit for service; and, under the pain which you feel, drops of perspiration, perhaps, make their appearance on your forehead. Throughout the previous parts of the labour, you have borne the sufferings of the patient with stoical fortitude, and truly christian-like resignation; but you now begin to sympathize!—A feeling heart is certainly an honour to its possessor! Well, in this condition, you feel for that part of the uterus which is the most roomy; and, depositing your hand there, you repose for a few minutes;—careful not to stir the fingers, lest contractions of the uterus, and compressions, should again be produced. Be still!

When performing the operation of turning, you have to contend with a second difficulty;—I mean those occasional contractions of the womb, which are denominated "the *pains*";—contractions which are exceedingly apt to be produced, when you attempt to make progress towards the feet. If the contractions are slight and rare, you need not interfere. In such cases, it is sufficient to lie quiet during the pains; endeavouring to steal forward afterwards, when the uterus relaxes. Should the womb, however, be angry, and the pains more frequent and violent, more opium must be administered;—twenty or thirty drops every quarter of an hour; until its further operation become obvious, or till the uterine irritation be subdued.

In these turning-cases, you will sometimes meet with a third obstruction; consisting in a *circular contraction* of the middle of the womb; dividing it, as it were, into an upper and inferior chamber; part of the fœtus lying in both. To judge from two or three cases of this kind which have fallen under my own notice, I should say that if you proceed with gentleness,—resolutely, yet cautiously, and taking sufficient time,—you will generally find that the hand may, on the whole, be passed through this sphincter with tolerable facility and safety; but beware of force!

Thus, then, encountering those difficulties which oppose your progress:—stealing forward when the womb relaxes, and reposing when it acts;—the hand extending flat upon the fœtus;—the knuckles never needlessly elevated as you bear forward, lest the uterus be torn by them;—at length you reach its fundus. Now, at the time when the hand is in the fundus uteri, the brawn of the arm lies in the pelvis;—the hand bearing forward beyond the ensiform cartilage, and the arm below resting upon the sacrum and perinæum, which you must be careful not to lacerate. If your person be slender, little difficulty will be experienced here; but should you carry much muscle, obstruction may arise;—the pelvis being too small to give ready admission to the arm (I mean the bulkier part of it); nor can this difficulty be effectually removed; though your operations may be facilitated, and that too materially, by the copious use of cold-cream or lard. You may send for another accoucheur, who enjoys the necessary physical aptitudes. Women, in choosing their practitioner, should give a preference to those who are of effeminate make; and I feel the more satisfaction in giving this advice, injurious to none, because I know it will not be taken.

Such, then, are the principal difficulties which embarrass the operations of turning;—the bulk of the arm; the circular constriction* of the uterus; the occasional spasms†; the general and permanent contraction of the womb; and the constriction of the os uteri. The rigidity of the passages I forbear to mention; for if you operate at the proper moment, it will rarely obstruct you. Through all these difficulties,—perseveringly,—resolutely,—patiently,—composedly,—without violence,—and at last successfully,—you struggle at length to the child's legs; and happy you are to feel them! Do not confound the arms with the feet;—an error to which you are obnoxious, when the nicer sensibilities of the hand have been impaired by compression. If both legs are seized, the child will turn more easily. If you can grasp one leg only, let this be brought down. Often you may turn by one leg; but should it be necessary to draw down the other, the access to the second will be facilitated by the descent of the first. Should the seizure of the leg be impracticable, I would recommend you to lay hold of the knees, and gradually work your fingers towards the feet. If you are tantalized and baulked, by coming within *touch* but not within *grasp* of the feet,—so that you can *feel* but not *seize* them,—you may sometimes overcome this difficulty by changing the position of the patient. The woman turning round slowly, while your hand is in the uterus, by this movement, without further trouble, the feet may be brought among your fingers; so that under this simple manœuvre, although you cannot carry the hand to the feet, you may sometimes carry the feet to the hand; and this without much difficulty. If, however, by none of these measures the feet or knees can be reached and seized, withdrawing the hand, you may pause till you have recovered your strength a little; after which the attempt may be repeated with the

* From *constringo*, "to bind." † From σπαω, *to draw.*

same hand; or you may send for another accoucheur. By one or other of these expedients, in most instances you succeed in obtaining a firm hold of the fœtal legs; and this accomplished, you draw them slowly into the pelvis;—ultimately bringing them forth through the outlet; so as to convert the *transverse* into a *crural* presentation. In drawing down the fœtus, let the abdomen be thrown upon the back of the uterus and pelvis; as, under this situation, the shoulders and head will be most easily extricated. It is not by sudden or violent efforts, but by a steady gentle bearing, that the child should be brought down. When the transverse presentations show a disposition to enter the pelvis together with the legs,—the fœtus descending doubled,—you may secure the legs by an instrument, called "the crural forceps"; or by tying a ribbon round one or both ancles, drawn forth for this purpose; and then, pressing the presentation upward with one hand, while you bear forth the legs with the other, you cause the fœtus to revolve upon an imaginary axis;—the original presentation receding from the mouth of the uterus, and the loins and the legs descending in its place. From the demonstration here given, you may perceive that, in this operation, the child is not thrown back from the pelvis, so as to extend and endanger the laceration of the womb or vagina. Though it revolves upon its axis, its elevation remains unchanged; or, if changed at all, it descends.

When the pelvis is narrow at the brim, space is sometimes wanting there, to give passage to the hand when grasping the feet;—the mass formed by the two, in conjunction, being too bulky. This difficulty may be surmounted by withdrawing the hand, after having seized the feet with the crural forceps; or, if you secure the feet, by placing two fingers (the first and second) upon the leg above the heel; the two remaining fingers and thumb being placed in front over the instep. The bulk of the hand may sometimes be reduced to so small a compass, in this manner, that the transit of the brim may be accomplished.

One other difficulty I have met with, when drawing down the legs; arising from the breech becoming seated over the front of the pelvis, above the symphysis pubis. In these cases, let the nurse, while you are drawing, press steadily and firmly between the brim of the pelvis and the navel;—urging the fœtus towards the promontory of the sacrum. The breech becoming dislodged, the legs will afterwards descend with facility; the delivery being completed, afterwards, as in ordinary crural presentations.

Composure, perseverance, gentleness, patience, experience, great manual dexterity, and a thorough knowledge of the bearings of the fœtus, womb, and pelvis, are requisite in the accoucheur who manages these cases. Lacerations constitute the principal danger. *Arte, non vi*! Beware of sudden violence! Take care, too, that you are not enticed by degrees to the use of too much force;—wheedled onward by the delusive and dangerous, and continually successive expectation, that one ounce more pressure will bear down the ob-

struction! Ah! that one ounce!—Only one ounce more! It is that, I fear, which often kills the patient!

SECTION 3.—IMPRACTICABLE TURNING.

But what is to be done in those cases, of rare occurrence, in which the operation of turning cannot be effected? If dangerous symptoms demand immediate delivery, embryotomy is (I imagine) the only remaining resource; but so long as no dangerous symptoms press, we may wait;—with a reasonable hope that the fœtus will be expelled by spontaneous evolution. I have seen two cases of impracticable turning, both terminating in this manner.

If spontaneous evolution be obviously begun, turning should not be attempted. If the fœtus be under six months old, the natural efforts may be trusted, and will frequently expel it. If, under your attempts to turn, you feel any fibres giving way,—whether in the womb or vagina,—withdraw the hand immediately. The body of the womb sometimes yields; but more frequently the back or front of the vagina;—near the bladder or promontory of the sacrum. The vagina is not much thicker than brown paper. It is much to be regretted that we are in possession of no plain indication, enabling us to decide, with precision, when our attempts to turn ought to be relinquished as dangerous. The yielding of fibres, vaginal or uterine, is a good monitory sign; but it is to be wished that we had some less dangerous indication.

CHAPTER IV.

FLOODINGS.

Floodings generally.—Where the discharge of blood (occurring before or during parturition) is only in small quantity, it may be regarded with little apprehension; being, perhaps, rather favourable to the patient than otherwise; because it tends to relax the softer parts. It too often happens however, that (instead of these smaller eruptions) we have the blood issuing from the uterus in large abundance;—to the amount of two or three pints, for example; when, dangerous in a high degree, it demands a treatment variously modified in different cases, but essentially the same in all. Hence it is that we have thrown together, in one class, all those cases in which the blood copiously bursts from the uterus;—considering them under the general appellation of "floodings"; a title at once descriptive of their nature, and familiar to every obstetric.

Source of the Hæmorrhage.—In the earlier months of pregnancy, when blood comes away from the uterus abundantly, the discharge may be produced by the detachment of any part of the ovum* from

* From ωον, *an egg.*

the uterine surface; for in these earlier months,—say in the second and third,—as the vessels of the uterus shoot in large numbers into every part of the ovum, no part of the latter can become separated from the uterus, without rupture of its vessels and consequent hæmorrhage. Again, in the latter end of gestation,*—say the seventh, eighth, or ninth months,—the vessels still pass into the ovum on all sides; but those which pass into the membranous part of the involucra, are few and small; and, if torn, discharge but sparingly. On the other hand, the vessels which pass from the placenta to the uterus reciprocally, are very numerous and very capacious; whence it happens that flooding to a great extent must take place, when these vessels become torn open, in consequence of a disjunction of the placenta and uterus from each other.

Cause of variation in the Quantity.—In flooding-cases, the quantity of blood which passes away varies exceedingly;—amounting in some instances to a few ounces only; but in others to a few pints, or quarts,—perhaps I might add "gallons." This variation in the amount of the discharge, arises principally from the following causes, operating separately or in combination;—the stage of the pregnancy; the extent of the separation; and the duration of the process. On the stage of the pregnancy much depends; and it may be laid down as an axiom, generally though not universally true, that the floodings of the latter months are more copious than those of earlier gestation; for, in the *earlier* months, it flows from a uterus of small size, and from small vessels (in which, therefore, there is much less blood than may be found in the same organ at a more advanced period of gestation); while those floodings which break forth in the *latter* months, make their attack when the uterus is thoroughly enlarged; with all its vessels numerous and capacious, and plentifully filled with blood. Hence it holds, as a sort of general prognostic, that while all the floodings in the later period are attended with much danger, those which occur in the earlier months,—provided the woman enjoy an ordinary share of health,—are seldom destructive to life; though the general health may sometimes suffer severely. Again,—when the ovum separates from the uterus, the quantity of the hæmorrhage may be determined, in part, by the extent of the detachment. Thus, even in the earlier months, if the ovum separate extensively, a copious bleeding may occur; while a sparing bleeding may take place, even in the end of gestation, provided the detachment of the placenta from the uterus be of small extent;—not exceeding two or three square inches, for example. Nor is it to be forgotten that there is much variety in the duration of these floodings;—the discharge, in some cases, recurring for weeks together; while, in other cases, the whole attack is comprised within the compass of a few days (two or three for example), or even of two or three hours. Hence a third cause, giving rise to variety in the quantity of blood discharged; for where the process is short, the discharge of blood of course is of short continuance, and may also be very sparing; but

* From *gero*, "to bear."

when the floodings are protracted for days or weeks together,—half a pint escaping on one occasion, a pint on another, a quart perhaps on a third,—it is obvious that the total quantity of blood lost may soon exceed even a gallon.

Here, then, are three leading causes, to the joint or separate operation of which the quantity of bleeding may be attributed;—the age of the pregnancy; the extent of the detachment; and the duration of the process.

Causes of the Cessation of the Hæmorrhage.—In flooding-cases, we frequently observe with satisfaction that, after a certain quantity of blood has been discharged,—where the patient is judiciously managed, or where she is left to her own resources,—the hæmorrhage ceases, either permanently or at least for a time;—unless she act very imprudently. Noticing this, the inquisitive mind may be led (and not without reason) to inquire what is the cause of this permanent or temporary stoppage of the bleeding; because the knowledge of such a cause may, perhaps, enable us to co-operate with nature more effectually, when using remedial means. On this point, therefore, I next proceed to remark. When blood flows from the uterus, the discharge, in such cases, seems to be partly arrested in much the same manner as it is suppressed in other structures of the body, where dissolution of continuity has taken place; namely, by faintness, and the formation of a clot. The current of the blood slackens; the quantity which is transmitted through the uterus in a given time, diminishes; and the concretions which form over or within the mouth of the bleeding vessels (the flow of the blood being languid), are less liable to be pushed away. To which may be added the fact, that when the body is faint, the blood becomes more prone to concretion;—a fact which the experiments of a very excellent physiologist, Mr. Thackrach of Leeds, has confirmed*; so that this approach to deliquium does not merely diminish the risk of a detachment of the coagula†, but effectually facilitates their formation. Among the causes, therefore, which first suppress the bleedings from the uterus, may be enumerated the faint condition produced by the hæmorrhage. A woman losing two or three pints of blood, and being perhaps of a hysterical diathesis, becomes very faint; and, under this tendency to deliquium, concretions form. This, together with that closure of the vessels which is effected by the formation of a layer or coat of blood over their orifices externally, gives rise to little coagula; which penetrate into their cavities,—perhaps to the depth of a line; and (on the principal of the plug) effectually close them. Hence, in bleedings, whether from the uterus or any other parts of our structure,—unless the patients be in danger of sinking into that state of asphyxia‡, or deep faintness, from which

* "An Inquiry into the Nature and Properties of the Blood. By Charles Furnes Thacrach."

† From *coagulo*, "to thicken," or "curdle;"—derived from *con* and *ago*, "to drive together."

‡ From *a*, *without*; and *σφυξις*, *the pulse*.

recovery is not to be expected,—we ought by no means to be in haste to rouse them. That faintness which shakes to pieces the nerves of their friends, is in truth not their danger, but their security; and I may further strengthen this remark by observing that, if the bleeding be stopped, as it generally is in these cases, and if the patient possess the ordinary share of bodily vigour, she in general recovers gradually and safely, if left undisturbed; however alarming the faintness may appear to the inexperienced.

If a wound be inflicted in other parts of the body, inflammation supervenes in the coats of the vessels in four-and-twenty, or eight-and-forty hours afterwards; sometimes even in a shorter period;—provided the vessels laid open be not of a very large size, and the hæmorrhage do not proceed so as continually to interrupt the process. This inflammation gives rise to a deposit of adhesive matter in the orifices of the vessels; which deposit, becoming consolidated by organization with the tunics of the vessels that enclose it, renders the security of the obstruction complete. For a thorough development of this principle, we are indebted to the late Dr. Jones*;—a physiologist of great promise, hurried from us by an untimely death, at the very moment when he was beginning to rise gradually into well-merited distinction; and indulging the fair hope of enrolling his name in the glorious company of those creatures of intellect,—

"Inventas aut qui vitam excoluêre per artes,
Quique sui memores alios fecêre merendo"!†

Now, it is a question whether the same defensive inflammations may not also occur in the uterus; which is similar in its vascular organization to the other parts of the body; and whether, after the hæmorrhage has been temporarily restrained by clots and faintness, a more secure closure of the vessels may not be accomplished, in the course of a few hours, by the deposition of small plugs of adhesive matter, and an organized union of them to the sides of the bleeding vessels;—in the manner just described. That such adhesive inflammation takes place in the bleeding vessels of the uterus, has never been clearly demonstrated; though it appears not improbable. It seems the less certain, however;—first, because it has never been demonstrated to the eye; and, secondly, because we find that if a woman once bleeds from the uterus, there is always, if she stir about, a great disposition to a renewal of the discharge. Now, if all the vessels were shut up by adhesive inflammation,—as in other parts of the wounded body,—it seems, on the whole, scarcely probable that the hæmorrhage should be so easily renewed. Among the means, therefore, of arresting bleedings, the closure of the vessels by phlogistic‡ adhesions may be properly enumerated; but it must be ad-

* "On the Process employed by Nature in suppressing the Hæmorrhage from divided and punctured Arteries; and on the Use of the Ligature; concluding with Observations on Secondary Hæmorrhage." By Dr. Jones.

† Who adorned life by useful discoveries; and by their good deeds embalmed themselves in the memory of others.

‡ Inflammatory; from *φλογιζω, to burn.*

mitted, in the present state of our knowledge, that its operation on *the womb* is uncertain.

Thus far the suppression of hæmorrhage from the uterus, bears a near alliance to the stoppage of bleedings from other parts of the body; but it should be known that eruptions of blood from the uterus may be restrained, more or less effectually, by the operation of a third cause, peculiar to gestation; and that cause is, the discharge of the liquor amnii. Even when that fleshy mass, the placenta, is lying over the mouth and neck of the uterus, the discharge of the liquor amnii, when practicable, might perhaps tend to diminish the hæmorrhage. But, however facts may hereafter dispose of this question, there seems to be little doubt that, if no portion of the placenta lie upon the mouth of the uterus, and the membranes alone cover it in the ordinary manner, the discharge of the waters will, in most cases, arrest the flooding; or so far diminish it, that it becomes no longer dangerous.

There is yet a fourth means, peculiar to the uterus, by which the bleedings may be arrested; and that is, the complete evacuation of the uterine cavity; effected by the spontaneous expulsion, or the artificial removal of the ovum (fœtus and secundines). The thorough contraction of the muscular fibres of the uterus, and (in consequence) the effectual constriction of the blood-vessels, greatly diminish the risk of hæmorrhage; and when floodings occur in the earlier or later periods of gestation, if the ovum be expelled, and the uterus contract,—so as to become permanently round, firm, and hard, like the head of a fœtus,—further hæmorrhage, in general, ceases; and thenceforth the patient is secure.

How it is that the discharge of the liquor amnii has the effect of diminishing and stopping the bleeding so effectually, I am not able satisfactorily to explain; though, I suppose, something may be attributed to the partial constriction of the vessels by the surrounding fibres; and something, again, to the pressure which the contracting uterus makes upon the placenta. After the liquor amnii is discharged, the uterus always contracts; and, indeed, expels the ovum (within an uncertain period of one, two, or three days); so that the escape of the water is not only immediately effectual in checking the hæmorrhage, but ultimately brings the patient a still greater security;—derivable from the complete evacuation of the womb. When the ovum is away, we can more clearly understand how the stoppage of the hæmorrhage is effected. The uterus then decidedly contracts; the muscular fibres contract too; and this necessarily causes a constriction of the uterine vessels, which are ramifying among the fibres. By the thorough contraction of the uterus, therefore, a thorough contraction of the vessels is insured; which, by the constriction of the muscular fibres round them, are closed as effectually as if they were secured by a set of ligatures; and are compressed much in the same manner as the fingers of one hand, when clasped by the fingers of the other.

Here, then, are the four principal causes which, operating sepa-

rately or in connexion, seem to stop the discharge of the uterine blood;—the formation of clots under faintness;—the closure of the vessels by inflammation;—the discharge of the liquor amnii;—and the evacuation of the uterus. To this important topic I have given the more attention, because no practitioner can ever scientifically assist Nature in the stoppage of these floodings, unless he thoroughly understands the mode in which she operates.

I have some preparations illustrative of our present subject. One is of the uterus, as large as in the ninth month, injected and dried. Two arteries (the spermatic*) supply the upper and middle regions; and two (the inferior uterine) the parts which lie below. All these vessels are of considerable capacity; being nearly as large as a goose-quill. It is not surprising, therefore, that bleedings so copious occur in the latter months. Another preparation is a strong contrast to the former; consisting of a portion of the womb in the earlier months. Here the vessels are as small as threads; and from vessels like these, but little hæmorrhage may be expected. It is clear, therefore, why the bleedings of the earlier months are so sparing. Another preparation is formed from the human ovum;—consisting of the cyst, which contains the fœtus and the liquor amnii, in connexion with the placenta. The water is within. When the membrane is ruptured, and the liquor amnii is discharged, the ovum becomes much diminished in its bulk; and the womb, therefore,—especially in the earlier months,—is enabled to contract itself considerably. There is a preparation of that part of the uterus to which the placenta coheres;—the womb being uncontracted. The blood-vessels may be observed opening, by unclosed orifices, on the internal surface. They are very numerous and large; and their patulous† orifices yawn destruction on the patient. The orifices of some are sufficiently large to admit a small goose-quill. Such are the vessels laid open when, in the end of pregnancy,—the womb being uncontracted,—the placenta becomes detached; and when we look at these orifices, we can no longer be surprised that, towards the close of gestation, the blood is bursting from the womb, in such copious and dangerous abundance. Again, there is a preparation, which is the counterpart of the former;—consisting of a section of the uterus in the *contracted* state; the contraction being thoroughly effected. Looking at the surface exposed by the section, we observe all the vessels of large capacity constricted, and closed up by the compression of the surrounding fibres; and such are the results of that complete contraction of the womb, which (as before observed) is obtained by the removal of the ovum. Think of these things!

Sometimes rapidly Fatal.—Hæmorrhage from the uterus may suddenly destroy life;—more especially floodings after delivery; under which patients sometimes die very unexpectedly. The woman is delivered with unusual facility; the placenta is removed, it may be, with more than ordinary care; the practitioner leaves the room; and

* From σπερμα, σπερματος, *seed*; from their supplying the *ovaries*.
† From *pateo*, "*to be open*."

is, perhaps, in another apartment, conversing with some of the family respecting the auspicious termination of the labour; when suddenly he is summoned to the chamber of the patient, and he finds her at the point of death. Cases of this kind have repeatedly occurred. Generally, however, when the patient sinks in consequence of the loss of blood from the uterus, death steals on its victim in a more gradual manner; and there is, therefore, more opportunity for the use of those remedial means by which the bleeding may be checked, and the danger averted. Where death makes an insidious approach in this manner, three or four hours may pass away before the respiration ceases; while there occurs a long train of symptoms to which I have, too often, been a witness. These may, I think, be divided advantageously into two classes;—those which are to be looked upon as *less alarming*; and those more dangerous symptoms, that are to be regarded as the more *immediate precursors of dissolution.*

Less alarming Symptoms.—When blood comes away from the uterus in large quantities, alarming symptoms soon begin to appear. The extremities become damp and chilly;—the tongue, lips, and cheek are pale and ghastly;—the pulse is frequent (one hundred and forty, fifty, or sixty), small, and perhaps intermittent;—disappearing in the wrist for a few seconds, or even for a few minutes (nay, for an hour or more); and then returning. There are weariness and weight in the limbs; fainting, sighing, vomiting, and cessation of the pains. All these symptoms may be thrown together, under the head of symptoms alarming in a high degree; but which are not to be looked upon as indications of immediate and almost certain dissolution.

Immediate Precursors of Dissolution.—When the patient is about to die in consequence of the blood she has lost, other symptoms frequently occur in addition to the preceding or precursory. The whole body becomes damp and chilly;—the breath becomes cool; as may sometimes be felt, by putting the back of the hand before the mouth;—the pulse intermits very much (or perhaps is permanently imperceptible at the wrist; which it may be for minutes (aye, for half an hour, an hour, or even longer than that) before the dissolution takes place;—the patient becomes restless, and wishes to alter her posture; no persuasions inducing her to lie quiet. Relief flies before her. She changes her position, and again she changes; but remains uneasy still. The irritability and exhaustive oppression continually augmenting, she gets at length into a state of involuntary jactitation*;—throwing her limbs about upon the bed. Deep convulsive† gasping sobs occur; and these are speedily followed by a cessation of the cardiac‡ and pulmonary actions. When respiration is once stopped, under received methods of management, she is gone beyond the reach of any remedy. Not even transfusion§ itself can save her. A solemn pause follows; presently broken by ejacula-

* From *jacto*, "to toss." † From *convello*, "to pull together."
‡ From *καρδια, the heart.*
§ From *transfundo*, "to pour from one vessel into another."

tions scarcely audible;—some dear friend, sobbing and in tears, exclaiming,—"Can you do nothing? Is there no hope?" What can you answer? "Nothing! None!" But if we could have foreseen; if, instead of raising a senseless clamour against experiments and experimenters, we had only availed ourselves of the helps of physiology*; if we had only supplied the necessary blood; if we had only transfused (and how easily it might have been done!);—at worst she could but have died! How false and futile is the reasoning, that all those who have got well under the operation, would have done just as well without it; and that all those who have been operated on have been seized with phlebitis!†

May occur in Gushes or Draining.—In flooding-cases, there are two ways in which the blood may be discharged;—by *gushes* or by *drainings*. In the latter months of pregnancy, when the bleeding first comes on, the blood frequently rushes from the uterus by impetuous bursts; so that, in a few seconds, a pint or two may be lost; and this it is which constitutes the gushes. Then, after this gush, the hæmorrhage may either cease altogether, or may be converted into a slow oozing from the uterus; continuing, more or less, for hours together. It is this latter kind of bleeding,—this slow and sparing discharge from the uterus, (frequently occasioning, in the course of a day or two, large losses of the vital fluid), which constitutes what are called "drainings." The *gushes* are produced by the detachment of the placenta or ovum from the uterus, by which the vessels are immediately laid open. The *drainings* seem to arise partly from the languor of the circulation (produced by faintness), and partly from the formation of clots which give only a partial closure to the vessels, so as not to put an entire stop to the bleeding; although, at the same time, they preclude the eruption of large quantities at once.

SECTION 1.—TREATMENT OF SPARING FLOODINGS.

Having said thus much on the nature, effects, and spontaneous suppression of flooding generally, I will now proceed to the consideration of the method of treatment; commencing with the management of more sparing floodings, especially those of the earlier months;—the first three or four, for example.

Regimen and Position.—If called to a patient labouring under a small discharge of blood from the uterus, in the earlier months of gestation, the accoucheur will be told that she has "a show";—occurring spontaneously, perhaps; or attributed (it may be) to some accident;—a blow, a fall, a Christmas party, or a long walk. Well, the discharge appearing in this manner, one of the first measures to be prescribed is a sort of *antiphlogistic*‡ *regimen*. The patient should be confined to the horizontal posture, for days or weeks together;—lying extended on the sofa, or bed; the bed being enjoined in pre-

* From φυσις, *nature*; and λογος, *a discourse*.
† From φλεβος, *a vein*; and "itis," *inflammation*.
‡ From αντι, *against*; and φλεγω, *to burn*.

ference to the sofa, if the disposition be restless; as the woman is then less likely to rise occasionally, and stir about. The chamber, if sultry and close, should be immediately cooled; stimuli should be forbidden, and especially port-wine;—a drink to which women, when flooding, are sometimes much addicted. They consider it to be nourishing and astringent*; and half a bottle, or more, is sometimes taken in the course of the day. I might mention much larger quantities; but respect for the sex prevents me from hyperbolizing here. That port-wine may be of use when cordials are required, I do not deny. Wine, however, must be regulated by the medical attendant; and, as a general beverage, it is improper. Plain nourishment is requisite; particularly if the discharge have been rather copious. These are very important points of treatment.

Mild Aperients.—When called to a case in which the discharges from the uterus are sparing, always inquire diligently into the state of the bowels; which, in these cases, are not unfrequently closed. Moderate evacuation appears to be desirable for two reasons;—first because, by clearing out the bowels, any irritants which might be lodged there (especially in the rectum) will be removed; and secondly because, in clearing the bowels, the system, heated perhaps by febricula†, is also relieved. Drastic‡ purgatives, or even active laxatives§, are highly improper; as they may occasion the premature expulsion of the ovum. Manna‖, rhubarb¶, magnesia, Epsom salts, or castor-oil, in small doses, may succeed very well. I am averse to calomel**, as on some bowels it acts roughly; and I have seen it apparently occasion miscarriage.

Refrigerants.—In these more sparing floodings, there is often a certain degree of fever. The surface is warm; the tongue is white; and the pulse is one hundred or one hundred and ten in a minute;—in the nervous, much more frequent. When this is observed, it will not be amiss to administer some *refrigerant*†† (infusion of roses, for example, with sulphuric‡‡ acid and sulphate of magnesia) in small doses;—more with a view to the refrigeration of the system, than to a laxative operation on the bowels. Nitre, a powerful refrigerant, may also be tried;—if used as a *placebo*§§, in daily doses of fifteen grains only;—if really employed with the view of obtaining its full effect, then in much larger quantities (say of one or two drachms in the twenty-four hours);—the practitioner carefully watching his patient, so as to ascertain whether the nitre irritate the stomach or not. To mix nitre with infusion of roses, is unchemical; as more or less decomposition ensues.

* From *astringo*, "to bind".

† The diminitive of *febris*, "a fever";—a slight degree of fever.

‡ From δραστικος, *brisk*; derived from δραω, *to effect*.

§ From *laxo*, "to loosten". ‖ From *mahna*, "what is it?"

¶ From *rhabarbarum*;—from *Rha*, a river in Russia (the Wolga), from the banks of which it was first brought.

** From καλος, *good*; and μελας, *black*. †† From *refrigero*, "to cool".

‡‡ "Sulphur" is derived from *sal*, "salt"; and πυρ, *fire*;—owing to its combustibility.

§§ From *placeo*, "to please".

Digitalis.—When sparing hæmorrhage from the uterus is combined with febricula, digitalis* seems to be particularly appropriate; and there are some accoucheurs who are very partial to its use. In operative doses, Dr. Haighton found it rather an unmanageable remedy. Dr. Hamilton seemed, at one time, to suppose that, in effective quantities, it might destroy the child. Whether this be so or not, I really cannot, from my own knowledge, decide. Experiments on animals are wanted to illustrate the point. Burns found digitalis of great service. In obstinate bleedings, with febricula, I would recommend digitalis to the practitioner's consideration, (on the very respectable authority of Burns); with the addition that, if given at all, it ought to be given in operative doses. Now those doses will vary exceedingly in different individuals; one requiring a much larger quantity than another. Sixty drops of the tincture, or from an ounce to an ounce and a half of the infusion, in the course of twenty-four hours, are moderately effective quantities; care being taken, when these larger doses are given daily, that the patient be sedulously watched by a competent person. Purging,—dying sickness,—a double quantity of urine,—a pulse of long intervals, or of unequal intervals, or with intermissions,—are, singly or in conjunction, the marks that digitalis is in action. If any one, or all of these effects take place, the digitalis is to be immediately laid aside altogether, until it has been ascertained whether an accumulative action will occur or not; for every one knows that, when this medicine begins to act, it may continue to operate for hours, with a perpetually increasing force, till the patient's life is endangered. To start into the sedentary posture, and to move suddenly, are both dangerous when the digitalis is in action. So, also, are large evacuations from the bowels.

Turpentine.—In cases of hæmorrhage from the uterus,—whether of more copious or more sparing quantity,—we are advised to use the oil of turpentine;—a remedy which has received the approbation of Denman. Though not prepared by my own observations to assert its efficacy, yet, on trial, I have not found any effects which prohibit its employment; though it must be acknowledged, that it is sometimes rejected by vomiting. It may be very conveniently administered floating on water; in which condition it is more likely to remain on the stomach, than when formed (with egg, or other intermediates) into an emulsion;—a form of turpentine odious to the stomach. The aptitudes of different stomachs for retaining the oil are various. In some cases I have occasionally given the turpentine very largely; so as to satisfy myself that, though there are some individuals who can scarcely bear one or two drachms of it in a day, there are others who, in the course of twenty-four hours, can take the larger quantities,—three, four, or even five ounces;—prior and smaller doses being increased gradually, and the effects on the chylopoietic†, and other parts of the system, being sedulously watched. Used as a

* From *digitus*, "a finger"; which its flower represents.
† From χυλος, *chyle*; and ποιεω, *to make*.

placebo, its doses must be small; but if given with a view to some decided effect, half an ounce, or an ounce, on an average, may be given in the twenty-four hours. If it remain on the stomach, it is well; if rejected repeatedly, it may be laid aside altogether; though the stomach may sometimes be reconciled to its reception by the use of the effervescing* draught.

Venesection.—Among the remedies, in cases of more sparing bleedings from the uterus, bleeding (by venesection or otherwise) may be enumerated as one, not the least important. Bleeding,—where the patient is in a febricular state, and is lusty and plethoric†,—may, I believe, be useful; and when we take away blood from the arm, sometimes,—whether from cause or coincidence,—the bleeding from the uterus becomes stopped. It is right, however, to mention here that, although bleeding in sparing floodings is generally advisable, yet, if used indiscriminately in all cases, it may destroy. It is (I think) obvious enough, on a little reflection, that recourse ought not to be had to the lancet, in those cases where the patient has already lost a great deal of blood. If, in consequence of blood already lost, the limbs are cold, the pulse small and frequent, the cheeks pale, and the countenance ghastly, why should we bleed? And yet I have seen patients bled in such cases! What is the advantage that is to be derived from venesection here? All the abatement of vascular action, derivable from an abstraction of blood, has been obtained already;—in consequence of eruption of the vital fluid from the uterus.

If, from the previous eruption of a large quantity of blood from the uterus, we have reason to fear that a future copious discharge may occur, it is unsafe to bleed. If the woman have lost much blood already, the advantages derivable from a diminution of the quantity of the circulating fluid, are (as before observed) already secured. Besides, how do we know, after we have taken a pint or two from the arm, that another one or two pints may not flow from the uterus? And how do we know that those together, may not be sufficient to sink the patient? It is not, therefore, copious floodings, but sparing discharges, which justify the intervention of the lancet. It is generally improper to bleed largely in the latter months; because the vessels are large; and the blood, at this time, is liable to burst forth in copious abundance. When the placenta is lying over the mouth of the uterus, for reasons to be more fully explained hereafter, there can be no certain security, till the child and after-birth are away. In the latter months therefore, when the placenta is lying over the uterine mouth, it is especially unwise to bleed. To preclude an eruption from the uterus, venesection can be of little use; and, indeed, when the woman is delivered,—whether by turning or the natural efforts,—the blood will always come away more or less copiously, and often in large abundance. Employ venesection, therefore, if you please, in robust country patients, who have sparing discharges from the uterus, in the earlier and middle months; nay, it may be proper to repeat it then; but beware of bleeding where

* From *effervesco*, "to grow hot". † From πληθω, *to fill.*

collapse* is already begun,—where large eruptions have taken place already,—where the patient is advanced to the latter months of gestation,—and where there is reason to believe that the placenta is lying over the mouth of the womb.

Proper Nourishment.—In cases of hæmorrhage from the uterus somewhat more copious in quantity, there is another remedy, perhaps too much neglected; and that is, *proper nourishment.* If a woman continues to lose a little blood every day, she at last sinks into a state of inanition†; and in the end reaches such a level of depletion‡, that some three or four ounces of blood may make the difference between life and death. That fatal quantity, if nourishment have been neglected, may be wanting to her in the decisive moment. On the other hand, if she take plain and nourishing food, the supply to the vessels may be kept up. Plain sense,—the wisest of Mentors,—will enable the practitioner, in most cases, to decide with judgment on this practice. If his patient, too plethoric already, require bleeding from the arm, bid her abstain from nourishing diet; but, practising in a large town (like this metropolis), he may have, under his care, women in a state of great inanition; and to whom it may be absolutely necessary that nourishing food should be given. When nourishing food is taken, there are two ways in which it may be administered;—either in the *fluid* or the *solid* form;—broths, jellies, fish, fowl, or flesh. Where the patient can take *solid* food, I prefer it on two accounts; first because, if digested well, it contains more nourishment in a given bulk; and secondly because, where women are weak, and lose much blood, they are apt to become very *flatulent*§. In this flatulency there is no danger; but it is inconvenient. Diarrhœa also may be produced by fluid aliment ‖; and, under inanition, the mucous membrane of the bowels is too apt to suffer;—giving rise to fatal purging.

Gastric Astringents.—With respect to gastric ¶ astringents (that is, astringents to be taken into the stomach), on these I have little reliance. By "astringents," I do not mean the refrigerants before mentioned (sulphuric acid, for example); but astringents properly so called;—catechu**, kino, alum, hæmatoxylum††, and so on. I have administered alum in the larger doses; though I have not known it productive of any very good effect. Not to appear negligent, the practitioner may try these remedies; but I would not have him rely on them, to the exclusion of others more valuable. They are of excellent service after the battle is won.

Faintness.—Of faintness I have already given my opinion. If the deliquium be such that the woman is likely to sink into a state of asphyxia from which she will never recover, then of course you must use your whole endeavour to prevent it. It would be too much to

* From *collabor*, "to shrink down".
† From *inanio*, "to empty".
‡ From *depleo*, "to empty".
§ From *flatus*, "wind".
‖ From *alo*, "to nourish".
¶ From *γαστηρ, the stomach.*
** From the Japanese *kate*, "tree"; and *chu*, "juice".
†† From *αιμα, αιματος, blood*; and *ξυλον, wood*;—alluding to its red colour.

assert that, under small discharges from the uterus, it is impossible that fatal asphyxia may occur; but such is the nature of our art, that we must practise, not on the anomaly, but the general principle; and on this principle it must be admitted, that the faintness from small bleedings is unattended with danger; is highly conducive to the cessation of the bleeding; and in general, therefore, ought not to be artificially relieved. For once, even in floodings, meddlesome midwifery is bad! Let the patient lie in peace upon the bed!

SECTION 2.—TREATMENT OF COPIOUS FLOODINGS

a. In the Earlier Months.

It was observed, on a former occasion, that we sometimes meet with cases (in the earlier months, especially) in which the discharge from the womb is sparing. But we also meet with another variety of the disease; a variety in which the discharge of blood is *more copious*, *more dangerous*, and *more pertinacious*;—a sort of bleeding that occurs occasionally in the *earlier* months, but still more frequently in the *middle* and *later* periods of gestation.

Rest.—As in those cases where the discharge of blood from the uterus is sparing, so when the discharge becomes copious, it is always proper that the patient should be placed in the recumbent posture, and that she should be kept perfectly still; neither ought we, if she lie in a very small room, or in a confined situation, to neglect her removal to a larger and more airy apartment, provided the strength will allow; for the stimulus of heat has an obvious tendency to keep up the bleeding.

Nourishment.—Again, in those cases where the discharge from the uterus has been copious,—just as in the more sparing discharges,—we are not to neglect the administration of nourishment. The patient can scarcely take nourishment with advantage, provided the large gushes of blood are still upon her; but it generally happens, in the cases under consideration, that after one or two large gushes,—one, two, or more pints of blood escaping,—the patient sinks into a state approaching deliquium;—a small drain of blood alone remaining; and, in these circumstances, nourishment may be administered with a fair prospect of advantage. Often, it is true, the digestive powers are in great measure lost; but generally, I conceive, a part of the food is digested; and contributes more or less to the formation of chyle and blood, in quantities not to be despised when the patient is endangered by inanition.

Turpentine.—Where, in the earlier months of pregnancy, the discharge of blood is small, oil of turpentine is recommended; on authorities which, in matters of experience, well deserve our deference. This oil is recommended by Denman, and others, in the more obstinate cases of flooding, now under consideration; and although I have not myself tried the oil sufficiently often to enable me personally to vouch for its efficacy, yet, from the experiments which I have made with it, the impression left on my mind is, on the whole, favourable to its powers. I have already said, that the quantity which different

stomachs will bear is exceedingly diversified. From half an ounce to an ounce, in the course of twenty-four hours, may be considered as an average dose. Sometimes we may exceed this; and sometimes even a smaller daily quantity will be rejected by the stomach. A drachm or two at once may be administered, floating on distilled water;—a form (as before mentioned) less offensive to the stomach than that of emulsion, sometimes recommended.

Stimulants.—Further, when there are large discharges of blood from the uterus,—the patient being prone to sink into a state of asphyxia,—it may then, no doubt, become necessary to keep up the action of the heart by stimuli (ardent spirits more especially); administered in a manner which I shall hereafter prescribe; but if, on the other hand, we are persuaded that the faintness is fugacious, beware of rousing the patient too hastily! A certain degree of reduction of the vascular action is safe, and to be wished for in these cases; because, under this faintness, the stream of blood loses its impetuosity, and the inherent disposition to concretion is augmented;—the quantity of blood passing through the vessels in a given time, and consequently the quantity of blood discharged in a given time from these vessels when torn open, being smaller in consequence. On all these accounts, if the faintness be not very great, it is to be looked upon as a natural, and very powerful, and very desirable remedy, for arresting the discharge.

Acetate of Lead.—In flooding from the uterus, considerable advantage appears to be derived from the use of *lead*, taken into the stomach, or administered by the rectum. To omit less weighty authorities, Dr. Haighton used to mention this remedy with great commendation; conceiving that he had himself used it with decided advantage. If we make trial of lead, it should be employed in the larger doses, the quantity being from four to six grains of the acetate, in the course of twenty-four hours;—six grains being a "large daily dose," and four grains a more moderate one. With respect to the mode of administration, it may either be dissolved in distilled vinegar, with a proper mixture of distilled water, or it may be formed into pills; and, as the lead sometimes offends the bowels,—giving rise to very severe spasms there,—endeavours may be made to correct this evil, by the conjunction of the lead with opium. To two grains of the acetate of lead, add half a grain of opium, and then form into a pill; and this pill the patient may take two or three times a day. Or, again, to five grains of the acetate of lead, add sixty drops of the tincture of opium, three ounces of distilled vinegar, and the same quantity of distilled water;—mixing and dissolving; and let the patient take, four times a day, one quarter part for a dose. The lead, though reputed a powerful medicine,—especially where there is a tendency to draining,—is, it must be acknowledged, an unweildy sort of remedy;—a kind of elephant in the battle. For this reason, it ought not to be used, unless the case seems peremptorily to require active treatment. It is not on every occasion that I would advise one to sit down, and prescribe the super-acetate of lead as a matter of

course. If, however, the discharge is found to be copious and dangerous, and (above all) degenerating into obstinate drainings; if (to use a strong expression) Death stare the patient in the face;—in such circumstances, the active use of the lead might be recommended; and, I think, would fully justify those large, and somewhat dangerous daily doses, of which the measure was before given.

Under the action of lead, a paralytic* affection, attacking the brachial† muscles, is liable to be produced;—occasioning a weakness of the wrist, denominated the *dangles*. This obstinate paralysis is now and then produced in painters and others;—those whose occupations lead them to handle the more active forms of the lead. Whether the internal use of the lead have the same effect, I am not prepared to decide; but I never saw or heard of a single case of flooding or other bleeding, where, under the use of the super-acetate‡, this distressing disease has threatened the patient; and although I conceive that this ought to put the accoucheur on his guard, there is no reason why he should be intimidated or deterred by it. Colica pictonum§ is certainly sometimes produced by the lead in larger doses;—a very severe pain extending itself along the bowels, as the lead makes its way through them; harrassing the patient much, but lasting only a few hours. From twenty to thirty grains of the compound extract of colocynth‖, with two, three, or four grains of opium, is a useful remedy in these cases; or, provided the pain be seated principally in the larger bowels, an ounce of the oleum ricini, and half a drachm or a drachm, by measure, of the tincture of opium, may be injected into the bowels with advantage.

Where lead is given with due caution in larger doses, it may be given in safety; but it may be asked—"In what do these cautions consist?" While administering lead largely, we should observe the bleeding; and if it is effectually stopped, let the lead be laid aside. Active and dangerous as the remedy is, a single dose more than seems to be justified by the urgency of the flooding, ought not to be administered. When the lead is administered, watch! If intestinal pains are not produced, it is well; while if, on the other hand, there are severe pains in the bowels, the remedy should be laid aside; for, in these circumstances, its continuance is not wholly unattended with danger. Again, in administering the lead, we ought to bear in mind, as we proceed, the aggregate quantity which may have been already given. Till, from experience, it is found that more may be safely administered, do not rashly exceed the aggregate of twenty or thirty, or (at most) thirty or forty grains of the acetate;—relinquishing the further use of the remedy, if these quantities are inadequate to afford relief. By not exceeding a certain

* From *παραλνω, to weaken.* † From *βραχιον, the arm.*

‡ Improperly so called; there being only one atom of acid to one of the base.

§ From *κωλον, the colon*; and *Pictones,* the inhabitants of *Picto*; who were subject to this disease.

‖ From *κωλον, the colon*; and *κιννεω, to move*;—on account of its energetic purgative properties.

aggregate (which may be fixed by your own observations), by relinquishing the lead as soon as intestinal spasms become manifest, by refraining from the further use of the remedy as soon as the bleeding is effectually checked (however small the quantity which may have been administered), the active use of the remedy (I think) is secured, without its danger.

Application of Cold.—When discharges of blood from the uterus are sparing, it is not my custom to apply *cold*, powerfully and extensively, to the lower parts of the abdomen, the back, thighs, buttocks, and so on; although, in conformity with popular feeling, I have recourse to vinegar and water; particularly if the temperature of the patient be warm. But when the discharges of blood are more abundant, cold (a very powerful remedy) must be called to our aid, and ought to be effectually applied; though not without due caution. When a woman has lost so much blood, that she is cold already, in every part of her body; which, in dangerous bleedings, is no uncommon occurrence; the application of cold (though, in conformity to popular prejudice, it may be recommended) is, I fear, of small advantage; but if a great deal of blood is coming away, and if (along with this) there is a certain warmth of the system, and a sort of febrile hurry of the circulation, in such cases cold may, perhaps, be administered with decisive advantage. Cold water is sometimes sprinkled over the body; cold water is occasionally injected into the rectum; and ice, naked or wrapped in linen, is occasionally pushed into the vagina;—a remedy not without its dangers; for if the vagina be frozen, it dies. Omitting these practices however, there are, for ordinary purposes, two modes in which cold may be administered. One is by laying bare the abdominal surface, and dashing cold water over it from a cup, or by means of the hearth-brush dipped in a pailful of water;—a rough, yet effective, practice; the other, a gentler method, is conducted in the following manner.

Procure from the cistern, or well, a pailful of water; to which a pint or two of vinegar, in compliance with popular opinion, may be added. Then, taking some napkins, effectually refrigerate them, by dipping them into this cold mixture, or by thoroughly besprinkling their surface. This done, apply them extensively to the central parts of the body, anteriorly and posteriorly;—changing them as soon as they become warm. This may be every two or three minutes;—oftener or seldomer, according to the communication of warmth from the body of the patient. In some cases, the local application of cold seems really to be of considerable advantage. I have met with one case of draining, where other remedies had been tried with but little effect: and where cold alone *appeared* to be efficacious in checking the discharge.

Plugging the Vagina.—If the fœtus has come away, and if the placenta has been removed, in *general* practice it is unwise, where there are large discharges, to *plug* the vagina; for this might, in many cases, occasion an *internal* bleeding; which continuing, though the efflux is prevented, the blood would, in consequence, accumulate

in the cavity of the uterus. Where, however, in more copious floodings, the womb is not emptied, and the placenta is not yet away, plugging the vagina may be tried with considerable advantage. The purpose of plugging is to allow the blood to accumulate in the vagina and uterus; and there, by forming clots, to close up the mouths of the bleeding vessels. This object may be variously obtained. Take a napkin, and (folding it) lay it upon the genital fissure; closing the orifice of the vagina without the irritating introduction of a plug. In many patients, however, who are not irritable in these parts, the canal may be more conveniently closed by introducing a plug of tow, sponge, or soft cloth. Cloth or sponge, is the plug which I am myself in the practice of introducing;—using more or less, according to the capacity of the cavity; and recollecting that the smallest mass which will inhibit the discharge of blood from the vagina, is the best for the purpose. There are some women in whom the vagina is so destitute of irritability, that, introduce what one will there, the organ bears it without reaction. In others, on the contrary, and more especially in *young* females, the vagina is sometimes so exceedingly susceptible, that the plug cannot be borne (unless, perhaps, for a few hours); and, in these cases, the application of a napkin to the genitals externally, may be substituted. When the plug can be borne for a few hours only, apply it nocturnally; as that may prevent your being called up in the middle of a cold December night. When the plug remains quiet, do not be in too much haste to remove it;—recollecting, that the longer it is left there, the more completely will the vessels become contracted and closed up.

Deobstruents.—In the earlier and middle months of pregnancy, as in the end of gestation, a most effectual mode of stopping the blood is to empty the uterus. Hence the use of *deobstruents* *; for it generally happens, when floodings have occurred previously to the birth of the ovum, that, on the abstraction of the ovum and the complete evacuation of the uterus, the discharge wholly, or in great measure, ceases. Where a patient is labouring under floodings in the earlier or middle months,—and more especially under obstinate floodings, recurrent again and again,—the emergency justifies us in having recourse to this remedy; which, perhaps, is unjustifiable in cases less pressing. In such cases the thorough evacuation of the uterus is the only remedy on which we can certainly rely. It is not, however, in our power to empty the uterus with the same facility and certainty as the intestines or the stomach; but there are three remedies of the deobstruent class especially deserving a trial in such cases;—succussion †, injection ‡, and the secale cornutum§. A jolting ride on a rough road, in an uneasy carriage, where the propensity to miscarriage is strong, may occasion the expulsion of the ovum. The remedy

* From *de*, "from"; and *obstruo*, "to obstruct";—because they remove obstructions.

† From *succutio* (*sub quatio*), "to shake from beneath".

‡ From *injicio*, "to cast into".

§ From *secale*, "rye"; and *cornutus*, "horned";—from the shape of this morbid excrescence.

is rude,—scarcely to be recommended. It is fitted to a few cases only;—where strength remains, and the pregnancy is of the earlier months (say the first two or three). In later periods of gestation it would be dangerous. A medical attendant should be in the carriage; and the house of the patient should always be at hand. Saline clysters will do little, if the womb is indisposed to contract; but if the fibres are in action, an ounce of salts and six ounces of the infusion * of senna†, or other and more powerful stimuli of the rectum, may be tried with advantage. But of all the stimuli exciting uterine contraction, that which, though failing completely in some cases, seems in others to operate in the most decisive manner, is the secale cornutum, or ergot‡ of rye. It may be given in powder, in infusion, or in decoction §; and suspecting, from some experiments made in conjunction with Mr. William South, that its virtues reside in a vegetable alkaloid‖, I presume it may hereafter be administered in the form of a pill, like quinine¶; when probably it will be found less offensive to the stomach. I would invite the chemists ** to the investigation of this point. In general, my formula†† has been a drachm of ergot in coarse powder, and three ounces of boiling water;—to be decocted rapidly to one half; the patient taking, of the decoction poured off, one-third every twenty minutes; unless some obvious effect be previously produced. In one miscarriage of the third month,—omitting many others,—after the administration of the ergot, I remember the pains became almost incessant till the ovum was expelled. The ergot will not act, I think, unless the uterus be irritable, and disposed to the pains. Supplies of the secale cornutum may be procured at Butler's, in Covent Garden. It is principally produced in America; and perhaps I may add the South of France.

Discharge of the Liquor Amnii.—In as many as thirty cases where floodings occurred in the end of gestation, and where the placenta was not lying over the os uteri, Merriman‡‡ found that the discharge of the liquor amnii either stopped the floodings, or reduced the quantity of the bleeding so greatly, that it became no longer dangerous. The same remedy was tried by Rigby§§ under similar circumstances; and in fifty or sixty cases with the best success. Set down, therefore, the discharge of the liquor amnii among the remedies for suppressing the floodings of the latter months. Nor is it difficult to accomplish this. Carrying one or two fingers of the left hand

* From *infundo*, "to pour upon".

† From the Arabian word *senna*, "acute";—in allusion to its sharp-pointed leaves.

‡ From the French word *ergot*, "a cock's spur";—alluding to its shape.

§ From *decoquo*, "to boil".

‖ From *alkali*, and εἶδος, *likeness*.

¶ From *quinquina*, the French appellation for Peruvian bark.

** From the Arabic word *chama*, "to burn";—in allusion to the examination of substances by fire.

†† The diminutive of *forma*, "a form".

‡‡ "Synopsis of the various kinds of difficult Parturition. By Samuel Merriman, M.D."

§§ "An Essay on Uterine Hæmorrhage. By Edward Rigby, M.D."

through the os uteri up to the membranes (usually felt with facility), take a bluntly-pointed instrument (say, for example, a female sound, sharpened for the purpose); and with this instrument puncture the membranes, and discharge the liquor. Under this operation the hæmorrhage becomes diminished, perhaps immediately; and although the ovum may, now and then, be retained till the end of the nine months,—especially if opium have been given,—yet generally, in two or three days afterwards, the whole is expelled; and the womb, emptying itself, contracts thoroughly; so that the flooding becomes entirely suppressed. In all cases, in the middle or later months, where there is an obstinate efflux of blood from the uterus, remember that the discharge of the liquor amnii is a most powerful remedy. In some of the worst floodings, where other remedies are failing, lacerate the membrane, and the hæmorrhage ceases.

Manually emptying the Uterus.—By manually emptying the uterus, so as to allow of a thorough contraction of its cavity and constriction of its fibre, the bleedings (in many cases, though not in all) may be suppressed. There are different modes in which this evacuation may be accomplished. Sometimes, in floodings, we find the child's head has been pushed down into the vagina; where we may apply a pair of forceps upon it, and draw it forth. In other cases, and these are far more frequent, the child is lying entirely above the brim of the pelvis, in the cavity of the uterus; so that no part of it, except the presentation, can be felt. In such cases, the hand may be introduced into the cavity of the uterus, and the fœtus brought away;—by the operation of turning, already explained. Even in the earlier months, although the manual evacuation of the womb is undesirable (the parts being thin and lacerable), yet the removal of the ovum, should it be deemed necessary, may sometimes be accomplished. With the utmost gentleness, introduce the left hand into the cavity of the vagina;—passing the genital fissure for this purpose. Then, the bulk of the hand remaining in the vagina, let the first and second finger be passed up into the cavity of the uterus; so as to reach from mouth to fundus; while the womb, felt above the symphysis pubis, is by the action of the right hand pressed down upon the fingers of the left. By this manœuvre, the contents of the uterus may be brought within reach and control; and, by a slight action of the fingers, may be easily got away. Though practicable, this operation is of dubious use; and if unskilfully or unwisely performed, it is surrounded by the risks of laceration. Thus the fœtus and placenta may be abstracted;—sometimes by the insertion of the fingers, sometimes by the operation of turning, and sometimes (when the head of the child is lying in the vagina) by the judicious application of the forceps; when, the womb contracting, and the muscular fibres becoming constricted, little further discharge of blood need, in most cases, be apprehended. Thus much, then, respecting the principal remedies to which you are to look, when there are obstinate and dangerous discharges of blood from the womb.

b. In the Latter Months.

We now pass to the consideration of the third sort of cases (frequent in consultation practice, and of the utmost importance);—cases in which large quantities of blood have come away from the uterus, in the latter months more especially; and where the practitioner finds, on entering the apartment, that the woman is already dead; or, as more frequently happens, that she is lying in a state nearly approaching to asphyxia. I have been called to two dead females in the course of one night;—both destroyed, before my arrival, by large eruptions of blood from the womb. When called to cases of this kind, as they must occasionally fall within the circle of a comprehensive practice, the first consideration relates to the removal of the child.

Removal of the Child.—In some instances, the fœtus,—low down in the pelvis, or lodging in a dilated os uteri,—might be abstracted (with little disturbance) by turning, or the forceps. In others,—the os uteri being shut more or less completely,—the fœtus could not be extracted, by the natural passages, without violence; and the razor, and Cæsarian incisions, would, in a scientific view, be a preferable method of delivery. In deaths from flooding, however, the fœtus will rarely be found alive. The interruption of the placento-pulmonary function frequently destroys it even within the uterus; perhaps while the mother still survives. Considering, as I do, that the fœtus ought certainly to be saved from drowning, if practicable,—I should in my own family wish the child to be withdrawn, provided this can be accomplished without violence; but should delivery be impracticable without laceration of the uterus, or the Cæsarian incisions, I should forbid it. To remove the fœtus by violence before the patient is utterly dead, and past all feeling, is a horrid cruelty; which all of us must, I am sure, with one voice, condemn; and, considering how possible it is, that some sensibility may still inhere, even when an ordinary practitioner little suspects it,—as the security of the mother is always paramount in British midwifery,—I think that severer measures ought, in conformity with this principle, to be forbidden altogether; even in those cases where the woman appears to be dead. Generally, however, under these large discharges of blood, you find the patient is still living; but in a state approaching to asphyxia. She is pale and ghastly; cold and gasping; and, in a great measure, insensible. Her heart flutters; and there is little or no pulse in the wrist. She lives still; but the grave yawns under her,—eager for its prey! Move her from one side of the bed to the other, and she dies! Disturb the clots, by passing the fingers into the vagina, and she dies! It is clear that when patients are in this condition,—trembling upon the very brink of destruction,—there is but little time to think what ought to be done. These are moments in which it becomes a duty, not to *reflect*, but to *act*. Think *now*, therefore;—before the moment of difficulty arrives! Be ready with all the rules of practice, which these very dangerous cases require.

Circumstances in which these Floodings occur.—Called to a case of this kind, the first thing I do, is to direct my attention to the cir-

cumstances in which these bleedings occur; for they may occur in the *pregnant*, or the *unimpregnated*;—in the *earlier*, or in the *latter* months;—*without* the placenta over the os uteri, or *with* the placenta partially or altogether covering that part;—*before* the birth of the fœtus, or *afterwards*;—before the birth of the *placenta*, or afterwards;—or, in twin cases, one child being born, the other may remain in the uterus;—or, when the secundines have to appearance been removed, a large piece may still remain in the uterus;—the accoucheur not suspecting it in the *latter* months, and still more frequently in the *earlier*. These points are of no small importance. On reaching the apartment of the patient, therefore, attention should be immediately directed to all of them. This is easily done, if they are borne in mind; and it should by no means be neglected. What are the circumstances under which the floodings occur?

If I am called to one of those cases in which the patient approaches to asphyxia, I am anxious to know whether the bleeding has been arrested. Sometimes it is going on; more frequently it has been arrested; or the discharge which continues is a mere show. To determine a point so important, I would recommend the practitioner, with as little disturbance as may be, to clear the blood from the genitals; and then, also with as little disturbance as may be, cautiously to spread a napkin between the hips and the bed. This done, another clean napkin, interposed between the thighs, may be applied against the orifice of the vagina; and if there is no further discharge, the napkin will retain its whiteness; but if the bleeding continue, blood will make its appearance on the napkin, in the form of concretions and a red patch;—broader or more circumscribed, according to the quantity of the discharge. The abundance of the bleeding may be judged of by the colour. If red, large orifices are open; if pale, then small; or, at all events, in the latter case the discharge is smaller, and of course less likely to be productive of danger.

Is the System on the Rally?—In cases of this kind, where the patient is approaching to asphyxia, I am very anxious to know whether the system be on the rally or the decline;—a most important inquiry. Sometimes the patient is evidently improving from half hour to half hour. Her hands and feet are warmer;—her pulse is stronger;—her countenance is brighter;—her mind is livelier;—in a word, there are all those appearances of amendment, which is to be expected to be met with, when the strength is rising. On the other hand, however, we sometimes meet with different cases; in which, although the hæmorrhage is stopped, the patient is evidently on the decline. Immediately after floodings, women sometimes die in a moment; but more frequently in a gradual manner. Death shakes his dart over the victim; and to you she stretches out her helpless hands, for that assistance which you cannot give, *unless by transfusion*! I have seen a woman dying for two or three hours together;—convinced, in my own mind, that no known remedy could save her; and the sight of these moving cases first led me to transfusion. Experience is the only means of acquiring the knowledge of these

mortal symptoms. In order to seize the tact which will enable you to determine, with promptitude and certainty, whether death must ensue or not, the cases must be seen. For a full enumeration of the symptoms which indicate death arising from inanition, I must refer you to the history of them already given. It may not, however, be amiss (in the way of repetition) to remark here, that to myself the fatal termination is principally foreshown, by a certain ghastliness of the countenance; by a restless disposition to change the posture; by a long-continued cessation of the pulse in the wrist; by a gasping respiration, like that produced by running; and by jactitation of the arms and legs, joined with a feeling of most oppressive anguish. From these symptoms, associated with the ordinary signs of inanition, women seldom escape; nor must it be forgotten that sometimes, in a fainting-fit, they die suddenly, or more slowly; without the harbingers of dissolution to foreshow the event.

If you are called to cases in which there has been a good deal of discharge from the uterus,—the patient lying in a state approaching to asphyxia,—you will sometimes find her, as you enter the room, supplicating that her posture may be changed; and this more especially if, under the flooding, restlessness have supervened. Now I wish you to understand, most distinctly, that a change of posture is very dangerous; and that, frequently, when it is allowed, it does not afford the expected relief. When a great deal of blood is come away from the uterus,—even where the patient is rallying and likely to do well; and where, perhaps, for two or three hours together, but little discharge has occurred,—were you to direct the patient to be lifted from one side of the bed to the other, you might cause a terrific disturbance of the circulation, or a renewal of the discharge destructive to life. One woman, in whom a large bleeding had been suppressed, perished, in this manner, under my own observation. To appearances all danger was over! Like a thunder-cloud it had passed away! Unhappily, she rose to the erect posture; the flooding was renewed; and she sank! This case occurred many years ago; and made a strong impression on my mind. A patient, on whom I performed the operation of transfusion, and who was very effectually relieved by it (ultimately recovering), was so urgent with me to allow a change of position, two or three hours afterwards, that my feelings subdued my judgment; and I assented. From this disturbance of the body, however, such perturbation of the heart ensued, that for three or four minutes together, I thought the patient would have sunk; and, really, the recovery might more properly be ascribed to our good *fortune*, than to our good *practice*. Only the other night I was called to a patient, in whom there was a large discharge of blood from the uterus; and where the woman was reduced to a state approaching to asphyxia, though likely to do well. This woman, contrary to my wishes, was moved; and, in consequence, for a few minutes, her life seemed to be in the most imminent danger. To

revert, then, to the rule with which I set out, and which these facts illustrate, remember,—that if you are called to cases in which women are lying in a condition approaching to asphyxia, you ought never, without need, to move them;—and, above all, you ought not to move them into the erect posture. One change you may, perhaps, sometimes make with advantage;—that of gently and cautiously raising the legs; so as to bring the blood upon the heart and central parts of the body. You may, with equal caution and gentleness, withdraw the pillows, and suffer the head to sink below the shoulders. If the woman chance to be already lying close upon the edge of the bedstead, the head may be allowed to hang down over it a little way, so as to facilitate the access of the blood to the brain. All this, I say, you may perhaps do, in these cases,—with gentleness,—with caution; shall I add, "with fear and trembling"? But, after all, I am not altogether convinced of the excellence of the practice; nor dare I dogmatically pronounce, that it is either very useful or very safe.

SECTION 3.—TREATMENT OF FLOODINGS WITH ASPHYXIA.

Emptying the Uterus.—When called to a patient labouring under asphyxia from flooding, probably one of the first impulses the accoucheur may feel will be to empty the uterus; and he may either consider of the propriety of discharging the liquor amnii, if not discharged already; or he may revolve in his mind whether or not it would be proper to carry the hand into the uterus;—with a view of abstracting the placenta, the fœtus, or whatever else may be lodging there. In these cases,—which are of vast importance, and by no means uncommon in their occurrence,—let him beware! Awake,—reflect,—before you make your decision; for on your determination the life of the patient depends! In these cases of alarming collapse, let it be remembered that, if the floodings be suppressed, you are on no account to interfere manually*. Not even an examination should be rashly made. Disturb the clots, and you renew the bleeding; the patient gasps,—heaves,—breathes deeply,—throws her arms about on the bed,—and dies! Even though the woman be on the rally,—her extremities warmer, her pulse larger, her mind recovering, her strength increasing,—should there, along with these symptoms, be little or no return of the bleeding, it is improper manually to interfere. Disturb the clots, and she may perish still! But if, asphyxia threatening, the bleeding from the womb return copiously,—by gush, or clot, or more abundant draining,—you may then, perhaps, be justified in having recourse to a manual operation;—the discharge of the liquor amnii, the removal of the fœtus, or the abstraction of the placenta;—operations, no doubt, attended by danger, even under the best management; but, on the whole, perhaps, of less danger than the continued flooding which they are intended effectually to suppress. I regret that, on a point of prac-

* From *manus*, "the hand".

tice so important, I am compelled to unsettle my opinion by the interjection of the dubitive "*perhaps*"; but, after all I have seen of these cases, I am not sure that it would not be better to refrain from manual operations altogether, when the collapse is extreme, even though the flooding should return somewhat copiously;—the suppression being confided to other remedies before enumerated, or to the effects of the faintness. These are dreadful emergencies, and surrounded with difficulties! If you refrain, your patients occasionally sink;—if you do not deliver, blame is frequently imputed! Whatever opinion might be formed by those about me, however, I acknowledge, for myself, that I had rather feel that the patient perished under the operations of nature, than that my meddlesome hand was unhappily auxiliary to her destruction! Perhaps the rule may be laid thus:—When asphyxia threatens, if the flooding be wholly, or in a great measure stopped, watch and assist the patient in other ways; but refrain from manual operation and disturbance of the clots. On this point of practice, there can (I conceive) be no doubt among competent judges. Further, when asphyxia threatens, should the flooding pertinaciously or obstinately return,—an occurrence by no means very frequent,—though in vigorous women manual operations may be justifiable, provided they contain the only remaining hope of effectually stopping the bleeding; yet, if the patient be weakly and much collapsed, and the danger of death from the hand be immediate, it may be wiser to abstain altogether from manual disturbance, and to commit the woman to her own resources; assisted by the other means of suppression, not obnoxious to the displacement of the clots. In coming to our determination, the degree of disturbance likely to arise from the operation must be considered. For example, to puncture the membranes and discharge the liquor amnii, may be proper enough, when the introduction of the hand into the cavity of the uterus would be certain death. But, in the third place, what is to be done, if manual operation have been rejected at this season of collapse; and if,—the woman rallying completely at the end of a few hours,—the ovum still remain in the uterus;—the system being, of course, exposed to a return of the bleeding? Why, in these circumstances, should the flooding not return, manual operations are still to be deprecated; but should the bleeding recommence, then, if the patient have vigour sufficient to sustain the operation, they should be had recourse to with promptitude. The liquor amnii ought to be evacuated, and the fœtus or the placenta ought to be taken away; according to rules which will hereafter be explained and prescribed.

Cold Applications.—Where a great deal of blood has been lost, and the patient is lying in a state approaching to asphyxia, it may be proper, perhaps, to apply cold to restrain the bleeding; and, if the hæmorrhage is going on, and there is some warmth still remaining about the body, the application of cold, as formerly prescribed,—by means of a napkin or otherwise,—may be fitting enough. Even in other cases, where the application of cold does not appear

to be necessary, it may be proper to administer it in forms less extensive and intense; because the popular opinion is in favour of it. A little vinegar and water may, therefore, be applied externally. Nevertheless, where patients are reduced to the state I am now supposing, and are already exceedingly cold,—so that if you touch any part of the body it is chilly as a corpse,—I conceive this topical refrigeration would be of very little use. Nay, there are some cases in which, if you were to push it far, it might be hurtful;—the woman being greatly debilitated, and the heart and arteries being prone to a cessation of action altogether.

Plugging the Vagina not always necessary.—I know not that it is generally necessary, in the cases we are now considering, to plug up the vagina; because, on applying napkins as a test of the bleeding, —in the way formerly prescribed,—you will often find that the hæmorrhage has ceased. There is no rush of blood, and no large clots are coming away;—the circulation is too low to admit of it. You find merely a small stain on the white surface of the cloth. In those cases, however, where the hæmorrhage is disposed to continue, and where the plug is not likely to do mischief by displacing the clots, I would recommend a closure of the vagina;—either with sponge, or tow, or old cloth. I should prefer old cloth. After-floodings (I mean those cases in which the bleeding comes on after the child is away, whether before or after the birth of the placenta) are, as before observed, scarcely fit for the plug; at any rate, it is only a dexterous accoucheur who could use it, in such cases, with advantage. The cases best calculated for plugging, are those in which much blood has been emitted from the uterus;—the patient collapsing, and the bleeding continuing; while the fœtus or the ovum still remains within the uterine cavity.

Nourishment.—When women are much reduced, in consequence of large quantities of blood lost from the uterus, their digestive powers are in a great measure destroyed; and there is often such irritability of the stomach, that whatever you may introduce into its cavity is speedily rejected. On both these accounts, you will find, in flooding cases,—the more formidable floodings especially,—that to nourish women in this state, as some medical orators have advised in our debating societies, is by no means an easy task. Nevertheless, as nourishment, and the support that is to be derived from it, are of no small importance, when women are approaching to a state of asphyxia, supplies of aliment ought by no means to be overlooked. Respecting the advantage of solids, my mind is not made up. Broth; eggs, differently prepared; bread and milk; milk itself;—any of these may be recommended. The last two have the advantage of being easily procured and prepared. Broth, or beef-tea, requires a longer preparation. Half a pint, or a pint, remaining in the stomach, may (if I may be allowed the expression) be deemed a sufficient dose.

The Employment of Opium.—In those cases where women are approaching to a state of asphyxia, you will sometimes find that rest-

lessness, which I have mentioned more than once, beginning to manifest itself. The patient wishes to change her position; she throws about her feet or arms; and perhaps, in some convulsive moment, she suddenly turns round;—though perfect quiet, so necessary to her safety, has been strictly enjoined. Now, so far as I understand the practice, it is in these cases,—after much blood is come away, and the patient (in consequence) has been gradually reduced, and disposed to irritability,—that the large doses of opium, advised by Hamilton and others (Stewart, for example), should be administered. If the fœtus is still in the uterus, and it is not your intention to carry up your hand and bring away the child by the operation of turning, it would, perhaps, scarcely be proper to give the opium in the larger doses; for it might prevent the pains, and the spontaneous evacuation of the womb; though it is not so powerful in this way, as mere speculists might suppose. The case best calculated for the opium, I conceive, is that in which there is a good deal of restlessness; and where the child has been taken away, or where it is your intention to perform the operation of turning. It might, indeed, be plausibly argued against its being largely given in those cases, that opium may prevent the thorough contraction of the womb, after the fœtus has been abstracted. This would be a serious accident; for contraction of the womb is one of the principal securities against bleeding; because, as I told you before, when the *womb* contracts, the *muscular fibres* contract; and the vessels becoming contracted also, are closed, as if by so many ligatures. Notwithstanding this plausible objection, however,—after what I have seen of these contractions at the bed-side,—if I expected any solid benefit from the opium, I should not be disposed to delay its administration. When opium is administered, in those cases where a great deal of blood has been lost, it should be measured according to the effect which it exerts upon the system; for ordinary doses will not operate on a woman half dead already, from the eruption of the blood. It may be necessary to give from two to three drachms (by measure) of the tincture of opium, in two or three hours;—provided you mean it to operate powerfully on the system. The practitioner is to commence with one hundred drops; and is to repeat the remedy, in doses of fifty or sixty drops, every twenty or thirty minutes;—according to the effect produced. Be firm in the use of the opium, but not rash. You may safely give the larger doses, if you give them under the control of a judgment sagacious and attentive. When the opium is beginning to act on the system, your hand should, of course, be stayed; if the irritability is much diminished,—if your patient become drowsy,—if there is a tendency to that garrulous delirium which you may often observe in women where they have taken narcotics, then you ought to discontinue its administration. In the fourth volume of the "Medico Chirurgical Transactions," two cases of large bleeding from the womb, attended with very dangerous symptoms, are recorded by Mr. Stewart. In those cases opium was employed; and they afford a very excellent

illustration of the doses women may take, and the effects that are produced by them. However, from a careful perusal of these cases, I was not able to convince myself that it was by the opium that the women were preserved. That seems very dubious. But, it appears, according to Mr. Stewart's statement, that the opium had great effect in diminishing the irritability; and, at all events, it is obvious it did no harm. The intrepidity and decision shown by Mr. Stewart, are well deserving of commendation.

Stimulants.—So long as there is no danger lest the patient should sink out of a state of asphyxia into the hands of Death himself, so long you are to look upon fainting, not as injurious, but as beneficial. You ought not, therefore, to excite the patient in these cases, merely because she is lying in a state alarming to the friends; but if, on making your observations, you perceive that the system is sinking lower and lower, instead of being on the rally, it then becomes necessary, at all hazards, to support the heart and vascular system. Independently of transfusion, one of the most effective remedies for accomplishing this, is a stimulus, proportioned to the effect it produces. For ordinary purposes, I think you will find the *alcoholic* stimulus answer as well as any other; and it has the advantage of being generally at hand. Rum, brandy, gin,—any of the three may be administered; but perhaps the preference should be given to rum. You may sometimes administer it in the diluted state;—say one part of water, with one part of spirit; but, provided your patient can bear it,—as she frequently may, under the inertness of the inanition,—the pure spirit will be preferable. If we give the spirit pure, a smaller measure will be necessary; and there will be less risk of its being rejected by the stomach. The quantity of this stimulus must be proportioned to the effect produced; and you will, perhaps, be surprised to hear me state, that I have given eight or ten ounces (that is, half a pint or more) of the pure spirit, in the course of two or three hours; and this to young persons, who, it may be, in the previous course of their lives, had been wholly unaccustomed to the stimulus. The truth is that, like all the other parts of the body, the stomach is half-dead, under the inertness of inanition; and being, in this way, half-dead from the lowness of the circulation, it is not capable of being acted on by the spirit in the same manner as it would be, provided its condition were more lively and susceptible. Half a wine-glass-full of rum may be administered at a dose. Where it operates, it usually does so, I think, more speedily than opium. Wait for twenty or thirty minutes,—sometimes ten or fifteen only,—and you may see pretty clearly whether the spirit will act on the system or not. If the lips are reddening, the pulse rising, the extremities warming, you have attained your object; the patient is on the rally, and (for the time, at least) no further quantity of spirit need be given;—for it is not to stimulate too highly, but merely to touch the beam of the balance, and turn the wavering scale in our favour, that the spirit is given at all. But, on the other hand, if, in the course of ten or fifteen minutes, the spirit

already administered is not observed to act, a repetition of the dos becomes necessary; till at length you reach those larger and extra ordinary measures, to which I before adverted.

Death after the Cessation of Floodings.—Debating societies have, conceive, no place in scientific medicine. Societies for discussio proffer many advantages; but necessary distinctions are too ofte overlooked. You will sometimes hear it asserted, in the eagerne of debate, that if women are well managed in their floodings (th after-floodings especially),—however alarming the symptoms ma be,—death will never occur. These assertions I have myself hear not unfrequently; but the intrepidity of assertion must sometimes b rebutted by equal intrepidity of unbelief. To declarations of th kind, I always turn a deaf ear. With these eyes, I have seen th fact to be the contrary! With these eyes I have seen that, under th *best* received modes of treatment sometimes, and still more fr quently under management of *average* skill, women occasionall sink! Nor is it arrogating too much, I think, to affirm of those wh make these assertions, that, if not negligent or insincere, they ca have had but few opportunities of seeing those more dangerous form of flooding, on which they presume to dogmatise. My observation being entirely free from personality, I deliver them with the more free dom. In medical discussions, to deal rashly and roundly in asseve ations of this sort, refuted by experience, can have no effect wi men of sense and observation, beyond that of diminishing or d stroying confidence in the authority of the speaker. To talk in th manner, is to butt against the fact! It is (pardon the comparison to "run the head against a brick wall"; or (if I must use an ex pression less homely, but not more forcible or appropriate) it to impinge blindly, and with certain discomfiture, against the sol materials of truth!

> "Come fa l'onda là sovra Cariddi,
> Che si frange con quella in cui s'intoppa
> Cosi convien, che qùi la gente riddi." *

When women, after large and dangerous floodings, are (to appea ance) recovered, it sometimes happens, in the course of a few da or weeks subsequently, that they are carried off by vomitings, pur ings, and hydropic affections;—more especially by purgings. Aft floodings, inflammations, and it may be excoriations†, of the inte tinal membrane supervene; and these give rise to irritability, a diarrhœa, and gradual or more sudden declension of the strength under which, notwithstanding all the care that may be taken of th patient, she occasionally sinks and dies. It sometimes happens, to —and if I were to examine the pages of my adversaries, I think

* "As the waves flow about Charybdis, dashing with violence against ea other as they come in contact, so do the people hustle one another, as when th dance the ridda."—*Dante's "Inferno;" Canto VII.*—The "ridda" is the nam of a dance.

† From *excorio*, "to take off the skin."

should be able to adduce several instances of this kind,—it happens, sometimes, that women suddenly and unexpectedly perish under flooding; or (as before observed) sink, in a more gradual manner, after the stoppage of the bleeding. They are one, two, or three hours, or perhaps longer, in dying;—the latter cases being, I think, by far the more frequent. After delivery, perhaps,—while the patient is lying quietly upon the bed,—a few minutes before or after the birth of the placenta, a sudden gust of blood from the uterus takes place, to the amount of two or three pints. Instantaneous collapse of the strength ensues; and from that time forth, though little more blood is lost, the patient's doom may usually be looked upon as sealed. It is true, indeed, that at times she rallies; and, it may be, rises so conspicuously, that, according to ordinary prognostics*, you would expect her to do well; but then again she sinks;—to rise and sink again,—like the flashes of the half-extinguished taper; while, with a reluctance which avails her nothing, she is gradually subsiding lower and lower;—till, at length, she suddenly drops into that grave from which, under the use of received remedies, no human art can save her! Of twenty cases of flooding well managed, I believe that perhaps nineteen will frequently do well; but probably you will find the twentieth to be of the kind which I have been here describing; and for this you ought to be prepared.

Transfusion in these Cases.—If transfusion, with all its defects and excellencies about it, should be found hereafter to be as safe as other received operations of surgery (venesection, for example), it may then, I conceive, be performed in those cases where there have been large discharges of blood from the uterus; although the danger arising from the inanition may not be very imminent. In the present state of knowledge, however, and until we have further proofs of its efficacy and safety, I should not recommend the operation of transfusion, in cases which are not desperate to appearance; but if you have under care a patient in whom the flooding has been copious; in whom, further, the womb has been emptied, and the hæmorrhage has been stopped;—should this woman (as I have myself on several occasions seen) be sinking gradually into the grave; so that, even to those who have seen much of floodings, the case appears to be without hope;—in such circumstances, I affirm that it is highly proper to have recourse to the operation of transfusion;—provided we are competent to perform it. On the human body, no needless experiments should be made. I speak the truth when I declare, that I have not to charge myself with having ever, by speech, writing, or conduct, in my whole professional career, among rich or poor,—in any way endeavoured to give countenance to a contrary principle! But I maintain, nevertheless, that desperate emergencies occur, in which the use of this *not* desperate remedy may become a sacred duty! Nor is it very difficult to distinguish these emergencies, if you ask yourselves this simple question:—"If I were myself in the same state of inanition with this poor creature,—or (more interesting still) if some woman near to me,

* From προ, *before*; and γινωσκω, *to know*.

and more than dear, were in the same state of inanition,—should wish transfusion to be performed"? Provided you have an ordinary share of sense and experience, those piercing whispers which enter the soul,—the whispers of conscience,—will tell you plainly whether you ought to operate or not! Do as you would be done by! In surgery as well as in ethics, the principle universally applies!

In performing this operation, which I shall subsequently explain more at large, it is not necessary that you should inject any very copious quantity of blood; for, in the present state of our knowledge it would be unwise to endeavour, by large injections, to raise the patient at once from a moribund condition to a state of vigour. The average measure of blood required, in order to turn the trembling balance in our favour, has not as yet been clearly ascertained by facts and observations. From what little I have observed, however I should suppose that from half a pint to a pint may be considered as a very ample supply; and I feel persuaded that, of those women who have sunk under floodings, the greater number would not have been lost, could they but have retained the last ten or sixteen ounces of the blood which they have lost.

Although I have said an operation of this sort is not to be rashly prescribed, and although, in the present state of knowledge, it ought to be confined to those cases which, according to our honest judgment, must be considered as desperate without it; yet let me add, in the way of caution, that where there is need of the operation, it is obvious the sooner it is performed the better. I have myself seen two women die, whose lives I feel persuaded might have been preserved to society, had transfusion been more promptly begun. Anxious to refrain from the operation, while there remained a hope of life without it, I delayed the use of the syringe* so long, that before transfusion could be commenced, the patient in both instances was breathing her last. For this delay I was, perhaps, to blame: but I reflected (it may be not without reason) that the operation was novel. In the retreats of my study, I had heard the clamour which had been raised against it; and I was solicitous that I might not by having recourse to the operation under circumstances where the need for its use was ambiguous, bring upon myself the suspicion of being a thoughtless enthusiast, who was disposed on all occasions, however slight, to have recourse to the transfusing syringe; and to bring upon the operation itself, the discredit of being supported by such an advocate. To give you a summary, then, of what appears to me to be important on this point,—I conceive that, under large eruptions of blood from the uterus, your patients, if well managed,—though they may alarm and shake your nerves,—will nevertheless in general (say in nineteen cases of twenty) ultimately do well; and transfusion will not be required. I maintain, however, (notwithstanding what is asserted to the contrary), and I *boldly* maintain (for I am irrisistibly borne out by facts) that, under the best and most judicious treatment, and certainly under treatment of average quality, dissolutions may occur;—sometimes so suddenly that you have no

* A Hebrew word, signifying *a pipe*.

time to act; more frequently in a gradual manner;—so that you see the patient sinking slowly, by little and little, into the grave. In cases of this kind, when the patient is sinking gradually, I am not sure that transfusion might not be proper;—even though the ovum were still in the uterus. But such cases are certainly not adapted to secure the splendid success of the operation; for so long as the womb is unemptied, the bleeding may return; and the blood may be lost again as soon as it is injected. But when the uterus has been emptied, and the hæmorrhage has been stopped, (and of all cases these are the most common), then, under the conditions stated, the syringe should be tried;—provided the case be obviously desperate without it; and provided you feel conscious that, if lying in the situation of the patient, you would wish the essay to be made on your own person. The operation once obviously necessary, beware of delaying it too long! Beware of subjecting yourselves to the painful mortification of seeing your patients perish at the entrance of the port;—sinking at the very moment when you are, at length, prepared with the very operation which might have saved them! From six to ten ounces of blood will probably be found sufficient to turn the wavering balance in our favour. From one or two friends,—males in preference to women,—this supply may be obtained. A *large* injection is not desirable. Reaction, of a lively kind, will sometimes come forward on the subsequent day. Adhere to these rules, and you cannot wander far from the line of duty; and, let me ask, where is the folly,—where the enthusiasm, of all this?

Evacuation of the Uterus.—I formerly observed that, of all means for stopping the discharge of blood from the uterus, the most effectual by far is the evacuation of its cavity;—either by taking away the child, removing the placenta, or discharging the liquor amnii; according to the circumstances of the case. But although I stated to you the fact that, by so doing, you may, in ordinary cases, generally arrest the further discharge of blood,—or, at all events, so far diminish the discharge that it becomes no longer dangerous,—yet, in mentioning this practice, I did not lay down any rules to enable you to decide in what cases you ought to interfere with manual practice, and in what cases you ought to refrain. I, then, purposely abstained from laying down those rules; for I thought they would be better understood if given in another part of the subject; and at that part we are now arrived.

On conversing with your obstetric friends, or on reading some of our best obstetric authors,—such as Denman or Burns,—you will find, as usually happens, that different indications have been marked out by different practitioners; by the intimations of which they endeavour to decide, at any given time, whether it is proper that they should deliver the woman by manual operations, or whether they should leave her to her own resources, and confide entirely to those other remedies which I have already exposed at large. In determining about the delivery, there are some (not unskilful practitioners) who are guided mainly by the quantity of blood discharged; and by the

effects the discharge produces. If, on being called to a woman labouring under copious flooding, they find her approaching to a state of asphyxia, they are anxious to enter the uterus as fast as possible, and to abstract both the child and the placenta; but if, on the other hand, they find that the patient is vigorous, and that the measure of the blood lost is by no means copious, they refrain from manual operations. This rule is not without its recommendations; but it is justly chargeable with one capital defect; for it directs us to deliver in those cases of asphyxia, in which the disturbance of the clots is death!

In determining, again, whether they should deliver or not, there are other accoucheurs who consider the effects produced by the discharge of the liquor amnii. If the liquor amnii have not been discharged, and the hemorrhage be proceeding, they rupture the membranes; and if, although the water has been evacuated, the flooding continue, they take the child away; and, in many cases, this may be found a very excellent rule. In determining whether the child should or not be abstracted by the hand, many are guided by the relaxation of the parts, and the facility of delivery. If they find that the vagina is thoroughly relaxed, and that the mouth of the uterus is open (as large as a crown piece, for example),—delivery being so easy,—they think it may be well to introduce the hand into the uterus, and to bring away the child, the placenta, or whatever may be lodging there. But if, on the other hand, under large floodings, they find that the softer parts are rigid (an occurrence not common), or if (as more frequently happens) the mouth of the womb be shut altogether, or not broader than a sixpence, they refrain from interfering;—laudably fearful lest, by thrusting the hand into the uterus, they should lacerate the softer parts. Again,—many practitioners are guided by the age of the pregnancy; and this rule has the advantage of being one of very easy application; for the period of gestation may generally be ascertained. In the latter months (say the last three or four) their general practice, under dangerous bleedings, is to discharge the waters; or, as soon as possible, to carry the hand into the uterus, and bring away the ovum;—the relaxation produced by the bleeding generally facilitating this; while, in the earlier months (say the first three or four), as women of ordinary health and strength rarely sink under the floodings, they refrain altogether from manual operations; and confide in other means for suppressing the bleeding; or in deobstruents; of which the most valuable, perhaps, is the ergot of rye.

In determining as to the propriety of manual delivery, Rigby has recommended that we should be guided by the situation of the placenta. If the placenta is lying over the mouth of the womb (whether partially or completely), the hand, he says, should be carried up into the cavity of the uterus, and the child brought away. As a general rule, this is certainly correct; and to it, I believe, all experienced accoucheurs adhere. On the other hand, if the placenta is *not* lying over the mouth of the uterus (either partially or completely), we are

advised, by Rigby, to content ourselves with the mere discharge of the liquor amnii;—a beautiful obstetric operation; which, in these cases, usually renders the condition of the patient secure!

Beware of being deceived by the rule (if rule it can be called) which has deceived many; I mean that of waiting for the pains, in flooding cases! "The *silly* rule" is the title by which I would designate it; and I use the expression, though quaint, with the hope that it may become fixed upon the mind; and may, by the caution it intimates, prevent your being misled. In cases where large quantities of blood are coming away from the uterus, the womb becomes paralytic; the pains which were commencing leave the patient; and the larger the bleeding the less the pain;—more especially in the latter months. Understand, therefore, that if the want of pains is to be considered at all, it is rather to be considered as an indication to *interfere* than to *refrain*; for you have not forgotten, I trust, that till the womb is evacuated the woman is never secure; and unless manual means be adopted, if the pains and uterine efforts are wanting,—in the latter months especially,—how can the ovum come away? You are called, perhaps, to a case in which the blood comes largely from the uterus. You ask the patient (and properly) whether she feels any uterine pains. "No!"—is the reply. Will you, then, act upon "the silly rule"?—Will you tell the patient,—"Come what may I can give no manual assistance, because you have no pains"? None bred in this school*, I hope, will be guilty of such folly! The truth is that, in flooding-cases, you have very little to do with the pains. It is with the *flooding*,—it is with the *danger*, that it is your duty to contend; and from them, if possible, the woman must be rescued, whether there be pain or not! A woman sitting quietly in her apartment, being seized suddenly with a large eruption of blood from the womb, a practitioner,—specious enough, but of small experience in these matters,—was promptly called to her assistance. Wo be to the woman, in these circumstances, who is deceived by an exterior! "Have you any pain"?—was the question. "No"!—was the reply. So, acting on "the silly rule",—without even examining whether the placenta was lying over the mouth of the uterus or not,—the practitioner went his way. The flooding continuing, he was summoned again; and again he acted on "the silly rule". There being no pain, he still determined that nothing could be done; so he went home, and went to bed, and went to sleep! How one envies such philosophical composure! But we bear the dangers and misfortunes of others with truly admirable resignation! In the middle of the night, his repose was broken by the tinkling of his bell, the noise of his knocker, and the clamour of voices;—a *third* summons had arrived. To the house of the patient, therefore, he went a *third* time; and then he found her dead!—The consequence of all this was a preparation, which I now possess; and which exhibits the child in the uterine cavity, with the placenta lying over the mouth of the womb, and the parts so re-

* The Medical School of Guy's Hospital.

laxed and open, that the abstraction of the ovum would have been a very easy task. Beware of "the silly rule"! In general, to die is no jest;—nor is it a jest to die even by the kick of an ass!

Rules for Manual Interference.—Having said thus much respecting the rules and principles by which, in flooding-cases, practitioners endeavour to ascertain whether they ought or not to interfere manually in the delivery, I proceed, in the next place, briefly to prescribe some plain rules, by which you may be enabled to decide this nice and important point for yourselves. Not that I hope, in laying these principles before you, to reduce your practice to maxims so correct, definite, and sufficient, that (adhering to them as to the rules of an arithmetical operation) you cannot err; but *this* I persuade myself;—that, keeping within the influence of these maxims,—with the help of a little common sense and common experience,—you cannot run out eccentrically into extravagant errors.

Remember, then, that in floodings, whether earlier or later,—but more especially the later,—if the patient be lying in a state approaching asphyxia, all manual operations are in general improper. Disturb the clots, and the patient dies! Watch, therefore; nor venture to resort to the use of the hand, till the return of the strength, and the copious or dangerous renewal of the bleeding, may render the operation at once necessary and more secure. If you are called to floodings of the first, second, or third month, remember (further) that although from such flooding, often repeated,—one miscarriage following another,—the health may suffer severely, yet with an ordinary share of vigour in the patient, notwithstanding all our alarms, death but rarely occurs; and therefore manual operations, not being necessary, should be rejected. It may, indeed, be sometimes advantageous to empty the uterus by means of one or two fingers. This I do myself;—in part, because my hand is small; and in part, perhaps, because I may have an overweening confidence in my manual skill. You, however, I strongly dissuade from this practice; till you have been familiarized, by experience, to the higher and nicer parts of obstetric operations.

When called to floodings of the latter months,—in which the patient, not in a state approaching to asphyxia, still retains her vigour,—remember, in the third place, that it becomes your duty to ascertain, by examination, whether or not the placenta is lying over the mouth of the uterus. If,—the placenta covering the mouth and neck of the womb, whether partially or completely,—you cannot deliver by turning, you may, perhaps, advantageously puncture the membranes, when accessible; but if, on the contrary, turning can be accomplished, the ovum ought to be, by that operation, promptly brought away. Not that this practice is wholly unattended with danger; but in the given circumstances it is, on the whole, the best we can adopt. Remember, lastly, in the latter floodings, that when the placenta is not lying (whether partially or completely) over the mouth of the uterus, as soon as the flooding becomes dangerous, the liquor amnii should be discharged; and although the continuance of

the flooding may now and then demand the operation of turning afterwards, yet in the majority of cases, such a necessity but rarely occurs; so that to this beautiful operation you may safely venture to confide.

For the sake of humanity, allow me again to caution you against "the silly rule"! For the sake of humanity, allow me again to remind you that, from whatever cause the flooding arises,—whether in the earlier or the latter months, before or after the birth of the child, before or after the birth of the placenta,—so long as the woman is lying in a state approaching to asphyxia, disturbance by your hand is death! Ah, how I commiserate those unsuspecting but ill-fated victims, who are destined to perish by your forgetfulness of this caution! At this moment live the women who must sink under this mal-practice! Not to introduce the hand into the uterus, in any case, till pregnancy is advanced beyond the sixth month, is a good general maxim, though not universally applicable. Not to introduce the hand into the uterus before the sixth month of pregnancy is completed;—not to pass the hand into the womb, unless the disk formed by the dilatation of the os uteri be as broad as a crown-piece,—are both of them good general principles of practice, and ought to have their influence; but they are not universal. When the woman is utterly dead, the child may be abstracted notwithstanding. In alarming floodings, it is often safer for your reputation to have the opinion of another practitioner.

SECTION 4.—AFTER-MANAGEMENT OF FLOODINGS.

Not to leave the Patient hastily.—When discharges of blood from the uterus have, in a great measure, subsided, the accoucheur ought not to leave his patient too hastily; as it sometimes happens, though not frequently, after these floodings have been arrested, that (spontaneously, or in consequence of some movement of the patient) the flooding is unexpectedly renewed; or, although the discharge of the blood may have been stopped, and the patient may have rallied somewhat, yet she may again sink; thus rallying and sinking again, as stated in a former section, until ultimately she dies. When the flooding is completely stopped, and the discharge has been sparing, it is scarcely necessary to remain with the patient; but still it is a good rule, when the blood has been lost in large quantities, to continue with the patient for some time afterwards (four or six hours, for example);—a longer or shorter period, according to the degree of apparent danger.

Making the Patient comfortable.—When the floodings have been arrested, the accoucheur will be asked by the nurse, and those around him, whether the patient may not be put into bed and made comfortable;—an expression which every Englishman so well understands. Now, if the loss of blood be small, and the patient have thoroughly rallied, there is no obvious objection to *putting to bed*, as it is phrased; but it is most important to remember that, where there have been large effusions of blood,—such as we have been

engaged in considering,—to put the patient to bed would be an operation of no small danger. In a former section, I observed that I had seen one patient perish, in consequence of being moved too soon after the bleeding; and, more than once, after very large bleedings, I have seen a great deal of vascular commotion produced, —not without alarming symptoms,—by merely lifting a woman from one side of the bed to the other;—and this, notwithstanding that the hæmorrhage had been stopped for three or four hours. For myself, when women, having bled very profusely, are reduced to a state approaching to asphyxia, it is my custom to direct that the patient remain twelve or twenty-four hours as quiescent as may be;—I had almost added, without stirring hand or foot. While she is lying in this state, napkins may be placed about her, to protect her person from the wet and soil; and to contribute, as much as possible, but cautiously, to her comfort. Were you to disturb the patient much, even by performing these small offices, death itself might, in *extreme* cases, be produced by a renewal of the bleeding, or a sudden commotion of the vascular system.

Secret Hæmorrhage.—If hæmorrhage is going on externally, it cannot, in general, be overlooked. The patient tells you she feels the blood trickling or running away; and, if she lie near the edge of the bed, sometimes it bursts forth so copiously, that it may be heard to fall upon the floor. It sometimes happens, however, that unobserved hæmorrhages are going forward internally. Blood clots over the mouth of the uterus; and the womb becomes dilated, in consequence of accumulations in the uterine cavity. All this may be overlooked by the accoucheur. Nor must it be forgotten that, when a woman is lying in the middle of a very large bed, a sort of hollow may form in the middle, in consequence of her lying there; and in this hollow, a considerable quantity of blood may now and then accumulate, unperceived. After a large flooding, therefore, recollect that hæmorrhage may be going on unmarked;—the blood sometimes accumulating in the centre of the bed, and still more frequently lodging in the uterine cavity;—danger stealing on the patient, unexpected and in silence. The accoucheur, therefore, should watch; or he may now and then approach the bed-side, and find his patient dying, or approaching to a state of asphyxia. The external hæmorrhages, or those in which there is an accumulation in the bed, are easily detected. Sitting by the bed-side, and asking how the patient feels, the accoucheur learns, perhaps, that her strength seems as if it were going from her; and that she perceives the blood running; and, on examination, he observes that faintness is approaching;—symptoms which, in common prudence, lead to an inspection of the bed; when the bleeding is easily detected. Nor is there a difficulty in making out an internal bleeding. Lay the hand upon the abdomen, above the symphysis pubis; feel for the uterus; grasp it; and, should it be small as the head of the full-grown fœtus, then there is no blood in its cavity; but should it be as large as the womb at seven months, and (further) should clots of blood come

gurgling away on compression, then there is no doubt that internal hæmorrhage has taken place.

Pressure on the Abdomen.—After smaller losses of blood, as at other times, it seems proper enough to bind up the abdomen (by Gaitskell's bandage, for example); though this is less necessary, so long as the medical attendant is at the bed-side, and is grasping the womb with the hand. But when the eruption of blood has been copious, he ought to compress the abdomen, with more than ordinary care, with a view of securing the contraction of the uterus, and thus preventing the return of the hæmorrhage. Not to enlarge on the advantages of taking a seat upon the patient's abdomen, or of making it a sort of desk on which to lay a folio-bible, with a heavy comment (to increase its anti-hæmorrhagic power),—I may simply observe, that (where the case is pressing) after a bandage has been applied, the uterus may be kept in the contracted state, by being grasped by the interposed hand; or, in less urgent emergencies, the bandage may be used, with the interposition of a pillow over the abdomen, in front,—if it be desirable to increase the pressure. In this manner, the contracted condition of the uterus may be rendered more sure; and the internal bleedings may be prevented. The bandage may be put on externally to the dress, or over the body-linen;—the less disturbance the better. It is useful to apply these bandages before the delivery takes place; as they may be easily tightened afterwards.

Napkins to the Genitals.—I am accustomed to apply clean napkins to the genitals, even after the hæmorrhage has ceased;—removing and inspecting these napkins occasionally. If there is no blood on them, or but little, it is clear that copious hæmorrhage cannot be going forward; more especially if, before inspection, we have made any pressure on the uterus;—so as to urge forth any blood that may have accumulated there. On the other hand, if we find a broad red stain, with clotted blood upon the napkin, there can be little doubt that the flooding is prone to return.

Nourishment.—If the hæmorrhage is arrested, it may be asked, by the nurse and friends, whether it is not proper to administer *nourishment.* If the patient is improving,—the limbs becoming warm, the lips reddening, the pulse enlarging, the frequency of the cardiac beat diminishing, the energies of the mind reviving,—in such a case, it is wise to let well alone. I would dissuade the accoucheur from interfering much with nourishment; for, when taken into the stomach, where the patient is much reduced from the loss of blood, it will probably be of little value;—owing to the debility of the digestive organs. But if the woman is continually sinking lower,—gradually subsiding into the grave,—nourishment should, I think, be administered; in order that nothing may be left undone. From the first, the bleeding ceasing, moderate quantities of nourishment may be given. The patient may have a disgust to solids; or, from the state of the œsophagus, she may not be able to swallow them; or, in this exhausted condition, she may be unable to masticate them well; but

milk, broth, or eggs prepared in any way (if soft), may be recommended. From three to six ounces of liquid nourishment may be thrown into the stomach, every three or four hours; especially if it seems to agree.

Headach.—When large hæmorrhages have occurred, it is sometimes surprising to see the rally which is effected in the course of four-and-twenty hours. The pulse, it may be, has sunk below one hundred; the cheeks are red; and the energies are considerable. On the other hand, however, if the discharge of blood have been large, and if the woman is of that sort of constitution (often met) which cannot sustain itself against the hæmorrhage, various symptoms are likely to manifest themselves, in the course of the first two or three days. Of these the following may deserve your notice. It is by no means uncommon for women to have a great deal of headach; and with it is joined a certain degree of lightness, aggravated when the head is raised from the pillow; which symptoms, according to Dr. Haighton, are not relieved by leeches and blisters;—remedies which, from his dissuasion, I have been induced not to essay. My valued relative imagined, not without good reason, that the cephalic symptoms arose from want of blood in the vessels; and conceived that they would therefore be most effectually relieved by nourishment introduced into the stomach. This cephalalgia* may continue for some time (a week or a fortnight, for example); but though somewhat alarming on account of the lightness attending it, it seldom terminates in any serious cerebral attack.

Diarrhœa.—The patient is occasionally assailed with irritability of the alimentary tube;—sometimes with vomitings, and still more frequently with purgings. This diarrhœa, if moderate, may do the patient but little injury; but should it prove (as it not unfrequently does) both obstinate and copious, the patient may be carried off. An atonic†, fretful, perhaps an aphthous‡ inflammation of the mucous membrane of the stomach and the bowels, terminating in excoriation, is (I suspect) the proximate cause of this disease; and I look upon it as produced by general ill-health;—the result of inanition. This inflammation, or inflammatory erythism§,—as in the nose, the lungs, or the urethra,—produces an excitability of the part. Opium, chalk, aromatic‖ confection¶, logwood, dry diet, and the removal of the patient into the country as soon as possible, are the best remedies. Dry diet and change of air have sometimes the best effects. For a considerable time before his death, the Epicurus and Lucian of his age,—Hume, the historian,—laboured under a diarrhœa, which ultimately destroyed him; yet it is remarkable that, having occasion (for health or business) to make a journey southward from the Tweed, he found more apparent relief from this excursion,

* From κεφαλη, *the head*; and αλγος, *pain*.
† Weak; from α, negative; and τεινω, *to extend*.
‡ From απτω, *to inflame*.
§ From ερυθαινω, *to redden*.
‖ From αρι, *intensely*; and σζω, *to smell*.
¶ From *conficio*, "to make up."

than from any other remedy. It was with the knowledge of this fact upon my mind, that I tried the effects of removal in a desperate diarrhœa; occurring after flooding, under my own care. "Remedium anceps melius quam nullum"*. Though the experiment was dangerous, and the patient was reduced to the last degree of debility, she was put (by my advice) into an invalid-carriage, and sent to Stamford Hill. She was so ill, that her apothecary became her attendant; as it was doubtful whether she would reach that place alive; yet, although we had been trying all the more effectual remedies, with little or no benefit, while she remained in town, and in Bishopsgate too,—a part of the metropolis not the most unhealthy,—in the course of a few days after her arrival at the Hill, the diarrhœa ceased of itself; and a full impression was left upon my mind, that the journey, and the change of air, were the remedies to which her recovery was to be referred.

Weakness.—After these large eruptions of blood from the uterus, the patient becomes very much reduced in her strength. For this weakness, mere drugs are of very little avail. Time and patience, and the occasional use of medicines to meet particular symptoms; supplies of nourishment, as large as the stomach can bear; the country air; the sea-shore;—these are the only remedies. The woman wants a full supply of blood; transfusion, day after day, may perhaps be recommended hereafter, in order to furnish this supply; but, till the safety and efficacy of the remedy in these cases has been proved and acknowledged, it is to the other medicinals which have just been enumerated that we must confide this supply.

There are some women who suffer dreadfully in consequence of their miscarrying in the earlier or later months (more frequently in the earlier); becoming pregnant again too soon; and miscarrying, perhaps, no less than nine or ten times in the course of two or three years; and losing, each time, large quantities of blood. Of course these repeated floodings very greatly reduce them. In such cases, I would strongly recommend abstinence from further communication with the husband;—at least for a time; so as to allow the genitals to recover. To use an agricultural expression,—the land should lie fallow; but the scientific husbandman has, in general, no small difficulty in managing the soil agreeably to his own principles. Independently of abstinence from connubial intercourse, there are various preventives of impregnation; but I do not think it proper to disclose them.

Aqueous Effusions.—Under large losses of blood from flooding, it is not often that aqueous effusions occur; yet now and then the dropsical diathesis† appears, in bad constitutions at first exhibiting inflammatory tendencies. If the legs or abdomen are the seat of the accumulation, there is less danger, but the patient may soon perish from effusion into the chest or head. More than once I have seen women who have survived the first losses of blood, sink in this manner; and one of the severest disappointments I ever experienced,

* A doubtful remedy is better than none. † From *διατιθημι, to dispose.*

within or without the circle of my practice, was of this kind. A most interesting young lady,—lovely, accomplished, amiable,—the admiration of her acquaintance, the idol of her domestic circle,—after a complete resuscitation by transfusion, sunk under an effusion into the chest and pericardium*. I had received the thanks of the friends (more gratifying to me than any other remuneration); two very beautiful children, in the lisping and imperfectly formed articulation of childhood, also attempted to stammer their thanks; when, two or three days afterwards, hydrothorax† showed that it had been gradually stealing upon its victim; and, after a short struggle, the patient sunk! There were extensive adhesions (old) in the chest;—the consequence of severe measles in earlier life.

Errors to be avoided.—I shall now close the remarks which I have to offer on this tedious, but very important subject of flooding, by pointing out three or four *errors*; which, in moments of negligence, we are likely to commit;—in the hope that I may guard others against them. In the first place, then, in the earlier months of pregnancy, where there are eruptions of blood from the uterus,—if the accoucheur thinks that he possesses more than ordinary manual skill,—he may, perhaps, feel an inclination heedlessly to thrust his hand into the uterus, in order to abstract the ovum. Now although, in the earlier months,—where the accoucheur is very skilful,—there may be an advantage, in some cases, in bringing away the ovum, by the introduction of the hand into the vagina,—yet, as a general practice, it is to be condemned. *Unnecessary* manual interference, therefore, in the earlier months, is an obstetric error, against which all ought to guard. Remember, however, that in the latter months it is possible to fall into another great error of the opposite kind;—I mean the neglect of the delivery where the operation really is necessary;—an error which may prove the destruction of the patient. In obstetrics, the general rule is to err, if you must err at all, on the side of *indolence*,—if you will allow the expression. Err rather by not interfering where assistance is necessary, than by pragmatically and unnecessarily interfering where help is not required; for, delivery being a natural process, the occasions in which the accoucheur may interfere needlessly are endless; but in general midwifery, the cases in which we may err, by refraining from interference when really required, are few. Feeling, as I do, that this is a most wholesome principle, I nevertheless very cordially agree with Denman, that, in flooding-cases, we have an exception to the rule. These cases are so dangerous, and so much depends upon the practitioner, and more especially upon the emptying of the uterus, that I would more willingly pardon the too active, than the inert. More especially when floodings occur in the latter months, I would caution you against delaying the delivery too long, when delivery is really required. If the general rules which have been laid down on this point be attended to, I think it will not be easy to wander far from the right path.

* From περι, *about*; and καρδια, "the heart."
† From υδωρ, *water*; and θωραξ, *the chest*.

There is yet another error against which it will be well to guard; and that is, the use of too much violence and hurry in conducting the delivery. In flooding-cases, when delivery is required, it is dangerous to abstain from the delivery too long. There is danger lest, having abstained till the patient appear to be on the point of sinking, the accoucheur then, anxious to deliver her while breath remains, should proceed with a rapidity or violence which may bruise,—tear,—destroy! While, therefore, your consciences are clear,—before it is too late, I caution you against this formidable error! Beware of delaying the delivery too long; and if delivery have been long delayed, beware, then, of using a force and promptitude of extraction greater than the parts can safely bear! In scientific midwifery, violence can have no place.

I have said that there are cases,—and, indeed, I may say (on the whole) *many* and most *important* cases,—where, after great discharge, the patient is lying in a state approaching to asphyxia. In these cases the accoucheur may fall into the error of sitting down at the bedside, and heedlessly disturbing the clots;—either by examinations, or by the introduction of the hand into the uterus or the vagina. Remember, however, that if, by operations of this kind, the concretions are broken up, and the hæmorrhage is renewed, the woman will most probably sink. Against such a careless excitement of the bleeding, therefore, be guarded! Consider, and then consider again, the rules already prescribed. If the bleeding recur of itself copiously, it may be necessary to operate; but so long as the discharge is wholly or in great measure arrested,—unless the patient has rallied thoroughly,—refrain from manual operations. Perhaps it may be hereafter found that, before the delivery, transfusion may with advantage be premised in some of these cases; and of this operation I now proceed to treat.

SECTION 5.—TRANSFUSION.

I consider the operation of transfusion to be of so much importance to mankind, that, having made it the subject of much thought and experiment, I seize with pleasure the opportunity which now offers, of treating the topic more at large.

Origin of Transfusion.—The general idea of transfusion, it is probable, has occurred to many in former times; and I am willing to believe, that it might not have been unthought of by those mighty masters of antiquity, who, first discovering the principles of things, have left to us, who follow them on the face of our planet, only the less splendid honour of exploring those tracts of knowledge, which they originally pointed out! It is certainly, however, to modern industry, that we are indebted for bringing this operation into notice. Lower, in our own country, and Denis among the French, towards the middle of the seventeenth century, first demonstrated its practicability, by observations on the human body, and experiments upon brutes; nor should I deem myself without blame, had I omitted to mention their names. I conceive it is to men of this kind,—to men

who, not unsuccessfully, make it their ambition to contribute disco veries in art or science to the general fund of human knowledge,— that an age or country owes its lasting splendour! The mass o mankind seem hitherto to have been scarcely capable of distinguish ing who are, from those who are not, their friends. Hemlock, or th cross, has too often been their reward; while the general ear has bee wearied with the applauses of those who, without honest principl have wielded the brute-force of the species for their own aggrandise ment alone! Among "the swinish multitude," as Burke was please to call them, each successive slaughter has raised still louder clamours just as the animal from which he draws the comparison, is never s noisy as when perishing under the knife. But the age for th modish and destructive folly has, I trust, already begun to pass awa Now that personal interests in the subject have vanished, who, amon civilized nations, cares to applaud a Jenghis,—or a Timour,—or Nadir,—or any other unprincipled devastator of days gone by;— brute-favourites of fortune, but scourges of the species; or, if I ma be allowed a bolder phrase, the destroying angels of the East! A knowledge steadily advances, these men of mere violence will, I trus appear before their brethren (the rest of the species) in their tru characters; while the names of Socrates, of Plato, of Euclid, Archimedes,—shall I add it?—of Timoleon, the Liberator,—will, persuade myself, with still increasing veneration and applause, d scend to the latest posterity of that mankind whom they hav benefited!

If I have myself any claim, however small, to rank among th supporters of transfusion, it lies entirely in this;—that, undeterre by clamour or scepticism, I have made it my endeavour to brin the operation again into notice; and to show, further,—by exper ments on animals, and observations on the human body,—that tran fusion (as it is called) may be performed by the help of a syringe under the use of which, human blood (the only kind fit for the op ration) may be infused into human veins. In the original operatio brute-blood was employed; but this (at least, if taken without di crimination from animals indifferently, and injected in large quan tities) is fatal. For the original operation, the presence of som animal in the bed-chamber was necessary. What, then, was to b done on an emergency? A *dog*, it is true, might have come whe you whistled; but the animal is small. A *calf* or a *sheep* migh to some, have appeared fitter for the purpose; but, then, it had n been taught to walk promptly up stairs. In this condition the op ration (little more than a name) was great in its danger, but of sma advantages in those very cases of sudden bleeding, in which it seeme most to be required.

Notwithstanding the sneers of his comic countrymen, who place him among the clouds, it was the just boast of Socrates, that he ha brought down philosophy from her airy speculations, into the com merce of mankind; and much it is to be wished, that some able an long-lived experimenter would do the same kind office by physiolog

To me, on weighing the considerations before enumerated, the great desideratum in transfusion appeared to be, that,—being brought from our lecture-rooms, to which it had so long been confined,—it should, in some improved form, be rendered safer, and more serviceable at the bed-side of the patient. Now, although it was evident that transfusion might be promptly (perhaps, however, not safely) performed, by means of a simple tube, provided the artery of a bystander could be laid open; yet, a more ready mode of rendering the operation practically useful appeared to be, by adapting to its performance the use of the syringe; and with the hope, in the end not disappointed, of accomplishing this point, I was led into the following train of investigation.

Cases in which Transfusion may be tried.

In hanging or in submersion, we know that death, at first, is apparent only, and not real; for during a certain period after respiration has ceased, resuscitation is still possible. That death from *bleeding* may also (for a time) be only apparent, is by no means unlikely; and it is not impossible, therefore, that transfusion may be of service, if performed within a given period after the breathing has been stopped. Under this impression it was, that I instituted the following experiments; and although the results have not corresponded with my wishes, and although they do not by any means form a complete body of information on the point, I am induced to record them, with the view of making an opening in the subject.

1. Into the right carotid of a dog, which weighed about ten pounds (avoirdupois), I introduced a tubule*,—directing its extremity towards the heart; and drew off about half a pint of blood, which was all that could be abstracted. At first the blood flowed with impetuosity, for somewhat less than a minute; after which there was very little farther discharge; and apparent death was produced;—respiration ceasing, and the abdominal muscles becoming relaxed, within about four minutes from the time when the artery was opened, and within about three minutes from the time when the blood ceased to flow in an impetuous stream. One hour after the attack of apparent death, a large quantity of blood was transfused into the jugular vein, towards the heart, from the carotid of another dog; but no signs of returning life appeared.

2. I opened the carotid artery of a dog, the same in size as the former, and introduced a pipe. The blood flowed for about half a minute, in an impetuous stream; and sluggishly for two minutes longer; so that about half a pint altogether was withdrawn. The breathing ceased, and the abdominal muscles became relaxed, about four minutes from the time when the discharge began. Half an hour afterwards, I transfused into the jugular vein, as before, blood taken from the carotid artery of another dog;—without, however, producing any signs of returning life. About an hour after the bleeding,

* From *tubulus*, "a small tube."

and half an hour after transfusion had been performed, the hot-bat was tried; but without obvious advantage.

3. I drained another dog from the carotid artery, in the sam manner as the two preceding;—about half a pint of blood bein drawn away, as before. Apparent death,—marked, in the ordinar way, by a total cessation of the pulse and respiration,—came on four minutes after the blood began to flow. About ten minute after the attack of asphyxia, I replenished the animal, by the jugula vein, with blood taken from the carotid artery of another dog; bu no signs of returning animation were produced.

4. Into the left carotid artery of a dog I introduced a pipe, as i the former experiments, with its extremity towards the heart. Th animal weighed thirteen pounds three ounces (avoirdupois); an about eight ounces of blood were got away. Apparent death cam on, about two minutes from the time when the blood began to flow though a few convulsive respirations occurred, for some two or thre minutes afterwards. About twenty minutes after the apparen death, I injected into the jugular vein (towards the heart, as before several ounces of blood, taken from the carotid artery of anothe dog; and, very soon afterwards, I tried artificial respiration actively together with the hot-bath for an hour;—without, however, producin the slightest indication of returning life. On examining the hea subsequently, I found the left side of it empty, and the right charge with blood; and it should be remarked, particularly, that this bloo was clotted.

5. I introduced a tubule into the left carotid of a dog, of middlin size,—directing its extremity towards the heart; and got away abou half a pint of blood; which issued first in an impetuous, and afte wards in a sluggish stream. Nine minutes after the blood began flow, the circulation ceased to be distinguishable in the femor artery; and it was not till fourteen minutes after the opening of th carotid artery, that apparent death occurred; so that in this, as the subsequent experiment (6), thirteen or fourteen minutes, inste of three or four, elapsed before apparent death was produce Thirty-five minutes after the attack of apparent death, and abo fifty minutes after the artery was opened, I transfused blood (b means of a tubular apparatus, not above four inches long) into th carotid artery, instead of the jugular vein of the animal;—directin it towards the heart; and though the quantity which entered cou not be exactly ascertained (as the blood was not seen), there is reaso to believe it was considerable; for the emittent dog was very la guid afterwards. About fifty minutes from the commencement apparent death, I attempted resuscitation by the hot-bath, and thorough inflation of the lungs;—in which natural respiration w imitated, as exactly as possible, for half an hour together; but wit out producing the slightest sign of returning life. This experime succeeded very well in all its parts.

6. In a dog, which had not acquired its full size, and of a hab somewhat delicate, I opened the carotid artery of the right side; an

introduced the tubule towards the heart. For about half a minute, the blood flowed in an impetuous stream; and then, for several minutes longer, it escaped very slowly from the tubule; which was kept clear from coagula, by the occasional introduction of a stilet*. The whole quantity of blood drawn, however, scarcely exceeded half a pint. At first the respiration was tolerably natural; but when the animal was pretty well emptied, it became disordered. Deep sighings frequently occurred; and, about twenty minutes from the time when the artery was opened, respiration stopped altogether;—the pulse disappearing completely in the femoral artery; the abdominal muscles becoming very flabby; and the animal lying, to all appearance, dead. About five minutes after respiration had stopped, and about twenty-five minutes from the time when the blood had ceased to flow with impetuosity from the tubule, I injected into the jugular vein, towards the heart, blood taken from the carotid artery of another dog;—the operation being continued for three or four minutes. The effects were immediate. Shuddering first occurred; then respiration; then vascular action; and ultimately complete recovery. I am disposed to think, that the heart of some dogs is much more retentive of its irritability than that of others; and that in bull-dogs, especially, the cardiac irritability is tenacious and permanent. This dog, though delicate, was very savage; and probably had a taste of the bull-dog blood; so that the heart was, perhaps, more tenacious of irritability than usual; which may account for its recovery.

Inferences.—From these experiments, a variety of inferences may be drawn;—inferences which, although they do not lead us to expect much from transfusion, when the asphyxia of hæmorrhage has been produced, are sufficient (I think) to bear us out in the assertion, that, in cases of this kind, where there is no other hope, the operation may deserve consideration. The following are the inferences:—

1. The time which intervenes between the opening of an artery, and the attack of apparent death, varies exceedingly in different individuals; even when the artery remains unclosed, and the bleeding therefore is not obstructed. In some of these dogs it was about two minutes; in some four; in one fourteen minutes (5), and in one twenty (6).

2. After the cessation of respiration, and the relaxation of the abdominal muscles, in the dog, the animal very speedily becomes irrecoverable by the process of transfusion; for it will be observed that, when the dog was suffered to be in a state of apparent death for sixty (1), thirty (2), twenty (4), or even ten minutes (3), it could not be resuscitated; and this too although (as in Experiments 4 and 5) the operation of transfusion was assisted by the stimulus of the hot-bath, and artificial respiration very diligently executed. Whether this principle may, or may not be transferred to the human body, admits a doubt; but the affirmative is probable.

3. One impediment to the resuscitation of the animal, in these

* From *stiletto*, a dagger with a conical blade.

cases, probably arises from the coagulation of the blood in the heart; for concretions were found there, on inspection, in Experiment 4. It should be added, however, that this was ascertained to be the case, by inspection, in one of the dogs only; for the others were not examined; and that in other animals, as the ox, the blood has been found (by an excellent experimental observer, Mr. Thackrah*) to be fluid in the heart, half an hour after the animal has been knocked down. Nor must it be forgotten, that the blood of the dog has a much stronger tendency to speedy coagulation, than human blood. We must not, therefore, lightly make this inference general; nor transfer it, without consideration, to the human body.

4. Although the dog cannot, in general, be resuscitated, even a few minutes after the carotid artery has been fairly laid open, and distended by the introduction of a pipe; and although resuscitation be improbable, if respiration has been suspended in consequence of bleeding;—yet, now and then, recovery is possible; since, in Experiment 6, a complete resuscitation was accomplished, about twenty-five minutes after the artery had been opened, and four or five minutes after the animal had lain, to appearance, dead. And here it may be observed, transiently, how necessary it is not hastily to draw conclusions from a few experiments; but, on the contrary, to multiply them as much as possible; since it is by performing the same experiment repeatedly, that important exceptions are sometimes ascertained.

5. It follows, from the preceding inferences, that if we are called to a patient fifteen or twenty minutes after the carotid artery has been laid open, the patient may be still respiring; and, therefore, that resuscitation (by means of transfusion) may not perhaps be found, in every instance, impracticable. If the eighth pair of nerves were divided on one side only, the recovery might be permanent; and if it were cut through on both sides, the patient might be expected to live for a few hours.

6. In some of these experiments, in which the carotid was laid wide open, the blood, towards the close of the operation, came away sluggishly, and in small quantities; so that the discharge might have been arrested by the mere pressure of the finger. When persons cut their throat, I strongly suspect that,—by the pressure of the finger, or by putting a fold or two of a handkerchief into the wound,—the flow of blood may sometimes be so far obstructed, as to prolong the patient's life till further assistance could be obtained. If this assertion be true, it cannot be made too generally known.

7. The preceding experiments do not enable me to decide whether, in apparent death from bleeding, a preference should be given to the injection of blood into the jugular vein, or into the carotid artery; but I think, on the whole, that the blood ought to be injected into the carotid artery, towards the heart; in order, if pos-

* See page 58 of Thackrah's "Inquiry into the Nature and Properties of the Blood";—a valuable present to Physiology.

sible, to renew the circulation through the coronary vessels; on which, I suspect, the irritability of the heart depends.

Transfusion the Medium of Nutrition.—The formation of blood is the principal end of the chylopoietic viscera, and of their auxiliaries; and it seems, therefore, not improbable that,—in those cases in which the action of these viscera is interrupted by scirrhosity* of the pylorus†, or other causes,—their operations might be superseded by the injection of blood into the veins; so as to supply the vessels in a direct manner with that blood, which in health is the result of sanguification‡. As, however, opinions derived from reasonings of this kind are exceedingly uncertain, until they are brought to the test of experience, I have been induced to institute an experiment,—not unattended with labour,—with the view of demonstrating that dogs may be supported, for a long time, by the transfusion of blood only;—without the aid of food taken into the alimentary tube. The following is a brief statement of the results:—

1. For three whole weeks, I nourished a dog by the mere transfusion of blood into the external jugular vein. The aggregate quantity infused, during this period, was nearly eighty-four ounces (avoirdupois);—that is, on an average, four ounces a-day. During the whole time, the animal was allowed to swallow nothing except water; and, indeed, it never manifested any marked desire for solid aliment. The blood, during the first eleven days, was injected by the syringe; but during the remainder of the term, it was transmitted directly from the artery of the emittent dog, by means of a tube. The kind of blood used was arterial.

2. At the end of this period I found that the dog (which weighed twenty-six pounds two ounces when the experiment began) had lost seven pounds two ounces of its weight; yet,—although somewhat emaciated, and a good deal disordered in its general health,—it appeared still to be in no danger whatever from inanition. That this dog had been effectually nourished by the blood with which it was supplied, there can (I think) be little doubt; for had this not been the case, the animal must have been exhausted, or nearly so, after a fast of three weeks; and as dogs, a little above the middle size, when they are kept without food, lose from eight to sixteen ounces of their weight in the course of twenty-four hours, it is evident (even without a nice adjustment of the calculation) that, unless nourishment had been derived from the blood, the loss of weight, in three weeks, must have been more considerable than seven pounds two ounces.

3. In the course of this experiment, the dog's health was a good deal impaired;—partly, perhaps, in consequence of the large wounds in the skin, which (in my method of operation) it was necessary to make, in order to get repeatedly into the jugular veins; and partly, indeed principally (I conceive), in consequence of the manner in

* From σκιρροω, *to harden.*

† From πυλη, *an entrance*; and ουρος, *a guard*;—because it guards, as it were, the entrance into the small intestines.

‡ From *sanguis*, "blood"; and *facio*, "to make."

which the blood was injected; for,—as this was a first essay, and not so well conducted as it might have been had I possessed more experience in the operation,—instead of injecting the blood daily or twice a-day, in quantities of two or three ounces only,—so as not to overload the vascular system,—I generally transfused the blood at longer intervals (one or two days, and, once or twice, three) and much larger quantities of blood (eight or ten ounces, at least) were thrown in together. The consequence of this large supply was such a surcharge of the vascular system, as would be produced in a full-grown man, by the injection of not less than three or four pints of blood into the veins; with no other preparation than a fast of one or two days. Accordingly, the animal seemed to be a little distressed by it; though not so much as might have been expected from previous reasoning. The pulse became irregular, and intermitted frequently. There was langour, general tremor, and sometimes (but not invariably) a disposition to sleep. On examination after death, too, I found that the spleen and liver were decidedly larger than natural;—the spleen weighing one ounce and three fourths (avoirdupois), and the liver one pound three ounces and a half; and the right side of the heart was, in a greater proportion than ordinary, larger than the left.

4. Why it is that the body of the dog wasted considerably, though four ounces of blood were, on an average, daily supplied to the veins it is not easy to demonstrate; but I think it highly probable that this wasting was occasioned, not by any defect in the nourishing properties of the blood itself, but partly by the insufficiency of the quantity injected, and principally by the disorder of the system which the injection occasioned. That the latter part of this opinion is correct, I incline to believe from an observation I made more than once;—I mean that the dog wasted more rapidly during the first twenty-four hours after the injection, than during the twenty-four hours which followed them.

From these facts and observations, I think the following inferences may be drawn:—

1. The dog may be nourished, for a long time, without the help of food, by having transfused into his veins the blood of another individual of the same species;—either by the tube or by the syringe.

2. The blood which is supplied to the vessels, in this manner does not support the body so effectually as would be done by an equal quantity derived from sanguification.

3. The health is liable to be much impaired by operations of this sort; and enlargement of the heart, the spleen, and the liver, may be produced by them, in the course of three weeks.

4. In the present state of our knowledge, it seems probable that these effects are not inevitable, or of equal degree in all cases; but are rather to be attributed to the *circumstances* of the operation, than to the nature of the operation itself.

5. Whether these principles may be transferred from the dog to

our own species, is at present uncertain; but, till we have proof to the contrary, they furnish a strong presumption, that the human body may be nourished by the injection of blood.

If, in the progress of knowledge and the decay of prejudice, the method of nourishing by transfusion should hereafter be practised on the human subject, I suspect it will be found, that small quantities of blood are sufficient to support the body, in a state of languid life; and that ill-health is not inseparable from the operation;—provided it be performed in a dexterous and judicious manner; and provided, especially, the blood be injected frequently, and in small quantities at a time.

There are, perhaps, various cases in which blood may be transfused with advantage; but three more especially deserve consideration. 1. When the patient is dying for want of nourishment. 2. When the patient is already dead, to appearance, in consequence of copious bleeding. 3. When the breathing still continues; although (from the course of symptoms) it is pretty evident that death must ensue, in consequence of the loss of blood which has been sustained. These cases, under the present modes of management, are all of them desperate.

The Kinds of Blood proper for the Operation of Transfusion, when performed on the Human Body.

That the blood of one animal may be substituted for the blood of another animal, of the *same species*, is a principle which has been placed beyond the shadow of a doubt. Repeatedly have I, and others before me, drained the dog till it lay in a state of apparent death;—the blood ceasing to issue even from a tube inserted into the carotid towards the heart; and the circulation, therefore, being entirely arrested. The animal being, in this condition, to all appearance dead, I have transfused from another dog; and found, where the operation has been well performed, that the dog, to all appearance irrecoverable, has soon afterwards arisen from the table, as if it had experienced a resuscitation from the dead. It is true, indeed, that for two or three days, a little cachexia, or ill-health, has hung about it; but, in the course of a few days more, the animal has seemed to recover itself completely;—becoming as well as before the operation was performed.

From Animals of a Different Genus.—When the blood of one genus* of animals is added, by transfusion, in small quantities, to that of another genus, we have reason (in the present state of our knowledge) to believe, that no dangerous consequences will ensue. I have heard Dr. Haighton assert that, after taking a few ounces of blood from the dog, he has afterwards transfused that of the sheep, in its place; without producing dangerous symptoms. If further experiments†, multiplied and varied, should thoroughly confirm this principle, we may hope to find hereafter, that the blood of the lower

* From γενος, *a family.* † From *experior*, "to try."

animals may be safely thrown into the human blood-vessels, in small quantities daily, for the purposes of nourishment; instead of human blood, which it must be more difficult to procure.

But although the blood of one genus of animals may, perhaps, without fatal consequences, be *sparingly* mixed with large quantities of the blood of another genus, all the facts which have hitherto come to my knowledge go to prove, that if an animal be drained of the blood in its *larger* vessels, and replenished with *large* quantities of blood derived indifferently from another genus, great danger, and in general death itself will ensue*. In support of this opinion, the following experiments are added to those already detailed†:—

7. I took a dog of smaller size than ordinary, but perfectly healthy; and drew off about four ounces of blood from the femoral arteries; when all the usual symptoms (dyspnœa‡, struggling, cessation of the circulation, relaxation of the abdominal muscles, and complete asphyxia) were produced; though (it should be observed) the quantity of blood abstracted was small. I then drew four ounces of blood (by measure) from the human arm; suffered it to lie in the cup between fifty and sixty seconds; and injected it into the femoral vein. At first, the dog seemed to be a little recovered from the operation; and both respiration and circulation were renewed; but it died on the table, in the course of a few minutes;—not from the entrance of air, or from excess in the quantity of blood injected (for both these accidents were precluded); but, apparently, in consequence of the substitution of human blood for the canine; or else, from the deterioration of the blood, occasioned by its lying in the cup of the syringe. The dog, before the experiment, was perfectly healthy.

8. From the femoral artery of an old dog, of the terrier breed,—valued a good deal for his hardihood and fondness for rat-catching,—I drew off eleven ounces of blood. Distress, dyspnœa, jactitation, and suspension of respiration, were produced by the operation; so that it was obvious,—from the character of the symptoms, as well as from the quantity of blood which had been taken away,—that, unless transfusion were performed, the animal could not survive. I then drew two ounces of blood from the arm of a healthy man; and suffered this blood to remain in the cup of the syringe for thirty seconds, before it was injected into the femoral vein of the animal. The operation was performed five times;—about ten ounces of human blood being injected; and every time, before the blood was injected into the vein, it was suffered to lie at least thirty seconds in the cup. Apparent death was produced by the bleeding; and the animal revived, as usual, in consequence of the injection. The pulse, imperceptible before, returned distinctly enough into the femoral artery;—beating, without obvious intermission, one hundred

* Does there exist a genus of brute-animals, the blood of which may be safely substituted for *human* blood?

† See pages 211 to 213.

‡ From δυς, *badly*; and πνεω, *to breathe*.

and twenty times in the minute; and when the dog was loosed from the frame, it was able to walk about; and seemed to be pleased when noticed, and encouraged by the usual caresses. Notwithstanding this partial recovery, however, the dog still remained languid, feeble, and evidently unwell; and, though originally of hardy constitution, it died in the course of the following night;—about twelve hours after the operation was performed. In this experiment, the entrance of air into the veins was carefully guarded against; and it appears, from the experiments which follow, that death was not occasioned by the mere exposure of the blood in the cup.

9. I took a large, lively, and very healthy bitch; and drew off, from the femoral artery, as much blood as could be abstracted;—amounting to seven ounces. The ordinary symptoms (distress, gasping, struggling, and profound fainting) were produced. As soon as the discharge was finished, blood taken from the human arm was infused;—to the amount of nearly six ounces. This was received into the cup of the syringe, as it flowed from the arm; and was thrown directly, but tranquilly, into the vein. In consequence of this injection, the dog clearly recovered a little. It became sensible, and respired more regularly; though not without occasional gaspings. The abdominal muscles, too, became firm; and the blood circulated so freely, that it gushed out afresh from the femoral artery. The recovery, however, was by no means so complete, as when canine blood is injected. The action of the heart remained irregular, intermittent, and labouring; and the dog,—after gasping, and gaping convulsively,—made ineffectual attempts to vomit, and died in the course of a few minutes.

These symptoms are very similar to those which occurred in the following experiment; and to those which are produced in death from bleeding. That death was occasioned, in this instance, by the substitution of *human* blood for the *canine*, there can (I think) be little reason to doubt; and this is the more remarkable, because the blood was injected without being suffered, as in the previous experiment, to remain in the cup; and because the animal, immediately before the experiment was performed, was lively and well. It should be observed, too, that the quantity of blood drawn away, was not very large (considering the size of the animal); and that a temporary revival was produced;—circumstances which make the death the more decisive. The experiment occupied but little time; and no untoward accidents occurred.

10. From the femoral artery of a large, lively, and very healthy dog, I drew off as much blood as could be obtained by means of the tubule, in the usual manner,—amounting to eighteen ounces; when the usual symptoms supervened; and I then threw in about five ounces and a half of human blood;—in quantities of half an ounce at a time. The blood was measured by means of the syringe; and it was not suffered to lie in the cup before injection. In consequence of the hurried and careless manner in which the apparatus had been put together, a few bubbles of air got into the veins. By

this injection the dog was revived a little, as in the former instances but by no means so much as is commonly the case, when the blood is taken from the same species. It noticed caresses; breathed more regularly; acquired firmness of the abdominal muscles; and had such a renewal of the circulation, that the blood issued afresh, though slowly, from the femoral artery. In the course of a few minutes however, the same symptoms occurred as those which preceded the death of the former dog. The animal gasped, yawned convulsively and vomited; and, after lying about an hour on its side, in a state approaching to faintness, it expired. On examining the heart after death, I found the right side full of blood, and the left comparatively empty. The greater part of the blood was in a fluid state; and the few coagula found there were very small. It will be proved, by future experiments, that the few bubbles of air which entered the veins, in conjunction with the blood, were not capable of producing death. Had the blood of another *dog* been transfused, instead of *human* blood, I have no doubt that the animal would have been permanently resuscitated; and the many experiments I have made enable me to form an opinion on this point.

11. I took a young dog, of small size,—very lively and healthy before it was made the subject of operation,—and withdrew from the femoral artery four ounces of blood;—being all that could be abstracted. The usual symptoms were produced; though the asphyxia was not so deep as in the preceding experiment. I then, without delay, threw in three ounces of blood, by means of my syringe;—not suffering it to lie out of the cup, except in the very commencement of the operation; when there was some pause, in consequence of one of the ligatures not having been taken away. By this injection, the dog was resuscitated more completely than in the three preceding experiments; and, though very unwell and feeble, it was able to walk about. Two hours after the injection, however, there was thirst, languor, and debility; and the pulse was so small, and weak that it could not be distinctly ascertained whether it intermitted or not. These symptoms gradually subsided; and, on the third day the animal appeared to be rapidly recovering; but drooping, a second time, one or two days afterwards, it died on the sixth, with dropsy of the pericardium. An ounce of fluid was accumulated in this membrane; but there were no signs of inflammation, nor was there dropsy of the other cavities.

12. Having laid bare the left carotid* artery, in a brisk, and very lively young dog, I drew away about eight ounces of blood;—by means of a pipe introduced into the vessel, with its extremity towards the heart. Faintness was produced; but not a total cessation of the breathing. I then, without delay, threw five or six ounces of human blood, into the external jugular vein†; by means of the im-

* From *καρωω, to cause to sleep*;—alluding to the coma which results from a ligature being placed on this vessel.

† From *jugullum, the throat*; so called, because it is the part embraced by the yoke (jugum).

proved transfusing-instrument hereafter described. By this injection the animal was a little resuscitated. The pulse became distinguishable enough in the femoral artery; and the blood flowed so briskly along the vessels, that, when the ligature was removed from the carotid, it gushed out in a full stream. Notwitstanding this partial resuscitation, however, the dog, when taken from the table, was exceedingly languid: and lay at full length, on its side, in a state approaching to syncope:—cool, and breathing slowly. In the course of half an hour or an hour afterwards, it died. This experiment is the more decisive, because the death of the animal cannot be attributed to plethora, injection of air, or the production of too deep an asphyxia, by the abstraction of the blood; for all these accidents were carefully precluded. It is one of the last experiments which I have made; and I do not hesitate to assert, after all the experience I have had of this operation, that if *canine* blood had been injected instead of *human*, the dog would have recovered. It deserves remark, that a drachm or two of blood, of an arterial tint, taken from the carotid of this dog after the injection, did not become solid at the end of seven minutes; although the blood of the dog naturally concretes in one or two. Now, as the human blood, like that of the horse, is remarkable for the slowness with which it coagulates, this fact goes to prove that the transfused blood, still retained the properties of *human* blood; although it had circulated for some minutes in the vessels of the animal. Whether the vessels of the dog, when the animal lives (as in Experiment 11), possess the power of assimilating the human blood to its own, is uncertain; but the affirmative is probable.

These experiments acquire additional strength, when associated with others instituted by Dr. Leacock, of Barbadoes, a few months before*;—experiments to which I am wholly indebted for my first notions on this point. From these it appears, that if a dog be drained of its blood until apparent death is produced, it may be revived for a time, and very completely too, by replenishing it from the sheep; but it generally dies in a few days afterwards.

Viewed in connexion with my own, these experiments of Dr. Leacock possesses a peculiar interest; for though they harmonize with them in the general result, they differ from them materially in their circumstances. It was *arterial* and not *venous* blood,—the blood of the *sheep* and not *human* blood, that was substituted; and it deserves particular remark that, in Leacock's experiments, the transfusion was not performed with the syringe (a method of operating with which he was unacquainted); but simply with the tube.

From the foregoing facts, it clearly appears that human blood cannot safely be substituted, in large quantities, for that of the dog. It is certain that death was not produced accidentally;—from the hurry of injection, or from plethora, or from suffering the blood to accumulate in the cup of the syringe, or from allowing the dog to remain

* Inaugural Dissertation at Edinburgh, in the year 1817.

too long in a state of asphyxia; for in some of the experiments particularly in the last, these accidents were carefully obviated.

13. The only experiments that I know of, in which human blood was substituted for that of the dog,—by an operation similar to those described above,—without destroying the animal, are those performed, six or seven years ago, by Mr. Goodridge, of Barbadoes;—a gentleman who was, at that time, finishing his medical studies, at the united hospitals*. In these experiments,—probably in consequence of the natural vigour of its constitution, and perhaps from the smaller quantity in which blood was injected,—the animal was enabled to struggle through the consequences of the operation; but even in these cases, for some hours after the transfusion, a variety of unfavourable symptoms occurred.

As it is clear, from the preceding experiments, that the blood of one sort of animals cannot, with impunity, be substituted indifferently and in large quantities, for that of another sort of animals,—it follows that, in performing the operation of transfusion on the human body, human blood should alone be employed;—at least, until we have discovered some other kind of blood as well suited to the vessels, as that which they naturally contain.

Venous or Arterial Blood.—Provided the blood transfused be derived from an animal of the same species with that which receives it, it seems to matter but little whether that blood be arterial or venous. In most of those experiments in which, after draining the dog of its own blood, I resuscitated the animal, and preserved its life, by supplying it with blood taken from the vessels of another dog, arterial blood was injected in preference to venous; because a full supply of this kind of blood could be more easily obtained. To satisfy myself, however, that venous blood possesses the resuscitating power, as well as arterial, I performed the following experiment:—

14. I opened the femoral artery of a dog, not much larger in the body than a large cat; and drew off about four ounces of blood (more could not be obtained); when faintness, and relaxation of the abdominal muscles were produced. Respiration, however, was not suspended; nor was the asphyxia complete; but, from observations drawn from other experiments, I have no doubt that, unless transfusion had been performed, the dog would have died. After suffering the animal to lie in this state for some minutes, I injected, by means of the syringe, about three ounces of blood taken from another dog; when the animal became so much revived by the operation, that it began to look about it, and was pleased when caressed; though unable, when loosened, to get down from the table. As the venous blood issued slowly from the emittent dog, I was compelled to transmit it in a very gradual manner; and some of it actually coagulated in the cup, in which it was detained for several seconds. For many hours after the operation, the dog seemed languid and ailing; but on the third day it recovered very much, and ultimately

* St. Thomas's and Guy's, Southwark.

got completely well;—the languor in this case being, I think, fairly attributable to the exposure of the blood in the cup of the syringe, before it was transmitted to the animal. It may be noted here, by the way, that from this experiment we have a proof, that blood may remain for several seconds in the cup,—not indeed without becoming deteriorated,—but without being thereby rendered completely unfit for the purposes of life.

15. I took a lively, resolute dog, weighing twenty pounds (avoirdupois); and drew off all the blood which could be got from the carotid artery, by a pipe of large bore; introduced, as usual, with its extremity towards the heart. The quantity got away was thirteen ounces (avoirdupois); and the dog lay, to all appearance, dead;—respiration ceasing entirely, and the abdominal muscles becoming relaxed; insomuch that my assistants thought the animal was gone beyond recovery, and I feared the same myself. Asphyxia having been induced in this manner, I drew blood from the jugular vein of another dog, and injected it direct, by means of the impellor. The dog became resuscitated immediately;—breathing; making a noise expressive of anger and impatience, as he had done before the blood was abstracted; and struggling with some violence. Blood, of a bright arterial tint, flowed afresh from the carotid artery. When loosed from the table, the animal (though languid) was able to walk about briskly. Indeed, he appeared decidedly better after the operation than my dogs do in general; and after remaining languid for a day or two, he recovered completely. The general health was impaired less in this, than in the preceding experiment; the reason of which (I conceive) was, that the blood, flowing from the emittent dog more rapidly, was more promptly transmitted through the syringe; and was therefore less exposed, and less deteriorated by lying in the cup.

Quantity of Blood necessary.—I suppose there can be little doubt that, to save a patient, by transfusion, from death in consequence of hæmorrhage, it would not, by any means, be necessary to pour in a quantity of blood equal to that which had been lost. That quantity of blood only would be required, which would enable the heart and arteries to act; and which would support the patient long enough to allow the vessels to accommodate themselves to the diminished volume of the blood, and to gain time for a new supply from the digestive organs. What, however, is the smallest quantity of blood which would be sufficient to support life, I have not hitherto laboured much to ascertain; and the rather because it is exceedingly doubtful, whether conclusions of this kind can be transferred, with any useful degree of certainty, from the dog to the human subject.

16. I once, however, laid bare the femoral vessels in a dog; and drew off, from the artery, in the course of two minutes, about ten ounces of blood;—by means of a pipe, which was introduced in the usual manner, with its extremity towards the heart. After the blood had been abstracted in this manner, the pulse disappeared in the

opposite limb; and the blood ceased to flow from the tube, except in slow drops, at long intervals; so that, after the experience which I have had in these experiments, I should not hesitate to assert that, unless transfusion had been performed, the animal must have died. After the dog had been suffered to lie in this state for a few seconds, I threw in, by means of the syringe, about two ounces of blood; in place of the ten, which had been taken away. The animal was very decidedly resuscitated. Respiration returned; the pulse became obvious; and the blood, upon slackening a ligature which had been applied, came out from the tube inserted into the femoral artery, in a pretty full stream. It appears therefore, from this experiment,—not only that blood transfused by a syringe is capable of resuscitating an animal,—but further, that a small quantity only (in this experiment one-fifth of the blood which had been lost) is adequate to the purpose.*

From these experiments we may venture, I think, to presume, until we have proof to the contrary,—

First,—That in transfusion, *venous* blood may be successfully used; although, perhaps, *arterial* blood is preferable.

Secondly,—That an animal may be saved from the death of hæmorrhage, by the transfusion of a much smaller quantity of blood than that which it has lost.

Thirdly,—That the blood of one genus of animals cannot, with impunity, be substituted, in large quantities, for that of another genus; and, therefore, that if an operation be performed upon the human body, human blood only should be employed; until some other blood, equally congenial to the vessels, be found.

To these inferences may be added the following remarks:—It seems not improbable that animals of one genus possess the power of assimilating to their own the blood of another genus;—provided they live for days after it has been infused into their veins; for it is not easy to conceive how life can continue for a long time afterwards (as in Experiment 13), unless such assimilation be accomplished.

Although the blood of one genus of animals cannot be injected *largely* into the vessels of another genus, without danger to life, it is not unlikely that *small* injections of this kind may be safely tried. The importance of this principle, in the operation of nourishment by transfusion, is obvious.

Although an animal may be resuscitated by the transfusion of *venous* blood, I suspect that, of the two varieties, the *arterial* blood is the more efficacious; but into this inquiry I forbear to enter further at present.

It is clear, from these facts and inferences, that although the blood of the mammalia may be essentially the same in all the genera, the different kinds of blood differ very importantly from each other. It

* I think it worth inquiry, whether, when there is a deficiency of the blood, the action of the heart and arteries may be kept up for a while, so as to gain time, by the mere injection of water into the vessels;—in other words, whether blood diluted with water, will support the actions of life; and to what degree it may be diluted.

is an interesting, and perhaps a difficult inquiry, whether any genus of animals is furnished with blood of a kind congenial to the human veins. That of the horse is the most promising.

Blood may be received into a Cup, and passed through a Syringe, without being thereby rendered unfit for the purposes of Life.

In performing transfusion, there can (I conceive) be no doubt, that blood ought to be transmitted by the tubule only, when this method is practicable; but as we should probably meet with obstructions in operating in this way on the human body, I have been led to make experiments, with a view of ascertaining whether blood may not be absorbed and propelled by means of a syringe, without becoming unfit for the purposes of life; for transfusion may easily be performed in this manner.

17. Into the carotid artery of a very healthy dog, weighing about seventeen pounds (avoirdupois), I introduced a pipe, with its extremity towards the heart; and drew off eight or ten ounces of blood (as much as could be got away). The animal did not cease to respire altogether; though struggling, stretching of the limbs, and the outcry which sometimes precedes dissolution, were produced. The muscles became very relaxed. After the dog had lain in this languid state for a few minutes, I injected several ounces of blood (in quantities of half an ounce at a time);—suffering it to become a little inspissated in the cup of the syringe, before it was infused. By this injection the dog was revived a good deal; so that it was able to walk; but, for some hours afterwards, it remained dull and languid, and disposed to lie about. The day after the operation it seemed, as usual, to be a good deal better; but declined a little in the evening. The day following it refused its food; and seemed so languid and unwell, that I really feared it would die. In the course of a few hours more, however, it recovered from this attack; and, a few days afterwards, became completely well. Whether the ill-health, greater than ordinary in this case, was occasioned by the entrance of air together with the blood, by the inspissation of the blood, or by the transfusion of too small a quantity, I am unable to determine; but of the causes enumerated, I think the inspissation of the blood to be the most probable.

18. I drained a very fat brown dog,—with hanging ears, and (to appearance) of tender constitution,—of all the blood which could be got from the left carotid artery; by a pipe directed towards the heart. The animal struggled hard; but continued to respire occasionally. By means of the impelling syringe, I then threw into the external jugular vein, blood taken from the carotid artery of another dog; but found, on loosening the animal, that it was languid; and more disposed to lie quiet than usual. For four or five days after the operation, this dog continued in an ailing condition; was dull, and ate and drank but little; but, after this period, it began to gather strength very fast; and soon became completely well. The languor and ill-health (it deserves remark) were, in this as in the

former case, of longer duration, and more severe, than I have generally found them;—perhaps in consequence of the tenderness of the animal, and its very great corpulence; for I never before operated on so fat a dog. That the injecting apparatus was air-tight is certain. This experiment was made in the presence of Dr. Ritzius, of Stockholm.

19. I procured a dog of delicate habit, and not full grown; and drew off from the carotid artery all the blood which could be got out by means of the tubule. It amounted to four ounces and a half;—somewhat less than the full measure usually obtained from dogs of the same bulk as this animal. Complaint, struggling, gasping, syncope, and relaxation of the abdominal muscles were produced; and in this condition, approaching to complete asphyxia, the dog was suffered to lie for a few seconds. I then, by means of a syringe, transfused arterial blood taken from another dog, to the amount of four measured ounces;—the blood, owing to some impediments in the operation, lying for three or four seconds in the cup, before it was transfused. In a few seconds the dog recovered; and on opening the carotid artery, the blood was found to break out afresh;—not sluggishly (as in the experiment with human blood), but in an impetuous stream; and the dog, upon being untied, got up without difficulty; and leaped down, in a somewhat playful manner, from the table. Though languid for a few hours afterwards, in the course of a day or two it got completely well; and never, at any time after the operation, appeared to be in danger. This experiment was made with the very same syringe which I employed in those experiments, already related (7, 8, 9, 10, and 11), in which *human* blood was transfused instead of *canine*; and though the results of the two sets of experiments were so different, the operation was performed exactly in the same manner in both.

20. I drained a dog from the left carotid artery; in the same manner as in the preceding experiment;—abstracting, as usual, all the blood which could be got away. The dog continued to respire a little occasionally, but was evidently dying; and the circulation was stopped. After waiting a few seconds, I threw into the jugular vein, by means of the syringe, blood taken from the carotid artery of another dog. The recovery of the animal was sudden; and, on the whole, complete. It remained somewhat languid for three or four days afterwards; but ultimately got well, without the occurrence of a single alarming symptom. The syringe was air-tight.

21. I drained a young dog from the left carotid artery, in the usual manner; so that the circulation stopped completely, and the animal scarcely respired. Then, by means of the syringe, I injected into the left jugular vein, blood taken from the arteries of another dog; with the effect of completely resuscitating the animal; which, a day or two after the experiment, seemed to be unusually lively and well; and not a single bad symptom was observed afterwards. For the first three or four hours, the pulse intermitted a little; and

I suspect that this symptom is not uncommon. Mr. Coleby, of St. Thomas's Hospital, gave his assistance in this experiment.

From the preceding, corroborated by Experiments 14 and 15, it seems obvious enough, that although the blood of the dog should become deteriorated by passing through the syringe, it is not thereby rendered unfit for the purposes of resuscitation and life. To confirm this principle,—which, in my opinion, is of great practical importance,—I have been induced to institute another scheme of experiments; of which the following is a brief and faithful detail.

22. I introduced pipes into the carotid artery and jugular vein of a dog;—directing their extremities towards the heart; and then drew off, into the bottom of a conical wine-glass, six drachms (by measure) of blood;—absorbing it into a syringe, and afterwards injecting it into the jugular vein. This was done several times, till about six ounces of blood had been transmitted; after which I paused for a few minutes, and then performed the operation twice again in the same mode;—about six ounces of blood being transfused each time; so that, in all the three operations, about eighteen ounces of blood were passed through the syringe; or, to assume the least estimate, twelve or fourteen. During the operation, the action of the heart was disturbed; and the dog, though able to walk about, was languid and ill immediately after it was finished. A day or two afterwards, however, it became very lively and well; took its food largely; and did not appear to suffer a single bad symptom, at any subsequent period.

23. Into the jugular vein and the carotid artery of another dog, I again introduced pipes, with the extremity towards the heart; and transmitted blood, by means of a syringe and wine-glass, from the artery to the vein,—in the same manner as in the preceding experiment,—at four different times;—an interval of a few minutes being interposed between each of the four injections. The second and third injections were sparing (of a few drachms only); but the first was much more abundant; and the last injection was long-continued and very copious; insomuch that the blood was observed, at length, to issue from the artery of an unusually bright tint;—as though it were rendered doubly arterial. In no other experiments have I observed this phenomenon to be so conspicuously marked. Owing to the imperfection of the apparatus, about a drachm of air got into the veins. In consequence of some alarm and agitation, the pulse intermitted before transfusion began; but during the operation these intermissions became more frequent;—occurring every five or six beats;—the blood flowing from the carotid artery, sometimes impetuously and sometimes sluggishly. Towards the close of the experiment, these intermissions became less frequent; and, in a few minutes afterwards, ceased altogether. The entrance of the air did not occasion any unusual symptoms. The intermissions of the pulse, constituting the most remarkable symptom, must be partly attributed to alarm; for it was observed before the operation commenced; but it seems also to have arisen partly from the unequal and impetuous

stream in which the blood was thrown into the heart. It is obvious that it cannot be ascribed to the arterial nature of the blood which was injected into the veins, or the changes it suffered in passing the syringe; for although the arterial characters of the blood were heightened as the experiment proceeded, and some of the blood at least had passed the instrument more than once, these irregularities, instead of increasing, became less and less frequent.

24. By means of an instrument very similar to the "impellor," hereafter to be described, I transferred blood direct from the femoral *artery* to the *femoral* vein of a dog;—absorbing the blood from the cup of the instrument, and discharging it promptly into the vein without suffering any large accumulation and exposure in the cup. The operation was continued for ten minutes together; but the blood was not observed to issue, in the end of the experiment, of an arterial tint brighter than ordinary. The dog was of the lap-dog breed;—very tender, and similar in constitution to that which was used in Experiment 18. Under this operation the pulse sank down from one hundred and forty beats in the minute (its natural frequency), to fifty or sixty beats; which were large and distinct. The dog, in the same space, respired twelve times;—a slight catch or spasm following each respiration. When taken from the frame, the dog appeared to be languid and unwell; but it was perfectly sensible, wagged its tail when caressed; and walked, though not without debility, several yards before it lay down;—the pulse, thirty or forty minutes after the operation, not exceeding sixty beats in the minute. Notwithstanding these unfavourable symptoms, in the course of a few days the dog became completely well;—the recovery being more speedy than I had expected; whence it is evident that, although the blood had perhaps been impaired by transmission through the syringe, it was not rendered wholly unfit for the purposes of life. Subsequent experiments, however, render it exceedingly doubtful whether the bad symptoms produced, really arose from the mere exposure of the blood in the cup, and the transmission through the syringe; for in these experiments, it will be observed, the same symptoms did not occur. This dog was of tender habit.

25. I took a dog of the sandy-coloured pug-breed, apparently a hardy animal, and (putting pipes, as usual, into the femoral vessels) transmitted blood, by means of the instrument used in the preceding experiment, from the artery to the vein direct, for eight minutes together;—the blood flowing during the whole time; and, towards the end of the experiment, exhibiting the arterial characteristics in a higher degree than ordinary. After waiting about half an hour, I performed the transfusion for eight minutes longer; and then pausing another half-hour, I operated a third time also for eight minutes;—a few small concretions forming, on this occasion, in the cup. Here then, transfusion was carried on, altogether, for about twenty-four minutes;—the blood flowing freely during the whole time. Assuming therefore,—what had, indeed, been ascertained by the preceding experiment,—that in the course of two minutes about half-a-pint of

blood came away from the femoral artery, when kept open by the tube, twelve pounds of blood, at least, must have been transmitted through the instrument; and the same blood must, in consequence, have passed the syringe repeatedly; for the whole weight of the dog did not equal twelve pounds; and this conclusion is confirmed by the highly arterial character which the blood had acquired when the operation concluded. After remaining languid for a day or two, this dog recovered like the former. In the progress of this experiment, made with greater dexterity than the preceding, it is remarkable that very little derangement of the system occurred. The respiration was, indeed, a little hurried; but the dog remained lively and vigilant; and his pulse, irregular from fear before the operation was begun, became very regular as it proceeded; and beat, as is usual in dogs of this size, about one hundred and fifty times in the minute. The temperature underwent but little change. The regularity of the pulse, during this operation, is very remarkable; especially if we consider its great irregularity in the preceding experiments. It must be recollected, however, that the transfusion was performed, in this instance, on the femoral vessels which are remote from the heart; and not on those of the neck. The formation of concretions deserves notice; as it proves that the blood, in this animal, remains fit for its peculiar functions, although certain parts have begun to concrete.

26. I procured a dog, weighing fifteen pounds two ounces (avoirdupois); and, inserting pipes into the carotid artery and jugular vein, instead of the femoral vessels, I suffered the blood to flow;—taking care to return it into the jugular, by means of the impellor, as fast as it issued from the artery. A slight disposition to coagulation manifested itself; and some clots formed in the emittent tube;—not, however, in sufficient quantity to close it. The syringe was airtight; but one bubble of air, accidentally absorbed from the cup, was injected into the vein. For twenty-five minutes, the operation was continued unceasingly; during all which time the animal did not appear to be in any way remarkably disturbed; and immediately afterwards the pulse (naturally one hundred and forty) beat one hundred and sixty times in the minute; and the respirations were twenty-six. No intermissions of the pulse were observed; and, throughout the operation,—the instrument playing well,—the blood flowed in a moderate and equable stream. From a subsequent observation I ascertained, that when the syringe was worked with the same degree of rapidity as it had been during the experiment, a full half-pint, that is eight ounces (avoirdupois), was transmitted in the course of a minute. It follows, therefore, that in the course of twenty-five minutes, during which the operation was continued, at least twelve pounds and a half of blood (probably more) must have passed through the instrument; though the whole weight of the dog scarcely exceeded fifteen pounds. The subject of this experiment was a large puppy of delicate habit, with hanging ears, and with a taste of the spaniel-blood. The whole length of tubes and surfaces

over which the blood passed, in its way from the artery to the vein was (as I ascertained by measurement) at least a foot and a half. Three hours after the operation, the dog seemed disposed to lie about, and was languid; but could walk very well; and there were one hundred and sixty beats of the pulse, and thirty respirations, in the minute. Next day the animal ailed but little; the day afterwards it was much better, and took plenty of food; and the day following,—that is the fourth (reckoning the day of the experiment as the first),—the general health appeared to be completely restored. This experiment succeeded perfectly well in all its parts; and seems in conjunction with the former, to prove clearly that blood may be transmitted through the syringe, and that repeatedly,—not, indeed, without injury,—but without thereby becoming unfitted for the purposes of life. The experiment is the more satisfactory, because the dog was small and tender.

We must not, however, suppose that experiments of this kind are wholly unaccompanied with danger; or that success invariably attends them, even when performed upon the dog.

27. Introducing pipes, in the usual manner, into the carotid artery and external jugular vein of a dog, I transmitted the blood through the syringe for two or three minutes together; after which the flow from the artery became sparing; and I suspended the operation for two or three minutes, in order to give the animal an opportunity of recovering. When the operation was renewed, the tubule accidentally slipped from the carotid artery; and two or three ounces of blood were lost, before the artery could be secured. At length, however, the pipes were replaced, and the operation proceeded;—the blood flowing from the arterial tubule slowly; either in consequence of partial closure, or (as I strongly suspected) from the want of a full action of the ventricle; and the blood in the cup assumed a slightly gelatinous consistency. On this occasion the operation was continued, as before, for two or three minutes; at the end of which, the dog was seized with a few spasmodic contractions of the dorsal muscles; and died without a further struggle. The cause of death, in this experiment, is not obvious. The transmission of blood through the syringe; the partial coagulation of it; the disturbance of the circulation, by the injection of the blood along the jugular vein into the heart; the loss of two or three ounces of blood when the tubule was pulled out of the artery; the impression of fear under which the dog laboured;—any of these causes may be supposed to have occasioned it. From viewing this experiment, however, in connexion with a previous one (24), I am inclined to think, that the partial coagulation of the blood, during its slow transmission, in the latter part of the operation,—when the blood flowed sluggishly from the carotid artery,—was the most probable cause of death. The quantity lost was not sufficient to kill the animal; unless there was, in this animal, some peculiarity of constitution, not usually found in dogs; and the result of former experiments shews, that it was not the ordinary deterioration of the blood by the syringe that

destroyed it; and that it did not die from fear, or from a disturbance of the current of the blood, occasioned by the operation. In Experiment 24,—in which the blood during its transmission through the syringe became, as in this experiment, a little inspissated,—very dangerous symptoms were produced; though the animal, surviving the first shock of the experiment, recovered rapidly afterwards.

From the preceding facts we may, I think, infer:—

First,—That blood, although repeatedly passed through the syringe, is still capable of supporting the life and health of the body. With one exception, all the dogs on which these operations were performed, eleven in number, recovered; and some of them got completely well within two or three days afterwards.

Secondly,—That although blood which has passed the syringe retains its fitness for the animal purposes, it probably becomes deteriorated by this operation; especially if it lie for a few seconds out of the vessels, and be slightly inspissated in consequence. In Experiments 19, 20, 21, 22, 25, and 26, the dogs suffered but little; but in Experiments 20, 21, 26, and 27, dangerous symptoms were produced. How long the blood may lie out of the vessels, without becoming wholly unfit for the vital purposes, has not been ascertained; though the subject is well worth investigation.

Thirdly,—That the deteriorated blood, after it has been thrown into the vessels, undergoes a sanative* process; by which it again becomes thoroughly congenial to the functions of the animal; for it will be observed, that most of the dogs, though languid for the two or three days succeeding the operation, became very lively and well a few days afterwards.

Fourthly,—That dogs of a tender constitution probably suffer more from operations of this kind, than those which are more hardy; —other circumstances being the same. This plain, but important principle, must be borne in mind, when we think of transferring these conclusions from the dog to the human subject. The preceding principles certainly hold true in the pathology of the dog; but whether they hold true in *human* pathology also, must be ascertained by future observations. The affirmative is in a high degree probable.

From experiments like these, I convinced myself that (in the dog at least) blood may be transfused by the syringe, without becoming unfit for the purposes of life; nor was it therefore, I conceive, with enthusiasm or rashness, that I first came to operate upon the human body; but with a mind rationally prepared to the best of my power, by previous reflection and experiment. Is our common nature, in general, a good judge of enthusiasm?

Transfusion in the Human Subject.

Arterial Blood.—In general, there must (I am aware) be considerable difficulty in obtaining arterial blood from the human body,

* From *sano*, "to cure."

for the purposes of transfusion; but persons may be induced occasionally,—sometimes from motives of affection, and sometimes for hire,—to submit to the opening of an artery.

If blood is to be transferred from the arteries of one man into the veins of another, it will be necessary in the first place to lay bare a vein, on the fore-arm of the patient, to the extent of an inch or more; and then to bind a ligature between the hand and the intended opening;—in order to prevent the escape of the blood when the circulation is renewed. After this, an opening into the vein should be made with a lancet, in a longitudinal direction;—that is in the course of the vessel; so as to allow the ready entrance of the small venous tube; which should be slipped into the vessel (directed towards the heart), and retained there by pressure of the finger*. The patient who is to receive the blood being prepared in this manner, the operator should next prepare the person who is to supply it. Of the different arteries which may be fixed on, as adapted to an operation of this sort, perhaps the radial†, ulnar‡, and anterior tibial§, are the principal; and of these three I think the radial is decidedly to be preferred;—from its convenience in other particulars, as well as on account of its easy access. The artery being chosen, a tourniquet should be put on the limb, between the intended opening and the heart;—in readiness to be constricted, should emergency require; and then the artery should be laid bare with a scalpel‖, to the extent of an inch or two;—extensively enough to secure the aperture against the obstructions arising from a deficiency of room. This done, the artery should be detached a little,—say to the extent of half an inch; and a ligature should be put on the vessel below;—close against the part where it remains connected with the cellular web and the vasa vasorum. About an inch from this ligature, there should be applied a pair of spring-forceps; which, closing of themselves, may press the sides of the artery together, so as to close it completely. The artery should then be laid open, with a lancet, to the extent of one-eighth of an inch;—so as to allow the ready entrance of a small tube. This opening should be made in the *course* of the vessel; for the artery, I find, when divided *across*, contracts more in its calibre; and, if the incision be a little too deep, is in danger of breaking completely through. A small tubule, about the size of a crow-quill,—in connexion with a flexible tube, about as large as a goose-quill,—should then be introduced into the

* Should the small quantity of air lodging in this tubule be found to produce injurious effects, the tubule may be inserted first into the flexible tube; and then, after the whole tubular apparatus has been filled with blood (as hereafter explained), the tubule may be slid into the vein. But unless the operator be dexterous and prompt, the blood will become deteriorated, and even clotted, by lying in the inanimate apparatus.

† From *radius*, "the spoke of a wheel";—alluding to the shape of the bone so called.

‡ From ωλενη, *a cubit*,—alluding to the length of the bone, called "the ulna."

§ From *tibia*, "the shin-bone".

‖ From *scalpo*, "to scratch", or "to carve".

artery (with its extremity towards the heart), and should be secured there by means of a ligature. The ridge, or shoulder, near its orifice, will give it a bearing-line, and prevent its slipping out. The operation being brought to this point, the small arterial forceps are opened, by pressing the handles together;—so as to give passage to the blood, and expel the air from the tubes; after which, the forceps are suffered again to close; and the tubular apparatus being full of blood, the flexible tube is firmly connected with the tubule in the vein. With a moderate share of dexterity, the junction may be easily accomplished in a few seconds; and before the human blood, which coagulates slowly, has time to become clotted; provided the venous tubule be made to unite with the flexible tube in the way of a plug. By pressing the tubule home into the flexible tube, and giving it at the same time a semi-rotatory movement, the junction may be made sure. The apparatus being thus prepared, the blood should be admitted to it by opening the spring forceps; and, by means of the same instrument, the rapidity of the flow, as well as the moment of its cessation, may be regulated with great nicety. After the operation has been concluded, the wounds and the injured vessels must, of course, be managed on the general principles of surgery; and it may not be amiss to remark, that if, with a view of facilitating the operation, the artery of the person who emits the blood has been detached a little from its bed, when ligatures are afterwards applied, those ligatures ought to be applied close to that part where the vessel still remains in connexion with the cellular web;—in order that the adhesion of the sides of the artery may not be interrupted, for want of connexion with the vasa vasorum.

The instruments required for this operation should, I think, be shut up in the same case with the impellor hereafter described. Those which I would recommend are the following:—a tourniquet; a scalpel; a lancet; an eyed probe*; a blunted needle; ligatures; a pair of spring-forceps; venous tubules, a smaller and a larger; and two flexible tubes, each about six inches long; one connected with a smaller, and one with a larger arterial tubule (in order to meet the varying calibre of the vessels); and both capable of uniting, in the way of a plug, with either of the venous tubules.

Transfusion of Venous Blood.—When, in consequence of the want of *arterial* blood, it becomes necessary to transfuse *venous*, a different method of operating must be adopted; and, in the present state of our knowledge, I would recommend in such cases, the employment of the impellor.

The Impellor.—In operating with this instrument, a chair is to be procured; and, by means of a gimlet, an aperture is to be worked into the outside of the back of it, at a convenient elevation; and into this aperture the vice of the apparatus is to be very firmly screwed. By means of the solid stem which projects from its apex, the cup is to be fixed erect in the gripe of the vice; and the large outer cup, containing the impelling part of the instrument, is to be filled with

* From *probo*, "to try";—because employed in searching wounds.

tepid water (about the temperature of ninety-six degrees), if this can be procured; so that the whole of this part of the apparatus, including the syringe, may be covered in completely by the water; in such a manner that the entrance of *air* into the instrument by leakage, whether of the joints or of the syringe, may be effectually precluded. The apparatus being thus far prepared, the inner cup is to be put in;—care being taken to fit the tube which projects below from the apex of this inner cup, to the corresponding tube which springs up from the cylinder with which the syringe is connected, and which lies in the bottom of the larger cup; because, if the exact apposition of one tube to the other be neglected, a difficulty may needlessly arise in putting the inner cup into its place;—in consequence of the two tubes interfering, in an obstructive manner, with each other. Half a pint, or a pint of water, is then to be poured into the inner cup, and pumped briskly through the instrument; so that the air may be expelled thoroughly;—the water taking its place towards the end of the operation, the extremity of the flexible tube which springs from the instrument, is to be bent down into water contained in a tumbler;—the pumping being continued; and this with a view of ascertaining, by the appearance of bubbles, whether there be any fissure at which air enters. The exact temperature of the instrument is not of importance; but the water should, in preference, be milk-warm. The apparatus being thus prepared, the operator (with his lancet) may lay bare, as before, a vein in the fore-arm of the patient, to the extent of an inch at least;—taking care to cut down completely through the cellular web; and then (by means of the same instrument) he may, as in the former operation, make a longitudinal incision, an eighth of an inch in length; and large enough to allow of the ready entrance of the venous tubule; which is to be introduced to the extent of two or three lines, thoroughly but with the utmost gentleness, and with its extremity towards the heart. A ligature should not be used. The tubule should be retained in its place by the finger of the assistant who holds the arm. The orifice of the tubule should not have a cutting edge.

After the tubule has been introduced, the chair should be brought close to the edge of the bed; an ounce or two of water should be poured into the cup, if empty; the syringe should be thrown into action (so as to fill with water the flexible tube, which may have drained itself empty); and then the venous tubule, previously inserted into the vein, should (by means of pressure, combined with a slight semi-rotatory movement) be plugged pretty firmly into the flexible tube;—in order to prevent the juncture from bursting open, when the blood is impelled. After the apparatus has been fitted together in this manner, the person who is to supply the blood takes his seat on the chair; his arm is opened by the lancet, as in ordinary venesection; any superfluous water lying in the cup is removed, by a piece of sponge; and the blood, instead of being received into a basin (in the usual manner), is directed into the cup of the trans-

fusing-instrument; and, by the play of the syringe, is impelled direct into the vein of the patient; without being suffered, at any time, to accumulate largely in the apex of the cup. As the object of the syringe is merely to give impulse, it ought not to be worked by long strokes, but by short and sharp movements;—care being taken that the plug is every time pushed home; so as to bear down upon the nozzle-plate, and prevent any accumulation in the barrel of the instrument. If the syringe be worked in this manner, the blood will be little more exposed when transmitted through the impellor, than it is when passing direct from artery to vein by means of a tube; since, in order that the impulse may be given, it is enough that the blood be admitted but a little way into the barrel of the syringe;—those who are acquainted with the principles of hydrostatics* being aware, that the entrance of a few minims† would be amply sufficient for the purpose.

For supplying blood, men are preferable to women; as they bleed more freely, and are less liable to faint. If blood can be procured from the arms of two persons at once, it would sometimes perhaps be desirable. Before the operation is begun, spirit sufficient to exhilarate and rouse the circulation, may be advantageously given to those who are to furnish the blood. If the blood, flowing slowly from the arm, show a disposition to clot in the cup; or if the supply of blood fail,—the person who furnishes should remove his arm, and a little water, poured into the cup of the instrument, may be pumped through the syringe;—so as to displace the blood. The apparatus being thus cleared of blood, will be secured against being clogged; and kept in a condition to proceed with the operation. If a large bubble of air be absorbed into the syringe, the operation should be suspended; the instrument should be separated from the venous tubule; and the blood and air should be cleared out of the apparatus, by immediately pumping through it a few ounces of water; which should be at hand, in a small jug furnished with a spout. It would be easy to contrive an instrument which would measure the quantity of the blood injected; but I think it better to avoid complexities of this kind. Of the quantity of blood thrown in, an opinion may be formed from the feelings of the person who emits it; or by the size of the stream of blood which flows from the arm, and the continuance of the flow; or by putting water into the cup after the operation, and working the instrument with the same measured movement, and with the same degree of rapidity, and for the same time, as during the operation. The measure of the water passed through the instrument, in this manner, will give nearly the measure of the blood transfused. The time during which the operation is continued, should be ascertained by the watch.

It is of great importance, in using this instrument, that the outer cup should be filled thoroughly;—so as to cover in the head or upper end of the barrel of the syringe, to the depth of an inch, or

* From *ὑδωρ, water*; and *στατικη, the art of weighing.*

† From *minimus*, "least."

an inch and a half at least; for it is this complete submersion of the impelling portion of the apparatus, with all its joints and vents, which is the only security against the entrance of air.

Till it be ascertained (and the affirmative is probable) that human blood may lie out of the vessels, for one or two minutes, without material injury, we ought, in operating, to prevent the blood from accumulating in the cup of the instrument. Should it, however, be found hereafter, that the blood may be suffered to gather in the cup, without thereby becoming materially unfitted for its offices in the vessels, then, if this instrument is used at all, it may be proper, during the operation, to suffer an ounce or more of blood to accumulate; in order with more certainty to prevent the cup from becoming empty, and thus to preclude the absorption of air.

The minute dexterity required in managing this instrument, may be easily acquired by any person who will accustom himself to pump blood, or even water, through it; and those who frequently perform the operation of venesection, must have many opportunities of doing this. When the operation is completed, a pint of water ought to be immediately worked through the apparatus, in order to clear out the blood; and prevent it from lying in the tubes and becoming clotted there; and, as soon as occasion serves, the whole should be unscrewed and cleaned out more completely. If the wire-springs which raise the valves are injured, others may be very easily made, by giving a piece of wire a spiral form;—like that of the spring which has been destroyed. If the leather valves are spoiled, others may be made of a piece of soft alum-leather. Both the wire and the leather should be stored in the case for this purpose. The owner of the impellor ought, by all means, to make himself master of its structure; and to acquire the little skill which may enable him to set it to rights for himself. Laundy (of St. Thomas's Street, Southwark) now manufactures these instruments.

Transfusion by the Syringe.—Should it be found hereafter,—by numerous, pointed, and therefore decisive experiments and observations,—that human blood may lie out of the vessels in the cup for several seconds, without becoming thereby unfit for the vital purposes, transfusion may be accomplished by the syringe alone; and this method of operating, if feasible, may be adopted in preference to the preceding, on account of its greater simplicity. In this method of operating, we require a good syringe, made of brass and tinned internally, capable of containing two or three ounces of blood, and furnished with a pipe for the vein (like that used in the former instrument), about two inches long, and made to fit (by plugging, and a semi-rotatory movement) into the nozzle of the syringe. The operation is performed in the following manner:—

Mode of Operating.—One or two bystanders (males are preferable to females) being in readiness to supply the requisite quantity of blood, the arm of the patient should be prepared as follows.—Taking a scalpel, at one cut, if tolerably dexterous, lay bare the bleeding-vein; which opens on the eye under the knife;—the patient being so

far from suffering in this part of the operation, that frequently she is not aware that it has been done. The vessel manifesting itself, take a short curved probe; and slide it beneath the vein, at the lower extremity of the incision. Then, with a well-sharpened lancet, lay open the vein to the extent of about one-eighth of an inch; and cautiously intromit, at this orifice, the tubule of the syringe;—so as to be sure that, in operating, the entrance will be easy. At this time, perhaps, a little blood oozes out. This preparation made, bind up the arm of the person who is to yield the supply of blood; lay open the vein in the usual manner, but making the orifice rather free; gather the blood in a conical tumbler, of large diameter; and into the syringe, previously washed and chilled by the transmission of water milk-warm, the blood is to be absorbed (from the point of the tumbler, through the long tubule); in such a manner that, although the whole of the blood is not to be taken up (lest the air should be drawn in), not more than a dessert-spoonful is to be allowed to accumulate at once in the bottom of the vessel. Indeed, it is not in the glass, but in the barrel of the syringe, that the blood should collect. This tubule should be long enough to throw the barrel of the syringe above and beyond the brim of the tumbler; so that it may be completely out of the way. That it may enter the vein more easily, the end of the tubule should be bevelled, like a teapot-spout.

Two ounces of blood from the arm being absorbed in this manner, hold the syringe vertically, with the tubule above and the handle of the piston below, and slowly urge the piston onward; till, together with all the air, about a dessert-spoonful of blood has been expelled. Then closing the nozzle by the apposition of the tip of the finger,—lest, the piston descending by its own gravity, fresh air should be absorbed,—give the instrument the horizontal direction, and proceed to insinuate the blood into the vein. On approaching the arm of the patient, the orifice of the vein may perhaps be found obscured by the blood. Touch the vein with a sponge, and the aperture will be clearly seen. At this time an assistant may gently press the vein, where it lies across the probe; which will intercept a further exudation; for the circulation is so low that it is easily arrested.

These preliminaries premised,—without trepidation,—with that calm and measured movement of mind and body, which is the result, not of mere animal spirits, but of that confidence which arises from a mind well prepared,—proceed to deliver the blood;—being careful not to interpose unnecessary delay. For this purpose, the tubule being insinuated into the vein, to the extent of half an inch (towards the heart), the next step is to infuse the blood into the vessel;—a very nice and critical point of the operation. What the heart in women or men might bear in a state of vigour, I know not; but reduced as it is in these cases,—feeble as the limb which refuses to sustain them,—it cannot support a sudden influx of the blood. To infuse too slowly is an error no doubt; for, lying in the syringe, the blood is becoming every moment more and more deteriorated. But to inject too rapidly, is a still more fatal error. Gorge the cardiac cavi-

ties; and the patient may perish, as suddenly as if shot through the heart. The blood should be infused with moderate velocity, and most cautiously, when the collapse is great. In pressing forward the piston, from moment to moment, look well to the countenance; and if all is well, then proceed more boldly; but if the lip quiver, or the eye-lid flicker, or if there be restlessness or vomiting,—though these are not *fatal* symptoms,—yet it is better to suspend the operation until they subside; for, in the present state of our information, there is good cause for alarm; and let me add, that, after waiting in this manner, it is not proper to return to the injection, until a fresh supply of blood has been procured. If the first two ounces load, it is better to wait a few minutes (say six or eight), before more is injected; but if these first two ounces are well received by the system, proceed immediately afterwards to inject other two;—waiting for eight or ten minutes, till the whole has duly circulated over the body; and (in some measure, at least) has renewed its vigour. Under the extremes of weakness, this caution becomes *especially* necessary. Sixteen ounces of blood, for the female system, is a large aggregate quantity; eight or ten are more sparing; four or five may, in delicate cases, turn the scale in our favour. If our object is simply to save life, the smaller quantities must be injected; if to restore vigour, the larger. Whether we transfuse after flooding or not, re-action is apt to come on next day.

If the respiration be stopped, it is (I fear) in vain to transfuse; if it be at it last gasp, the hope is small;—a sudden influx of two ounces of blood would, I think, destroy in these cases. Would the heart bear, at proper intervals, doses of half an ounce? If the respiration be steady, we are almost certain of success.

The best syringes I know of are those of Laundy, Weiss, Reid, and Scott. Laundy's are made according to my own whim;—of course I think them preferable. Transfusion from artery to vein, perhaps even from vein to vein, might be accomplished by a simple tubule; were it possible, however, to obtain readily those who would supply blood in this mode, arterial transfusion would require especial caution; for, if the heart were very feeble, an impetuous influx would destroy.

Blood may be transmitted by means of the gravitator. Water poured into the cup, runs down the flexible vertical tube, which hangs below;—expelling the air; and being itself retained in the canal, by turning the tap, when not more than a tea-spoonful remains in the point of the conical cup. The air being expelled in this manner, the tubule (at the end of the vertical tube) is inserted into the vein, and the arm which supplies the blood is held over the cup;—as is usual in ordinary bleeding. A fall of two or three inches, perhaps less, is sufficient to insure the gravitation of blood into the vein, which is so empty, that it makes no resistance. The blood runs out of the cup into the body, as through any other vessel with leakage. The cup must not be suffered to run empty; or air will be carried in. The rapidity of the flow may be regulated by a tap

in the throat of the tubule. I have contrived this instrument, in order that we may have it in our power to pass the blood directly, without delay, from one body to another. To learn the ready use of the gravitator, you should, when bleeding patients, transmit their blood through the instrument; as if you were operating. In this world of imposition, I suppose we may be forgiven if, in avoiding objections, we pretend that this is done to prepare the blood for examination. "Mihi ignosco"* may, perhaps, commend the deception; and, it may be, not without reason! But let us now consider some of the objections against transfusion.

Dangers attendant on Transfusion.

Inflammation of the Vein.—It may be objected to transfusion in every shape, that the tube may excite inflammation of the vein. In weighing this and similar objections, however, it should not be forgotten that, in the present state of our knowledge, it is proposed to perform the operation only in the most desperate cases;—when it seems to be the sole remaining means of saving the patient's life. There is much good sense in the familiar maxim of Celsus†; and in the present case it is peculiarly applicable; for, surely, it is better to incur the uncertain risk of venous inflammation, than to leave the patient to his fate. Beside, the pipe should not be secured in the vein by a ligature, but merely by the pressure of the finger; or the blood may be injected by an artery. In the latter case the risk of venous inflammation will be completely obviated; and even in the former it is probably small.

Coagulation of the Blood.—It will, perhaps, be further objected to transfusion, that the operation is likely to be obstructed by the coagulation of the blood; but this objection is unfounded. In the preceding experiments the operation, though performed on the blood of the dog, was not impeded by coagulation; yet the *canine* blood coagulates in one-sixth of time which is necessary for the coagulation of *human* blood;—as the following experiments prove. It is therefore clear that, in transfusing human blood, coagulation can furnish no insuperable impediment.

28. I drew off, into a conical wine-glass, about three drachms of blood from the femoral artery of a dog. It began to coagulate in about ten seconds; and was completely solid in about eighty. In a second experiment which I made, the blood began to coagulate in about ten seconds (as before); and was completely solid in about sixty.

29. A patient being seized with an arterial epistaxis, I collected some of the blood; which was of a bright florid tint. A full minute elapsed before even minute coagula made their appearance; and the blood did not become wholly solid till four or five.

30. A few drachms of venous blood were taken from the arm of a girl liable to attacks of epilepsy. It was full sixty seconds before even minute coagula began to make their appearance about the sides of

* "I forgive my own faults." † Anceps remedium melius quàm nullum.

the vessel, and six or seven minutes elapsed before a general coagulation of it took place.

31. I filled a syringe with blood taken from the same patient as the preceding. When retained there for one minute only, it was found, on expulsion, to be thoroughly fluid; and it was but slightly inspissated after remaining there for two minutes.

Entrance of Air into the Vessels.—That air may enter in conjunction with the blood, may also be objected to this operation; and I have been induced, therefore, to make the following experiments and observations;—with the view of ascertaining how far this objection is just.

32. Into the femoral vein of a dog (scarcely larger in the body than a full-sized cat) I threw about five drachms of atmospherical air (in the direction of the heart), in quantities of about a drachm at a time. The whole operation occupied about five minutes; and the quantity of the air was measured by means of the syringe. In consequence of this operation, dyspnœa was produced; together with irregular action of the heart; the dyspnœa, however, not coming on as soon as the air might be supposed to have entered the heart, but a minute or two afterwards. During the operation, the dog sighed deeply; the pulse became unequal; and the muscular system tremulous. As soon, however, as the animal was liberated it leaped from the table, licked the wound, and seemed pleased with caresses. On the following day it was languid and restless, and the muscular tremor continued; the pulse intermitted occasionally, and the dog vomited once. In other respects it appeared tolerably well took food greedily; and revived completely by the third day. This dog was very delicate; and (the small size of the animal considered) the quantity of the air injected was large; yet the symptoms may be imputed (in part, at least) to the alarm which the operation excited.

33. About three drachms of air were blown from my lungs, into the femoral vein of the dog, which had been made the subject of the preceding experiment. The greater part of the air was introduced at once; and in a direction towards the heart. The respiration, circulation, and general health of the animal, seemed to be but little deranged by the experiment, even at the time; and the dog suffered so little subsequent inconvenience, that, a day or two afterwards, it was led into the country; nor did any urgent symptoms ultimately occur.

34. Mr. Coleby, well known at St. Thomas's Hospital, procured a large dog; laid bare the femoral vessels; introduced pipes, with their extremities toward the heart; and, by means of the "impellor," transmitted blood from artery to vein, for several minutes together without ceasing. The syringe used in this operation, being of faulty construction, was not air-tight; and, in consequence, a considerable quantity of air was, by little and little, worked into the vessels along with the blood. Before the instrument was put into action, too, the air was not expelled by charging it with water; so that when the

syringe began to play, all the air contained in the tubes, the cylinder, and the barrel of the syringe below the plug, was injected into the animal's veins. In consequence of this operation, the dog suffered a great deal of distress, with frequent and irregular pulse, for six or seven days afterwards. At the end of this time it was killed and examined; when (as I am informed) a considerable quantity of air was found in the cavities of the heart;—mixed up with the blood.

These facts considered, then, it seems probable that the entrance of a few drachms of air into the vessels, would be attended with considerable distress and even danger; but it must be recollected, that,—if the operation be carefully performed, by a competent person, with a proper instrument,—there can be no risk of air entering the vessels in large quantities; and the *probability* is, that only a bubble or two of air would occasion little if any inconvenience. It is not objected to the capital operations in surgery, that an unskilful operator may lay open an artery; or that this or other accidents may happen, in a moment of negligence, even to the most dexterous.

In making these experiments on the dog, I did not warm the instrument, unless the weather was unusually cold; and though, in the present state of my information, I have recommended *tepid* water in operating on the human subject, I have a suspicion that heat tends to exhaust the irritability, and destroy what may be called the life of the blood.

Introduction of other Fluids.—Whether *large* quantities of water may or may not be safely injected into the human vessels, is (I think) uncertain; but there is reason to believe, at present, that *small* quantities will occasion no inconvenience; and the injection of small portions *only* is necessary, in performing this operation. Both water, and wine-and-water, were injected into my dogs, without fatal, or even serious consequences; but into this question I forbear to enter.

Superiority of the Syringe.—In pointing to the advantages which belong to transfusion by the syringe, in preference to transfusion by the tubule, I shall not enter into details. I refrain, therefore, from enlarging on the facility of the operation, or its uses in physiological research; and shall content myself with touching on those advantages which appear to be the most important. This operation may be performed with promptitude; for human blood is always at hand; and the instrument may, in many cases, be procured in readiness; for the danger of uterine bleedings, at least, may frequently be foreseen. Promptitude of operating is an advantage of capital importance; for there is reason to surmise, from some of the preceding experiments (1, 2, 3, 4, and 5), that apparent death from bleeding soon becomes irremediable. Another advantage arising out of this method of operating, is the abundance in which the blood may be procured. A dog, below the middle size,—and this variety principally is found about our houses,—generally dies after it has given off from ten to twelve ounces of blood; but much larger quantities of human blood might be obtained, on an emergency, from the friends of the patient, or for hire.

But of all the advantages derived from transfusion by the syringe,

by far the most important is the opportunity it offers of throwin human blood into human veins. There seems reason for pre suming, from facts already related, that the blood of one class animals cannot be substituted in large quantities for that of anothe with impunity; and hence it becomes of the utmost importance th we should be able to supply the human vessels with human blood;– an excellence, which transfusion by the syringe eminently secures.

35. I was called, by two gentlemen in my neigbourhood, to a ca in which a woman was dying; in consequence (as was supposed) a loss of blood, which occurred during the birth of the placenta. I entered the room, thirty or forty minutes after the messenger ha been despatched from the house to request my attendance, the patie ceased to respire; and *five or six* minutes afterwards, about sixte ounces of blood,—procured with ease, by venesection, from two me (relatives of the patient),—were thrown, by means of a syringe, in the bleeding-vein of the arm. No signs of resuscitation were ob served. The vein was laid bare with a lancet; the blood was infuse without difficulty; and the operation was performed by the syring simply;—in the mode already recommended.

36. A young man, of somewhat muscular make,—a patient Guy's Hospital,—lost a large quantity of blood, from the burstin of an artery; and appeared afterwards, for two or three hours to gether, to be evidently sinking from inanition. This patient I w requested to see; but, in consequence of my being from home (o professional business), time was lost; and I could not perform th operation till the man had ceased to respire for three or four minute Assisted, however, by Mr. Key,—a surgeon of talent and enterpris —I injected sixteen ounces of blood, by means of "the impellor into the bleeding-vein, exposed by the lancet; but, with the excep tion of one single sigh, no signs of returning life were perceptibl An esteemed and intelligent pupil of mine, Mr. Lord, furnished th blood; and there was no difficulty whatever in obtaining it, b venesection, as fast as the operation required.

In the first of these cases, it will be observed, the syringe w used; in the second, "the impellor"; and they prove that, in eith mode, the operation is of easy performance. Both, though ind cisive, rendered it doubtful whether a man can be resuscitated b an injection into the veins, performed three or four minutes aft the last respiration. Artificial breathing was not tried.

37. By a friend of mine, on the other side of the water, I w called to a patient, evidently sinking from a hæmorrhage, which ha made its attack during the birth of the placenta; though two three hours elapsed before death actually occurred. In this cas three or four ounces of blood were injected by the syringe, befo the respiration ceased; but without producing any obvious effect, the quantity was small; and as a full supply could not be obtaine from the lady who offered to furnish the blood, the operation w necessarily abandoned. Women, it has been observed already, a not so capable of supplying a sufficient quantity of blood as men ar

38. A lady, bled largely for puerperal fever, sank into that state of collapse, which (as men of observation know) is the precursor of certain dissolution. At the request of friends,—who were anxious that a remedy, though it promised little, should have a trial,—about six ounces of blood (taken from her father by venesection) were infused into the bleeding-vein, by means of the syringe. Mr. Williams, of St. Thomas's-Street, laid the vein bare with a lancet; and the tubular nozzle of the syringe was repeatedly introduced into the vein, without any difficulty. No decisive effect of any kind was produced by the operation; and the lady died of the fever, without suffering any extraordinary symptoms.

39. A poor fellow in Guy's Hospital (named Brazier), between thirty and forty years of age, lay at the point of death, in consequence of the extenuation produced by obstinate vomiting; arising, as afterwards appeared, from scirrhosity of the pylorus. At the request of Dr. Cholmley, and the expressed wish of the patient, the late Mr. Henry Cline and myself injected, by means of the syringe, twelve or thirteen ounces of blood into the vein usually laid open in venesection; when no ill symptoms, fairly referrible to the operation, were produced. During the first thirty hours afterwards, there was an increase of the strength, and the man appeared mending; but, at the end of that period, he began again to sink into a state of collapse, similar to that which had preceded the operation; and died about fifty-six hours after the injection. Not a single bad symptom occurred when the blood was introduced. Could the operation have been repeated, it is not improbable that his life would have been prolonged.*

40. A young man,—of short stature, but rather broad and muscular,—came into Guy's Hospital, under an attack of hydrophobia†, when verging towards its close. By the medical officers of the institution, I was requested, in this case, to lend my assistance in performing the operation of Majendie; which consists in the abstraction of some twenty or thirty ounces of blood, and the injection of two or three half-pints of tepid water into the veins;—from one to several hours after the bleeding. I directed that thirty ounces of blood should be drawn; but I understand (from the very respectable surgeon who operated) that,—in consequence of the restlessness of the patient, and the resulting difficulty in securing the orifice of the vein, after the prescribed measure had been abstracted,—a further quantity (of uncertain amount) was lost, during the pause (enjoined by Majendie) between the bleeding and the injection of the water. Thirty or forty minutes after the bleeding, preparation was made for the injection of the water. A surgeon of the hospital prepared the vein, and introduced the tubule; but it appeared at this time so evident that the poor fellow was dying, that those whose office it was to decide, deemed it most prudent that the water should not be injected; and in this opinion I thoroughly concurred. By direction

* See a fuller account of this case, in the "Medico-Chirurgical Transactions"; volume x.

† From *υδωρ*, *water*; and *φοβεω*, "*to fear*."

of the assistant-physician to the hospital, a few drachms of spirit-and water were infused, with the hope of raising the circulation; but no decisive effect was produced; and death ensued, with the usual distressing symptoms, about fifty or sixty minutes after the bleeding. The essential part of Majendie's operation,—the injection of water —was not performed here. Death was, I think, accelerated by the largeness of the bleeding; but this may be disputed. Respecting the operation of Majendie, I think it better to give no opinion either favourable or repugnant, till further information.

Whether it be possible to save a patient, when sinking from hæmorrhage, by injecting blood before respiration is stopped, these cases do not enable us to judge; but we may, I think, infer from them,—

First,—That transfusion,—especially that variety of it in which the syringe alone is employed (page 236),—may be performed with facility.

Secondly,—That in the present state of our knowledge, the operation is not attended with any obviously dangerous symptom;—provided the blood be promptly transmitted, and the injection of air be precluded.

Thirdly,—That, till we have proof to the contrary, when a patient has ceased to respire for a few minutes, much is not to be expected from the injection of blood into the *veins*. What effects might be produced by the injection of venous blood into the common carotid of the right side, towards the coronary arteries, remains to be ascertained.

Numerous cases, however, are recorded, in the various periodicals of the day, where this operation has been tried with complete success —proving, beyond all cavil, that the blood of a man may be injected by means of a syringe, into the veins of a woman greatly debilitated by hæmorrhage, without causing death*.

[The first successful trial was made on the 8th of August, 1825, on a patient at the London and Southwark Midwifery Institution;—Dr. Blundell, the Editor, and one or two others, being present. The female, a weakly and delicate creature, had given birth to her first child; the labour had terminated favourably, and the placenta

* See the "Lancet"; Numbers 110, 111, 114, 116, 117, 131, 175, 231, 232, 233, 273, 279, 300, 302, 322, 328, 332, 379, 541, 582, 604, 614, and 656. Volume 9; Pages 111, 134, 228, 295, and 331; October 8 and 15, and November 5, 19, and 26, 1825; and March 4, 1826. Volume 11; Page 457; January 6, 1827. 1827-8, Volume 1; Pages 644, 662, 673, 676, 698, and 716; February 2, 9, and 16, 1828. 1828-9, Volume 1; Pages 232 and 431; November 22, 1828, and January 3, 1829. Volume 2; Page 284; May 30, 1829. 1829-30, Volume 1; Pages 183, 369, and 511; October 31, and December 12, 1829; and January 9, 1830. 1830-1; Volume 1; Page 350; December 4, 1830. 1833-4, Volume 1; Page 596; January 11, 1834. 1834-5, Volume 1; Page 156; October 25, 1834. Volume 2; Page 336; June 6, 1835. 1835-6; Volume 2, Page 61; April 2, 1836. See also Dr. Ryan's "London Medical and Surgical Journal"; Numbers 27, 71, and 261. Volume 2; Page 29; August 4, 1832. Volume 3; Page 590; June 8, 1833. 1836-7, Volume 2; Page 654; January 28, 1837.

was expelled by the efforts of the uterus. The organ, however, relaxed again; and the consequence was a profuse gush of blood, followed by rather a free draining. The usual means were had recourse to, and after a time the discharge ceased; but no permanent rally took place. Stimuli were frequently administered, but only temporary benefit was obtained;—the pulse soon sinking again. This case not being attended with any immediately dangerous symptoms, it was agreed to wait awhile, and to watch her narrowly. In the course of a few hours, it was evident to all that she was getting worse; and the chance against her surviving was so great, that it was agreed to perform transfusion. Four ounces, taken from the arm of her husband, were injected (in the manner hereafter to be described); after which there was no relapse. The quantity of blood was small, when compared with what had been previously lost; and many people were doubtful as to the amelioration in the patient's condition. As, however, a permanent improvement took place after the transfusion; and as this effect was noticed, in succeeding trials, so early as the first or second injection, the Editor thinks that the amendment in this patient may be fairly ascribed to it. In two other cases, the Editor has succeeded, where life was nearly extinct. He takes the liberty of relating one of them at length; as it will exemplify, in a striking manner, the good effects resulting from transfusion of blood.

Mrs. ——, a lady of delicate habit, 30 years of age, and who had borne nine children, was confined in the latter part of the year 1826. She had been subject to hæmorrhage after each labour. At this time it was renewed with increased violence; and was attended with symptoms indicating the most urgent danger. Her medical attendant (an accoucheur of long standing and great repute) requested the Editor's assistance. On entering the bed-room, the patient was found in the following condition:—She was lying on her back, with the most perfect death-like countenance; the extremities were of a marble coldness; the surface of the body cold generally; respiration excessively laborious; the eye-lids close; the eyes perfectly insensible to light; the jaw dropped. No pulsation could be felt, either in the radial or carotid arteries; and, in fact, there was not the slightest appearance of life, except the breathing. Stimuli had, in this case, been exhibited largely; but with no lasting benefit. There could be no hesitation as to the propriety of performing transfusion in this instance; it being the only remedy which afforded the slightest chance of success. It was therefore immediately decided upon. The first injection, of two ounces, produced no marked effect; though it certainly rendered the beat of the artery discernible. The second injection was followed by very decided improvement. After eight ounces of blood had been introduced, this lady was so far revived as to know her medical attendant. She evidently felt considerable pain over the region of the heart, and placed his (the surgeon's) hand upon the left side of her chest; but, on a very careful examination, no irregularity was discovered. During the operation,

two or three spoonfuls of brandy were given; but nothing else. The patient suffered much from headach, and had occasional attacks of hysteria, to which she had been long subject; but independently of these, she recovered without an unpleasant symptom.

The operation of transfusion has been several times performed, with the same beneficial results; but as the effects bear a marked resemblance to those observed in the case before detailed, it is only necessary shortly to refer to them*.]

But to conclude. The preceding observations comprise all the facts, favourable and unfavourable, that have come to my knowledge; and that seem calculated to help the mind in judging, as to the operation of transfusion. On perusing them, every one who is in the habit of reflecting, will form an opinion for himself. Having, however, thought a little on the subject, I may be permitted to state my own persuasion to be, that transfusion by the syringe is a very feasible and useful operation; and that,—after undergoing the usual ordeal of neglect, opposition, and ridicule,—it will be admitted into general practice. Whether mankind are to receive the first benefit of it, in this or any future age, from *British* surgery, or from that of *foreign* countries, Time, the discoverer of truth and falsehood, must determine!

Against this operation it may also be urged, as against most operations, that it is not without its danger; and it may be so. But this is no reason why we should lay it aside, if in any case it be necessary; for, in reality, every operation of surgery† has its danger. Amputation‡ has its danger;—the operation for hernia§; the introduction of the catheter; cutting for the stone;—all have their dangers‖. As, then, every operation we perform is attended with more or less danger,—unless it be proved, which it cannot, that the injection of blood is attended with more surgical danger than ordinary,—why should we urge this, in a solitary manner, as an objection against transfusion? Again,—it is sometimes objected, that the operation may be needlessly performed; and so it may. How often shall we, in the course of our practice hereafter, give medicine, with no advantage to our patient; though (it may be) with some advantage to ourselves! How often is venesection performed needlessly! How often has lithotomy been performed needlessly! How many legs have been taken off, where, if the patients had been under better surgery, they would still have had their limbs! Why, then, are we to bring this as a solitary objection to the operation of transfusion? If we transfuse too copiously, we may take the blood out again; but when we overbleed in inflammation, what can be done?

* Denman's "Introduction to Midwifery";—Seventh Edition; Edited by C. Waller, M. D.

† From *chirurgia*;—derived from χειρ, *the hand*; and εργον, *work*;—alluding to surgical operations being performed by the hand.

‡ From *amputo*, "to cut off."

§ From ερνος, *a branch*;—alluding to its protrusion.

‖ Dr. Blundell here alluded to the great skill displayed by Mr. Key, Surgeon to Guy's Hospital, in performing the operation of lithotomy.

It may be said, again, that the operation may sometimes prove unavailing; and so it may; for he would be a bold man, indeed, who would venture to affirm that this, or perhaps any operation, ought always to succeed. We amputate a limb; but sometimes the patient dies. We perform venesection; yet the inflammation proceeds notwithstanding, and destroys the patient. So that, if the arguments that are raised against transfusion be candidly weighed, they will be found to be objections which do not lie singly against this operation, but against surgery at large;—nay, against the whole of the medical art itself;—an art, sometimes not without danger, sometimes used without need, and sometimes not producing any obviously beneficial effects; and yet, after all, so well calculated, on the whole, for the advantage of mankind, that no people, civilized or barbarous, are entirely without it! Why, then,—I ask again,—are these objections urged against transfusion alone? Is it apathy?—Is it the trouble of learning?—Is it negligence of reasoning?—Or is it that unnamed and unacknowledged feeling which deceives itself;—a very Proteus in the variety of decent garbs which it assumes*?

After all, among the members of a liberal profession (like that of medicine), I persuade myself that these objections,—even when urged without due candour,—arise, in reality, from no unworthy motive; but perhaps from an honest conviction of the essential uncertainty of our art; and the risk,—which there must be,—of incurring new dangers, while we are flattering ourselves that we are the discoverers of new remedies.

"Audi!
Nulla unquam de vitâ hominum cunctatio longa est†."

The more discussion,—the more objection and defence the operation has to undergo, the better! If it be grounded in error, let it perish; if in just principles, it must survive! From the most violent conflicts of opinion, Truth has nothing to fear! Though long to us, to her a thousand years are but as one day;—a point,—a nothing in the eternity of her duration! Oppressed, though she is, beneath the chaos of human follies and errors, she must,—she *will* emerge at last;—unchangeable as her Author! By the mere force of durability, she must ultimately stand alone;—solitary amid the wreck of those perishable materials, by which, for a time, she is overwhelmed! "And the ark went upon the face of the waters"‡. To her, the living spirit of philosophy,—immutable, immortal, infinite, eternal Truth;—parent of all knowledge,—fountain of light;—to her may be addressed, without perversion or hyperbole, the sublime apostrophe of the poet—

* Proteus was one of the Gods of the Sea; and could transform himself into any shape.

† "Listen! No forethought is too great when human life is at stake".

‡ Genesis; Chapter vii; Verse 18.

"The stars shall fade away; the sun himself
Grow dim with age; and nature sink in years;
But thou shalt flourish in immortal youth;—
Unhurt amid the war of elements,
The wreck of matter, and the crush of worlds"!*

When on the subject of transfusion, I should be guilty of crimina injustice were I to forget to mention with applause the names o Doubleday and Waller. Their exertions stand in need of no com memoration from me; but I may be allowed to remark, that, what ever advantage may be hereafter derived from this operation, to them mankind will be largely indebted for it. Through evil report and good report, they have laboured devotedly to uphold and practise it and I trust that, in the approbation of the public, and that com placency of feeling which arises from the consciousness of not having deserved ill, they may, hereafter, find the full remuneration of al their exertions!

CHAPTER V.

FLOODINGS IN THE EARLIER MONTHS.

Our remarks on floodings *in general* being now brought to a close, we proceed to enlarge a little on those different *species* or *varieties* of flooding, which are likely to be met with at the bed-side; —dividing them into those which occur in the *first* three or four months of pregnancy; and those which make their appearance in the *last* three or four;—the *earlier* and the *later* floodings, as they may be called. Before entering, however, on the consideration of the earlier floodings, it may not be amiss, on the very threshold of our subject, to offer a few observations on the appearances of those substances which, at this period of gestation, are found to come from the uterine cavity.

SECTION 1.—SUBSTANCES WHICH ESCAPE IN THE EARLY AND MIDDLE PERIODS OF PREGNANCY.

Manner in which the Ovum is expelled.—I may observe, then, that occasionally (though rarely) the ovum is expelled from the uterus entire. In shape and bulk it is like a pullet's egg; and contains a cavity, immediately to be described; with the liquor amnii; and a fœtus, sometimes not bigger than the garden-bean. More frequently, however, disruption precedes the expulsion of the ovum; the parts of which escape in succession. First the liquor amnii escapes; and then the embryo (if the latter have not already disappeared, in a manner presently to be described); to be followed ultimately by a fleshy mass, which constitutes the most important part of the whole structure. In this fleshy mass (especially when washed and immersed in clear water), you find a hollow, with a tuberculated surface;—

* "Cato; a Tragedy; by Joseph Addison." Act V; Scene 1.

mooth, polished, and invested with a semi-transparent glistening nembrane, of pearly appearance; through which the dark red of he structure over which it lies, may be obscurely seen. With this leshy mass, which at the first glance resembles a clot of blood, is mar-ginally connected a membrane; which floats in the water; and forms, n the entire condition of the ovum, a part of the cavity in which, as n the hollow of the egg, the embryo is lodged. Before I proceed o the next appearance of the ovum, it may be proper to remark hat, in the earlier months, the fœtus is of very small size, compared vith the bulk of the secundines; so that the fleshy mass, with which he embryo is in connexion, may be as large as half the hand, when he embryo itself is no bigger than a single joint of the little finger. t is by no means very uncommon for the ovum to come away in a hird manner;—the fœtus, it may be, being first expelled, or not ap-pearing at all; while the secundines follow by pieces, one portion fter another, till the whole is discharged from the womb. To those vho are accustomed to inspect the ovum of the earlier months, it is y no means difficult, if the structure be in ordinary condition, to letermine, on examination, whether a part only, or the whole, be way; but those practitioners who have paid but small attention to hese matters, are liable to deceive themselves with the persuasion, hat the uterus is completely evacuated, when, in reality, a part of he ovum still remains in its cavity. The embryo is so small at this arly period, and the secundines are so large, that, at the first glimpse, ne half of them seems proportionally of bulk more than adequate o the fœtus. Beware, therefore, of falling into error here! Be-vare of presuming that the uterine cavity is empty, when a portion f the secundines still remains; for this portion, lodging in the hollow f the uterus, may keep up the drainings as effectually, as if the vum lay there entire. Hereafter you will understand more clearly, hat the ovum is composed of two parts;—the one (the *fœtal* portion) nade up of the embryo, enclosed in a delicate membranous bag, covered with a fine shag; the other (the *maternal* portion) consisting f the fleshy mass, which in a measure encloses both the embryo and ts receptacle;—corresponding with the placenta of the full-grown vum of nine months. Now it sometimes happens, that the fœtal part of the ovum is expelled alone; while the placenta, or remaining portion of the ovum, escapes from the uterus afterwards;—an inter-val of uncertain duration (sometimes of a few *hours*, sometimes of a few *days*) being interposed; and the woman, during the whole term, having all the symptoms of miscarriage; as, by the presence of the placentar portion of the ovum, the distention of the uterus is kept up. In cases of this sort, you are more exposed to deception; be-cause the embryo (coming away with its membranous cyst and liquor amnii) has, to the inexperienced, the appearance of a complete ovum. The inexperienced alone, however, can be deceived in this manner; for if your eye have been accustomed to the inspection of miscar-riages in the earlier months, the want of the placentar part of the tructure must appear obvious at once.

Plurality of Ova.—For women to conceive of three, four, or five

ova at once, is very rare; but the occurrence of twins is by no mean infrequent; and in miscarriages, a single ovum may sometimes com away, while another, or the greater part of another, still remains be hind in the cavity of the uterus;—not to mention that we now an then meet with cases in which, together with the healthy ovum, there forms in the womb a fleshy mass (a mole, as it is popularly called) in which no traces of ovum are discernible;—the whole of the ovum being expelled, and this mass remaining behind in the uterus, an (as in ordinary miscarriage) keeping up the discharge of blood. In difficulties of the kind, the prudent and very circumspect practi tioner (the Volpone of his profession) will probably soon detect the nature of the case; but those who are rash, or have seen little, may be again deceived;—inferring, with too much certainty, a thorough evacuation of the uterus, because a complete ovum is come away. This error, not of a speculative nature, is to be deprecated in a prac tical view;—for,—the bleeding from the uterus continuing, yet not being understood by the practitioner,—it is probable he may not have recourse to judicious means for its suppression. When the case is ambiguous, examination is the only diagnostic on which we can with certainty rely.

Ambiguous Traces of the Embryo.—In miscarriages, it is by no means uncommon to see no traces of the embryo; which perhaps is dead and dissolved in the liquor amnii;—like sugar in water, or food in the gastric juices. Occasionally we find only parts of the embryo (the head more especially); and it well deserves commemoration that, now and then,—the embryo dying and melting, perhaps in the second month,—the secundines are retained, and continue to grow till they acquire the bulk of the same parts in a nine-month ovum; so that, to the astonishment of the unpractised, there at length issues from the womb a large placenta, with its membranes and the liquor amnii, without the fœtus which might be supposed to tenant them. When, too, the ovum dies in the earlier months, it may be retained till the close of pregnancy;—the fœtus, without growing or decaying, re maining quietly in the cavity of the womb; till (in the seventh or eighth month, perhaps) labour pains occurring,—the ovum is at length expelled; but not of the bulk which, from the age of the ges tation, we should have anticipated. Hydatids* sometimes form in the ovum, and (if I may be allowed the expression) devour it; some times a part only becoming converted into their substance, so that they lie embedded and concealed in the placentar structure; some times the whole (or with the exception of a few vestiges) being con sumed; so that, in place of the ovum, nothing but these animalcules† remains in the uterus. Sometimes they form a cluster large enough to fill a wash-hand-basin, or a vessel more capacious; sometimes they are of much smaller bulk. Much bleeding accompanies their expulsion, when their growth has been great; nor is the flooding always sparing when their bulk is much smaller.

While adverting to the changes which the ovum undergoes before

* From *υδωρ, υδατος, water.*

† From *animalculum*, the diminitive of *animal,* "a living creature".

its expulsion, I must not forget to remind you of those shapeless masses, membranous or solid, before mentioned. Of these it may be observed, further, that sometimes there are several; but more generally they are single. Like the ovum itself, they vary much in their bulk; being sometimes not larger than a pullet's egg; but occasionally as large as the fist, the child's head, the child itself, or even still larger. Masses like these may give rise to symptoms similar to those produced by ordinary miscarriages; and they are best managed on the same principles as other flooding-cases.

Illustrations.—Thus much, then, respecting the different substances which escape from the uterus in the earlier and middle months. The various points worthy of attention are well illustrated by a series of preparations. For the first I am indebted to my friend Mr. Sterry. It is entire; and resembles a fowl's egg in size and form. The next preparation, of the earlier weeks, at the first glance presents an appearance like a clot of blood; and shows how needful it is to order the nurse to preserve, for the inspection of the accoucheur himself, all solid substances which may pass from the vagina;—in order that he may decide whether or not the ovum has come away. I have another preparation which shows the interior of this apparent clot; and exhibits the various characters of the cavity in which the fœtus lodges;—the smooth membrane; the tubercular surface; with its glistening, pearly, yet livid red colour. Other glasses contain specimens of the fœtal portion of the ovum, only a few weeks old; consisting of a bag covered with fine shag, and filled with water, in which the embryo floats. On careless, or inexperienced inspection, such substances may seem to form entire ova; but, in truth, they constitute but a small part of the whole structure. In the next glasses are fleshy masses, as big as one-third, or one-half of the hand; and consisting of the fleshy parts belonging to the preceding preparation. In one glass is an amorphous mass, which came from the uterus after a four-month ovum had been expelled, and the miscarriage was supposed to be complete. Much bleeding attended. There is also a fine cluster of hydatids, which came from the uterus. They are all of them, like grapes, appended to a stalk; and the remains of the ovum on which they have been feeding may be seen. I have an engraving of a placenta and membranes (of the size of seven or eight months) matured in the uterus, after the embryo (probably of small size) was dead, and had become dissolved in the liquor amnii. The secundines, of great bulk, came away without their usual occupant, the fœtus;—to the great surprise of the accoucheur. At a small expense, it is easy to make for oneself preparations of the substances which come from the uterus; and I would recommend the accoucheur, when in practice, by all means to do this; as it is desirable that these appearances should be well known to him. From ten to fifteen glasses, probably, would contain all the specimens his practice might require. In examining such preparations, do not omit to notice the smallness of the fœtus in the earlier months, and the largeness of the secundines with which it is connected.

SECTION 2.—VARIETIES OF FLOODING IN THE EARLIER MONTHS.

When floodings occur in the earlier months, if the patient be robust, strong, and full of blood, and if she be left in a great measure to her own resources,—the practitioner prescribing on general principles for occasional symptoms,—she will in general do well; and very satisfactory it is to the young accoucheur to remember this; for, like an anodyne*, it may soothe and tranquillize the mind, when he is sitting at the bed-side of the patient. Without meaning to alarm you needlessly, however, it is proper for the accoucheur to remark, that women do not always recover, even in the earlier months; and certainly not always in the middle parts of pregnancy, when the discharges become larger; more especially if the patient have flooded much in preceding miscarriages, and have thus been much reduced in blood and flesh. Under these earlier bleedings, in some few instances, women sink from inanition; and still more frequently, when they escape with life, the tenor of the general health becomes greatly impaired; so that, for months or years together, they labour under the cachexia produced by bleeding; and perhaps die at last of hydropic, enteric†, or other affections. As they are, therefore, sometimes (though rarely) attended with danger, and as they always impair the health, and create much uneasiness and anxiety to the patient and her friends, the different varieties of earlier flooding are well worth the study of the accoucheur; and I proceed, therefore, to remark on them.

Rapid Miscarriages.—Of miscarriages in the earlier months, there are some remarkable for the rapidity of their progress. In the morning the patient is well; in the evening, after a *fright*, a *long walk*, or the ordinary bustles and fatigues of her establishment,—sometimes without any obvious cause whatever,—she is suddenly seized with an eruption of blood from the uterus. Fainting follows; then a rally; then pain; then expulsion of one of those substances just demonstrated;—the process being completed, perhaps, in the course of one or two hours. The evacuation of the uterus is followed by a contraction of its cavity, and a cessation of the bleeding;—the patient recovering completely in the course of a few days; so that scarcely a trace of the accident remains. Of all the forms of earlier flooding, this is most to be desired.

Tardy Miscarriages.—More generally, however, it happens (in a way more harassing to the practitioner) that the expulsion takes place in a gradual manner;—induced, as before, by some imprudence; or arising, it may be, without any obvious cause. At first, perhaps, a few ounces of blood are lost; and then,—the patient keeping herself cool and composed,—the hæmorrhage ceases; returning, however, when she rises, and begins again to stir about; and thus, it may be,—bleeding at one time, and free from hæmorrhage (wholly or in great measure) at another,—she gradually sinks

* From *a*, *without*; and *ωδυνη*, *pain*.

† From *εντερον*, *an intestine*.

into a state of inanition; becoming pale, cold, and faint; so that she is compelled, at last, to confine herself to the sofa or the bed. Meanwhile, as the bleedings proceed, pains begin to occur;—cutting, grinding, sawing, at first; then forcing, and (beyond all further doubt) parturient. More blood flows from the uterus; and, sooner or later, the contained substances come away;—under the forms before described. Days, weeks, sometimes one or two months, or even more, may be occupied by this process; and the total quantity of the blood lost may be large;—the constitution suffering much in consequence; and, in some few cases, death itself being the result.

Partial Evacuation of the Uterus.—There is yet a third variety of hæmorrhage well deserving of notice; I mean the hæmorrhage, whether rapid or tardy, under which you have merely a partial evacuation of the uterus. A woman is seized, perhaps, with an eruption of blood from the womb; and a substance mistaken for the ovum comes away; so that you are assured, by your predecessor in the case, that the uterus must have been thoroughly evacuated. Notwithstanding this, however, you learn that the hæmorrhage does not cease; and, from this time,—it may be for weeks together,—the patient is more or less liable to discharges of blood from the uterus; and, by-and-by, there issues from the womb an offensive odour, as if something were decomposing there. When the uterus is in this way partially emptied, there may be a retention of half the ovum; there may, too, be a retention of a twin;—an accident, however, which I never myself witnessed; or, as before observed, there may be a retention of some fleshy mass, of the nature of a mole, lying in the uterus, and keeping up the bleeding. This I have myself seen. In these perplexing cases, the grand point is to decide whether the womb is empty or not;—and to this end, when floodings prove obstinate, you should always bear in mind the consideration, that it is to something retained in the uterine cavity, that this obstinacy is most probably to be ascribed; nor should you suffer yourselves to be lightly driven from this opinion, by the declarations of those who have preceded you in the management of the case. A suspicion of this kind prepares the mind for further investigation. In midwifery, as in medicine generally, too much faith is a fault! Doubt! Investigate! The more the better! Truth, here, has no fears!

Suspecting, then, that the ovum is partially retained by the uterus, if the health be much shaken by the continuance of the bleeding, you must of course determine this very important point. That the womb is not emptied, you may sometimes know, by examining the ovum which has been expelled, and finding that it is not complete. If you have been in the habit of examining preparations of that organ, and particularly if you have been in the habit of *making* them, as recommended,—acquiring an experienced eye,—you may sometimes decide at a glance whether or not the ovum be complete; and therefore whether, without retention of any part, the whole of it have been expelled from the uterus.

You may further judge whether or not some substance be retained

in the uterus, by ascertaining whether, after the reputed evacuation of the contents of the uterus, the patient have still remained obnoxious to floodings, cutting or forcing pains, or those smells offensive to the sense, which result from animal decomposition. If there is a pertinacious discharge,—and if, more especially, along with this discharge, pains or fœtor occur,—there can (I think) scarcely be a doubt, that there is something still remaining in the cavity of the uterus. Should the urgency of the case, however, demand decision, and should the point still remain in doubt, you may generally determine the question at once,—provided your hand be small, and your manual skill considerable,—by the introduction of the fingers into the uterus;—an operation, however, not without its dangers; to which, therefore, you ought not wantonly to have recourse; and from which, in the commencement of practice, it is better to refrain. In performing this operation, as the vagina is very relaxed, the left hand (if small) may be gently deposited in its cavity; and then,—the bladder being empty,—you may place the right hand over the uterus, above and behind the symphysis pubis. This done, the first and second finger of the left hand being passed onward from the vagina, up to the very fundus of the uterus,—which, by the counter-pressure of the right hand, is cautiously pushed downward and backward upon their tips,—the cavity may be examined without any difficulty. Should you find a solid substance in the uterus, you may, at the time, take it away. Though, in the earlier months, you may pass your hand into the vagina, you must not even think of passing the entire hand into the uterine cavity. I had almost added, that the very *thought* of it is enough to bruise and tear the parts! If you are, from former experience, fit to perform the operation which I have been describing, you will find no difficulty in executing the different parts of it. Unless the safety, or (at all events) the entire future health of the patient, demand the operation, it ought not to be done. It is an evil;—justifiable only when a remedy for one still greater! If you want skill, have recourse to some one more dexterous. Dilators* of the os uteri, and extractors to remove the ovum, have been contrived. They are more likely to do harm than good. Iron has no feeling for you or for the patient!

Continued Hemorrhage after Expulsion.—There is one other variety of flooding in the earlier months, which it may be well to mention here. I mean the flooding which continues after the womb is, in reality, thoroughly emptied; of which I have seen several instances. In the third month, perhaps, the whole ovum comes away; but, instead of shrinking in the ordinary manner, the womb still remains very large,—very lax,—very vascular; and the patient, in consequence, continues obnoxious to the bleeding. It is by examination only, as before explained, that this case can with certainty be made out. By passing into the uterine cavity two of the fingers of the left hand, and counter-placing on the fundus uteri, above the symphysis pubis, the fingers of the right, the condition of the womb may be

* From *dilato*, "to enlarge."

clearly ascertained. Remember, however, what was before stated; that you ought never to have recourse to internal examinations of this kind, unless the life or the entire health of the patient require them. Generally, in the earlier months, women will do very well, provided you let them alone.

Thus much, then, respecting the more interesting varieties of earlier flooding;—the rapid; the tardy; that variety in which some portion of the ovum, or some other solid substance, is retained in the womb; and, lastly, the floodings, in which, though the uterine cavity is empty, the hæmorrhage continues nevertheless;—the womb being large, lax, and full of great vessels; with its vascular orifices unusually relaxed.

SECTION 3.—TREATMENT OF THE EARLIER FLOODINGS.

After the general observations already premised at large, the management of the earlier floodings may be compressed into few words. If a woman, in the earlier months, be labouring under a flooding of one or other of the four varieties,—no obvious danger attending,—the less you actively interfere, the better. The patient should be a-bed, quiet, and cool; the bowels should be opened; the system, if feverish, should be refrigerated; cold should be applied topically; and, perhaps, lead should be administered in large doses. Or the vagina should be obstructed;—provided the discharges, copious and pertinacious, seem to require it. But if you find your patient labouring under a discharge more copious and dangerous, and if there be reasonable cause for believing that life, or the tenor of her future health, may be in danger, practices more vigorous than those just enumerated may be required. In these rarer exigencies, besides the remedies ordinary in such bleedings already detailed at large, it behoves you to consider whether you may not have recourse to some of the deobstruents formerly commended (ergot, for example), in order to accelerate the expulsion of those substances which are lodging in the uterine cavity, and keep up the discharge. The ergot I have sometimes tried, according to the rules formerly prescribed; and with the greatest advantage. If from idiosyncrasy,* or other causes, the ergot should remain inert, it would be for consideration, whether you might not manually interfere;—emptying the uterus by that action of the fingers, already explained. Such interference, however,—be it remembered,—is always an evil. Violence will bruise, tear, and kill. However, when the ovum lies, not in the womb, but in the vagina, it is often both safe and proper treatment, in both varities of flooding. When the bowels are open, it often comes away of itself.

I will not suppose it necessary to remind you, that when the woman, in the latter floodings, lies, without further discharge, in a state approaching to asphyxia,—to disturb the clots by manual operations may be death. I should despair of teaching you prudence and caution, could I imagine that this principle, so lately

* From ιδιος, *peculiar*, συν, *with*; and κρασις, *a temperament*.

pressed home upon the attention, were already effaced from the mind; and yet I have my misgivings! Memories are sometimes aqueous! Remember that, even in earlier gestation, if the woman have lost much blood, and if she be in a state of deep fainting, it is unsafe, in any way, to disturb the clots. Let her lie and rally. Assist her by other means than manual operations about the vagina. Transfusion may be necessary. Then, when she is thoroughly established;—when the bleeding shows a disposition to return;—when, the womb being empty, the drainings of blood still obstinately continue,—vaginal operations may be proper enough.

In continued drains from the uterus, when emptied of its contents,—besides the more obvious and general practices,—there are two deserving especial notice;—mercurial action, and the injection of the uterine cavity. Though not, I trust, besotted with an overwrought opinion of the powers of this valuable mineral (mercury)*, I think some cases have fallen under my notice in which, whatever its action, the cessation of the drainings might be reasonably attributed to a mercurial action in the system. Do not however, I entreat you, without reflection, go headlong and salivate your patients! A slight soreness of the mouth is all I would recommend; and that as an ultimate remedy. It would be better for the personal charms, and sometimes, I am sure, better for the *health* of our patients, if some of our blue-pill and calomel were converted into looking-glasses!

The injection of the uterine cavity with astringent fluids, I learned entirely from my valued relative, Dr. Haighton. Its due performance requires an accoucheur; for it is not into the vagina, but the womb, that the fluid should be thrown. Twice (or oftener) in the day, the fluid may be thrown up. Begin with a scruple of alum to a pint of water;—increasing the strength according to the effect produced. The blood is sometimes consolidated in the uterus, by the action of the alum; and may, to the great alarm of the patient, be expelled with pains like those of parturition; and for this she should be prepared. Though not prepared to assert that this practice is wholly without danger of inflammation, I never saw any serious ill consequences result from it. There are now living women who have, I think, been preserved by this remedy; but it should not be used without need.

Errors in Management.—The grand errors which are likely to be committed in managing the earlier floodings, are, I think, the following. Tyros,—young soldiers in midwifery, you are apt to be too intimidated by the sight of blood. Perturbations are always undesirable in a practitioner. Be it remembered, of the earlier bleedings, that they generally do well. That thought is an excellent anodyne! Again, if rash and resolute, they may fall into a second error (in some measure the result of the preceding);—that, I mean, of needlessly thrusting their hands into the vagina, and their fingers into the womb. I have already said, nor can I reiterate it too often, that it is impossible to enter the womb without risk; and who, of common

* So named from some supposed resemblance to the planet of that name.

humanity, will incur that risk, unless overborne by a paramount necessity? Now, in floodings of the earlier months, such necessity but seldom exists; and, in consequence, active manual operations are seldom required. It may, it is true, be sometimes necessary to use the hand; but meddlesome midwifery is bad. Beware! Remember the principles formerly prescribed! The use of instruments to dilate the neck and mouth of the uterus, or to take away substances from its cavity, I dislike. In a young accoucheur, it is certainly an error to employ them. That dilatation of the os uteri can never be proper, I dare not assert. Now and then the finger may be used as a dilator;—now and then the forceps may be used to take away the substance contained in the uterine cavity; but these anomalous cases are so rare, that (not to bewilder the mind) it is wiser, perhaps, to consider them as nothing. Beginners, at least, ought not to be perplexed with them; and it is better for them, on the whole, to take the chance of evil arising from the rejection of these practices, than the chance of the still greater evil which may result from their adoption; for the cases in which these practices may be needlessly and injuriously attempted are innumerable; but those in which the rejection of them may be attended with ill consequences, are few indeed. Meddlesome midwifery is bad! "*Bene ascolta chi nota.*"* To suppose the uterus to be empty when it is not, is another grave error. Recollect the diagnostics† stated already; and you may, I think, keep clear of this mistake. Nor, perhaps, is it unnecessary to guard yourselves against the error of imagining that, because the bleeding is pertinacious, something must necessarily be retained. In the more doubtful cases, time or examination must decide.

CHAPTER VI.

FLOODINGS IN THE LATTER MONTHS.

Large eruptions of blood from the uterus, during the latter months of pregnancy, I am accustomed to divide into *three* kinds;—those which are connected with the situation, or implantation of the placenta over the mouth of the womb; those again, in which you have large quantities of blood coming away from the uterus, *without* the placenta being so situated; and, lastly, those large discharges from the uterine cavity which follow the birth of the fœtus, and either precede, or come after, the abstraction of the placenta. Of these three species of floodings, we shall treat in order.

SECTION 1.—FLOODINGS WHERE THE PLACENTA IS OVER THE OS UTERI.

Nature has so wisely ordained it, that, in general, the placenta does not cohere to the *mouth* and *neck* of the womb; but is attached

* "He listens attentively who can note down what is said."

† From διαγινωσκω, *to discern* or *distinguish*.

either to the *body* of the uterus, or to its *fundus*. It does, however, occasionally happen,—and dangerously both to the mother and the fœtus,—that the placenta is implanted over the os uteri; so as either to lie over it completely, or else to give it a partial covering;—one half of the os uteri being closed in by the membranes, as the other half is by means of the fleshy mass, the placenta.* When the placenta is, in this way, partially implanted over the os uteri, or covers it completely, we find the patient becomes liable to large and dangerous eruptions of blood from the womb;—these eruptions taking place during the latter periods of gestation, earlier or later; but generally, I think, about the seventh or eighth month; and without any obvious cause. The patient, perhaps, is lying asleep in bed; or, it may be, she is quietly occupied with her needle; when suddenly the blood bursts from the uterus;—asphyxia shortly following; and sometimes, though rarely, death itself. Sooner or later, with more or less severity, the pains make their beginning; and it is remarkable, that when the pains of parturition ultimately supervene, every effort of the uterus is sometimes accompanied with a gush of blood varying in quantity. The reason usually assigned for these hæmorrhages, is the following:—

The Cause of Hæmorrhage.—During the first and middle months, it seems, the ovum is confined merely to the *body* of the womb;—the *neck* forming no part of the general receptacle in which it lodges. The placenta, therefore, placed during these months over the neck of the uterus, lies undisturbed. But during the two or three months in the end of pregnancy, the cervix uteri gradually dilates itself; so as to form a part of the chamber tenanted by the fœtus; and the consequence is that,—the neck of the womb dilating to receive the ovum, while the placenta is not equally expanded,—a movement of one surface upon the other (slow, indeed, but certain) is produced. Now, in consequence of this movement of surface upon surface, there is a tearing of those vessels (numerous and large) which pass from the uterus to the placenta; and the blood, in consequence, rushes from

* "This species of hæmorrhage was not generally understood till of late years. It was formerly supposed, when the placenta was found presenting, that (having been accidentally separated from the fundus) it had fallen, by its own weight, on the os uteri; which it had closed up, so as to prevent the child from passing. More accurate observations and dissections have proved, that when the placenta presents, it has been, *ab origine*, implanted over the cervix uteri. Portal, who practised midwifery extensively in Paris, seems to have entertained more correct opinions on this subject than his contemporaries."—*Dr. Merriman's "Synopsis"*; Fourth Edition.

"In Levret's Treatise on Midwifery, published at Paris a few years ago (1761), there is a very excellent dissertation on this subject; in which the author proves, from very satisfactory reasoning, that the placenta may be situated over the os uteri, without having been previously separated from some other part of it and pushed down there. He illustrates this by four cases in which the placenta was attached to the os uteri; two of which were under his own care; another was communicated by a friend; and the last was taken from the relation of a dissection of a gravid uterus, published in the Memoirs of the Royal Academy of Sciences, at Paris, in 1723; in which the placenta was found there situated, and had been the cause of a hæmorrhage which proved mortal."—*Dr. Rigby's "Essays"*; Third Edition; 1784.

the uterus largely, and without visible cause;—the discharge depending on nothing extrinsic, but upon those internal changes which must necessarily take place. Again:—When the efforts of parturition come on, the entire ovum is pushed down towards the vagina, as in ordinary labours;—the placenta, which lies over the os uteri, of course descending foremost.* With every effort of parturition, therefore, the placenta comes forward more and more; and becomes, in consequence, more and more detached from the uterine surface. Additional vessels are successively laid open;—each disclosure being accompanied with a further discharge of blood. Thus, in these floodings, we have not only, at first, a spontaneous eruption of the blood; but sometimes also a return of the gushes with the pains;—both of them symptoms very characteristic of the disease.

Such, then, is a brief summary of the more important symptoms which characterize this disease. The placenta covering the mouth of the womb, partially or completely, large hæmorrhages, dangerous both to the mother and child, are apt to occur. These floodings often arise spontaneously, and without obvious cause, in the latter months. When the pains supervene, the ovum begins to descend; and, at this time, the gushes of blood, instead of being diminished, are apt to return with every effort. After all, however, these symptoms merely create a suspicion of the real nature of the case.

Mode of ascertaining the Position of the Placenta.—The only certain mode of ascertaining that the placenta covers the disk of the os uteri, is by an examination very carefully instituted; and wherever this situation of the placenta is suspected, examination should be had recourse to, as soon as it can be made. Performing this operation carefully, we find a fleshy mass lying over the mouth of the womb, and covering it completely or partially; and if we are in the habit of feeling the placenta, we may readily enough determine (on examination) whether that fleshy mass is, or is not, the placenta. I would recommend you all, in commencing practice, to acquire a knowledge of its tangible properties, by handling every placenta which may come in your way. If, however, being inexperienced, you suspect that this reputed placenta may, in reality, be nothing more than a clot of blood, taking a small portion of it between your fingers, you had better pluck it away;—making an examination of it afterwards, by putting it into pure water; when the placentar characteristics may be easily discriminated from those of a clot of blood. In the outset of your practice, take every opportunity of contrasting the one with the other; for readiness of discrimination may be of use to you here. To conclude, then. When, in the seventh or eighth months, you find a large discharge of blood oc-

* In some instances, before the orificium uteri can be sufficiently opened to admit of turning, the whole cake will actually be disengaged and protruded; but the separation and expulsion of the placenta previously to the birth of the child, is, for the most part, fatal to the mother: though some cases have occurred where the woman has been saved by nature;—the pains being so strong, that the child has been forced down, with the placenta before it.—*Dr. Hamilton's "Outlines of Midwifery"*; Fourth Edition.

curring spontaneously; and when, after these large discharges, gushes are found to recur with every pain,—you may venture to surmise, from these symptoms, that the placenta is lying over the os uteri. That such is certainly its situation, can be made out by examination only; and the sooner it is instituted the better.

General Rules for Delivery.—If you are called to a case in which the placenta is lying over the mouth of the womb; provided the woman be in a state nearly approaching to asphyxia, and provided (as generally happens) that the bleeding is arrested,—let her lie quiet;—forbearing to disturb the genitals by manual operation; for, I repeat, if you hastily introduce your hand into the uterus, at this time, you perhaps produce a renewal of the discharge; which would most probably destroy the patient. If, again, you are called to a case in which, the placenta lying over the os uteri, there is not this great reduction of strength,—so that the woman does not lie (as it were) half-dead,—remember the general rule is, that you should introduce your hand into the uterus as soon as you safely can, and that you should abstract the child by the operation of turning. On this point there can, I presume, be no difference of opinion among competent judges;—at least, in the present state of knowledge; so that the mind is not here, as it sometimes is, distracted or disturbed among a variety of practices, all of which may have nearly equal claims to its adoption. Thus, then, lies the general rule:—Provided you find the placenta lying over the disk of the os uteri,—so as to cover it partially or completely,—the hand is to be introduced into the uterus, and the child is to be abstracted by turning, without the delay of a moment, as soon as the operation can be performed with safety.

The hand may be introduced safely,—or, at least, with that degree of safety which justifies the operation,—provided the softer parts are thoroughly relaxed; which, in these cases, they almost always are, in consequence of the bleeding;—provided, further, that the os uteri is beginning to open itself a little; becoming, for instance, as broad as a half-crown (for the urgency of the danger would justify our not waiting for a wider dilatation);—and provided, lastly, that the woman be not in such a state of asphyxia, that if you disturb the parts, so as to cause the discharge of an additional cupful of blood, dissolution may be expected to ensue. Under such conditions, therefore, the sooner you operate the better. But, on the other hand, if the os uteri be closed, if the softer parts be rigid, and if the patient lie in a state approaching to asphyxia, wait. Wait, in the first place, where the patient is in a state approaching to asphyxia:—proceeding to the operation when the patient rallies. Again, where there is a rigidity of the softer parts (the os uteri or vagina), wait;—proceeding to the delivery as soon as the laxity of the parts will allow. In thirty, twenty, nay, sometimes in ten minutes, or even less, relaxation will sometimes suddenly occur. Remain, therefore, with the patient; and let your examinations, though gentle and prudent, be frequent;—unless asphyxia forbid. That you ought always to wait when the disk of the os uteri is smaller than a half-crown piece,

I am not sure*. When experienced, dexterous, and cautious, you may sometimes dilate and deliver notwithstanding; but keep the fear of laceration always before your eyes; and, while young in practice, beware! In general, I may remark, you should remain at the bed-side;—never quitting the patient till she is delivered. Be watchful, too! Be vigilant! The waves are high; and the winds are abroad! While you are sleeping, the bark is sinking! Save, or your patients perish!

Mode of Turning.—It is by turning that the fœtus is to be abstracted, in these cases; and this may be accomplished in different ways. The placenta completely covering the mouth of the uterus, in the first place you may carry your hand through this aperture; at the same time making an opening through the placenta, so as to penetrate both simultaneously. Enlarge this opening sufficiently to admit the introduction of the hand into the uterine cavity; where you may lay hold of the child's feet, and bring it away by the operation of turning. Or, again,—and this is the second method of operating,—passing the os uteri, you may advance the hand between the placenta and the uterus; until, with as little disturbance of the parts as may be, you reach the edge of the placenta; where the cyst containing the liquor amnii (a cyst of water) may be felt. This point accomplished, you enter the cavity of the ovum, by lacerating the membranes;—advancing afterwards to the feet of the child; and, as before, abstracting it by turning. Like all other things, these two obstetric practices have both their advantages and their evils; for, as it was wisely observed by the ancients, every thing has two handles, though we commonly see but one. If you enter the uterus by rupturing the membranes, I think, on the whole, there may be a fairer chance of preserving the fœtus. I say "there *may* be"; for of this I am not certain. But, probably, under this mode of procedure,—in consequence of the detachment of the placenta,—a larger discharge of blood during the operation will occur; while, on the other hand, if you dexterously enter through the os uteri, at the same time perforating the substance of the placenta, you may, perhaps, detach the placenta less extensively from the surface of the uterus, and secure the chance of a smaller discharge of blood; though the laceration of the capillaries of the umbilical vessels, occasioned by the disruption of the placenta, may possibly endanger the child. More experience, however, is wanting in these matters. At present we must, in speaking of them, interject those dubitatives, which form an essential com-

* The os uteri will be found in one of the following situations: first, but little opened, and very rigid; second, but little opened, yet disposed to dilate; third, opened to some extent, but very unyielding; fourth, opened to the same extent, but soft; fifth, fully dilated.—*Dr. Dewee's Midwifery.*

In order that the performance of the operation may be as little perplexing as possible to the practitioner, and as little hazardous to the mother, it is necessary that there be a certain degree of softness and dilatability of the os uteri; but this dilatability is not always to be judged of by the actual dilatation or openness of the part; for sometimes, in hæmorrhages, the os uteri will be very dilatable,—very capable of being dilated by art, though it hardly seems sufficiently open to admit a single finger.—*Dr. Merriman's "Synopsis."*

ponent of most medical opinions. For myself, I make my election between the two modes of performing the operation, upon the following principle:—If, arriving early, I find the patient is not much reduced by bleeding, I do not scruple to enter through the membranes;—having, I presume, a fairer chance of saving the child in this manner; and, under the conditions given, not being afraid of the loss of an additional cupful of blood; but if, as frequently happens in placentar cases, the woman is so reduced that the loss of a few additional ounces of blood may sink her, then I prefer entering the cavity of the uterus by penetrating the placenta; because the bleeding may be less, and the security of the woman may be greater; and, in British midwifery, the safety of the mother, in every point, is made paramount to all other considerations.

Here, then, is a brief statement of those peculiar practices, which these very important and very dangerous flooding-cases,—the most important and dangerous of all cases,—require. When the placenta is implanted over the os uteri, so as to cover the disk of it partially or completely, the first office of the accoucheur is to ascertain the precise situation of the placenta;—*certainly known* from careful examination only; but to be *suspected* when, in the seventh or eighth month, you find large bleedings without obvious cause; while gushes of blood accompany every effort of the uterus. This point ascertained, the practice to be adopted is the following:—If the woman seem to be at the point of death, and the hæmorrhage be stopped, you must not disturb the genital parts at that time, even by making examination; but, without neglecting other important practices, you must wait till she dies or rallies;—operating if she recover herself, provided the bleeding return and require it. If, on the other hand, the patient is not in this sinking condition, without the needless delay of a minute, you are to deliver as soon as you safely can; and you may do so with that degree of safety which, in such an emergency, justifies the operation, provided there is not a state of asphyxia immediately approaching; and provided the softer parts are tolerably relaxed, and the os uteri is a little open. If there be rigidity of the softer parts, as there sometimes is,—especially when you are summoned to the case early,—by no means leave the patient, even though you may not be able to introduce the hand; but make your examination every five or ten minutes, and introduce your hand as soon as the parts will admit. In performing the operation, if anxious to save every drop of blood, perforate the placenta; afterwards, as you enter the ovum, dilating both the aperture in that viscus and the os uteri; but if the woman be strong, you may then, in general, enter by passing between the womb and ovum to the edge of the placenta;—rupturing the membranes and turning the fœtus, as before explained. When the woman cannot be delivered, there may be an advantage in discharging the liquor amnii. This might sometimes be done by puncturing the placenta;—care being taken not to detach it in so doing. When the membranes are felt over the os uteri,—the placenta giving it but a partial covering,—the waters, in such circumstances, may be

easily discharged. These practices deserve consideration. I first learnt them from a very sensible friend, Mr. Greenwood, of Horsly-down.

Errors likely to be committed.—The grand errors which you are likely to commit, in cases of this kind, are the following:—You may begin your operations too early,—when the softer parts are rigid; and, by forcing up the hand, you may (I conceive) bruise, and tear, and destroy the patient; though, on the whole, it must be admitted that there is not much danger of this; as, in placentar cases, the parts are generally relaxed. In these cases, again, you may lose the patient by delaying the delivery too long; for you may wait till the woman is so much reduced, that she dies;—either before the operation can be performed, or as soon as the fœtus is taken away. You may also be misguided by the expectation of pains;—misled by that "*silly* rule" which, you will recollect, I formerly denounced *. The placenta lying over the mouth of the womb, you may have pains, it is true; but the floodings may be so copious that the womb becomes, in a great manner, paralyzed; and while you are waiting for the pains, the patient may die. In performing the operation, you may commit violence;—atrocious violence;—in obstetrics, the sin which cannot be forgiven! If you are too urgent in forcing the hand into the vagina;—if you are too rough in dilating the os uteri (and this is almost the only case in which it is allowable to dilate the os uteri);—mark the effects! The dangers of asphyxia I have already pointed out. Sitting down at the bed-side, without a pause of reflection, you may proceed headlong to perform the operation, when the patient is so reduced already, that the loss of two or three additional ounces of blood will sink her! And what is the result of this? Why, before you have got your hand into the uterine cavity, jactitation, heaving, gasping, and intolerable oppression, may seize on the patient; and perhaps, before you can deliver the woman, she perishes!

I have some preparations in my museum which illustrate these points. The first of them illustrates two points;—first, the natural situation of the placenta, which coheres to the body of the uterus; and, secondly, the neck of the womb, forming a sort of appendix to the body, and (as yet) not dilated, so as to constitute a part of the general receptacle for the ovum. The dilatation of the cervix uteri will occasion spontaneous bleeding.

In the next preparation, we have the lower part of the uterus, consisting of the neck and womb;—the placenta being placed over the os uteri. The woman from whom it was taken was not delivered, because she had no pains. The practitioner was an admirer of "the *silly* rule"*; and the consequence was her death, and the preparation referred to. Mr. Randall, a very intelligent practitioner, made me a present of the parts. In the practice which we have reprobated, he had no share.

The next is a preparation in which the os uteri is beginning to

* See Page 201.

open;—the neck of the uterus forming a part of the general receptacle for the fœtus. It is when the cervix uteri makes its transit from the *undilated* to the *dilated* condition,—in the seventh or eighth month,—that the detachment of the placenta and the bleeding are produced. In another preparation, the ovum is seen, with its placenta perforated. These are the secundines of a woman whom I delivered;—the placenta lying over the mouth of the uterus. A hole was made through the placenta; and gradually, by dilating the os uteri and the placenta simultaneously, room was obtained for the introduction of the hand.

SECTION 2.—FLOODINGS IN WHICH THE PLACENTA IS NOT SITUATED OVER THE MOUTH OF THE WOMB.

It frequently happens, in the latter months of pregnancy, that there are large eruptions of blood from the uterus, though the placenta be not implanted over the mouth of the uterus; and this absence of the placenta from the mouth of the uterus is to be ascertained, in dubious cases, solely by very careful examination. That the flooding is not occasioned by the situation of the placenta over the mouth of the womb, may be reasonably suspected when the bleeding is not spontaneous; but is clearly referrible to some exciting cause,—a fright or a fall, for example; though these eruptions may sometimes occur without being preceded by any obvious accident to which they can be attributed. That the flooding is independent of the situation of the placenta over the os uteri may be shown, in some cases, by the freedom of the patient, during the pains, from those large gushes of blood, which so frequently occur when the placenta is implanted over the mouth of the womb. These diagnostics, however, are merely presumptive. Understand, clearly, that the only certain mode of deciding whether the placenta is or is not lying over the mouth of the os uteri, is by careful examination.

Immediate Death from Flooding.—These floodings manifest themselves under various forms, when the placenta is not deposited upon the mouth of the womb. In the seventh or eighth month, for example, the patient may die suddenly, with symptoms very similar to those of ruptured aneurism; and, on laying open the body after death, two or three pints of blood may be discovered within the cavity of the uterus; and this, too, although there have been no external bleeding. On this variety of flooding, however, I forbear to dwell. It is of rare occurrence; and, in the present condition of knowledge, scarcely admits a remedy.

Floodings during Labour.—In the latter months, when the placenta is not lying over the mouth of the womb, floodings of a different kind (more frequent though not common) are found to occur. Perhaps the woman is in strong labour; the liquor amnii has been discharged; the head of the child has descended into the cavity of the pelvis; and a sudden eruption of blood takes place in the middle of the labour. In cases of this kind, if the discharge is

not very abundant, and the head of the fœtus is not advancing with unusual tardiness, the less you interfere the better. Puzos, a practitioner of Paris, used (as I am informed) to recommend the urging forward of the pains, by making pressure on the os uteri, perinæum, and back of the vagina; which, as he imagined, had the effect of stimulating the uterus, and of multiplying the efforts. Of this practice I have had but small experience. Contusions would be the result of a rough administration of it. If it really possesses the power imputed, and effectively accelerates the birth of the fœtus, it would, with due gentleness and caution, be well worth a trial in the more copious floodings of this kind; but, after all, I incline to think that other practices may be more advantageously adopted, with a view of stimulating the efforts of the uterus; and of these it is my design to treat at large hereafter, when on the subject of lingering labour. The ergot appears to be especially indicated. If, again, the bleeding takes place in the middle of the labour, and that to a dangerous extent,—should the head be *above* the brim, you must introduce the hand, and bring the fœtus away by the operation of turning; but should the head be *below* the brim of the pelvis, you may introduce a lever, or a pair of forceps, and abstract the fœtus in that manner. The practice here, then, is very simple. So long as the discharge is not dangerous, it is unnecessary to interfere actively with your manual practice; but if the discharge is so abundant that life seems to be thereby endangered,—unless, as before explained, asphyxia forbid,—manual operations become necessary. If the head of the child be *below* the brim, the lever or forceps may be used; if it be *above* the brim of the pelvis, the hand must be introduced into the uterus, and the child must be abstracted by the operation of turning, already considered at large;—the evacuation of the uterus, in these cases, being the only effectual mode of putting a stop to the discharge.

But let us proceed to the next variety. If engaged in a large consultation-practice (as it is sometimes called), you will occasionally meet with flooding-cases where the placenta is not placed over the mouth of the womb; and where the labour, perhaps, is not as yet begun;—the patient being attacked with copious bleeding, at a time when the membranes are unbroken, and when the os uteri is wholly or in great measure closed. In cases of this kind, if the discharge be unattended with danger, you need not actively or manually interfere. Let the patient lie a-bed;—let her be kept cool and quiet. If there be a slight fainting, let it be encouraged. Refrigerants may be of use; turpentine and lead may be given; cold may be applied topically;—in a word, to check the bleeding, you may have recourse to all the various practices already recommended, and as yet (I trust) not wholly forgotten. If, however,—as not unfrequently happens in those bleedings,—you are alarmed for the safety of the patient, you may then be justified in having recourse to manual practices; and if the placenta is not upon the mouth of the uterus, and the liquor amnii has not yet been

discharged, then it seems to be agreed that the preference is to be given to that beautiful operation, which consists merely in the rupturing of the membranes, and the discharge of the liquor amnii. For this purpose, the hæmorrhage continuing, pass a finger or two to the membranes; then take a female sound (if bluntly pointed, all the better); and, carrying this through the membranes, tear them a little, so as to discharge the water. Rigby,—who first recommended the practice in this country, and who has all the merit of originality,—tells us, I think, that in as many as sixty cases, he found this operation sufficient to arrest the discharge; or, at all events, to diminish it so much, as to secure the patient from danger. Merriman, in his very excellent Synopsis of Midwifery, states that, in nearly thirty cases of uterine bleeding in the after-months, he found this operation alone sufficient effectually to check the discharge. Now, the danger of the cases considered, this success is splendid! Nor have I, in my own practice, found reason to doubt the efficacy of the remedy. Your practice, therefore, lies here within a very narrow compass;—easily administered,—efficaciously operative! The placenta not lying over the mouth of the womb, and the os uteri being shut,—provided the discharge be not very large and dangerous,—you do not interfere with the membranes; but wait, at least for a time, to see whether the bleeding will not cease of itself; but if the discharge continues, so that you are alarmed for the safety of your patient, even then you ought not, without reflection, to thrust your hand into the uterus; for, in general, it is sufficient merely to rupture the membranes;—an operation, than which none in midwifery is more easy; and, in this way, discharging the fluid of the ovum, you more or less completely arrest the discharge of blood. The operation is beautiful;—simple, as it is effectual!

Even when the placenta does not lie over the os uteri, it now and then happens that, notwithstanding the discharge of the liquor amnii, the flooding still continues. In cases of this kind, provided the patient's life appear to be in danger, the only remaining resource is to bring away the child by the operation of turning; for of the remaining means for arresting the bleeding, the most powerful is the thorough evacuation of the uterus. If the softer parts are rigid, if the os uteri is shut and unyielding, if the patient is in a state approaching to asphyxia,—so that it is necessary to wait till she rally,—you must refrain from interfering. Remain in the house. Abide in the bed-chamber. Be patient! Be vigilant! When your patient has rallied somewhat, making an examination, in order to know whether the hand can yet be introduced with safety; and if,—from the laxity of the softer parts, and the dilatation of the uterine mouth,—it seem evident that turning may be safely executed, let the hand without delay be carried into the cavity of the uterus; for the sooner the fœtus is abstracted the better.

The following are the principal errors which you are apt to commit, in the management of those floodings in which the placenta is not lying over the mouth of the uterus; and they well deserve a

little consideration. Neglecting to ascertain whether the placenta is, or is not, lying over the mouth of the womb, is a capital fault; for your whole practice must turn upon that knowledge. If the placenta is lying over the mouth of the womb, one kind of practice becomes proper; if it is not so situated, another. Trusting too much to medicinal treatment, to the exclusion of manual interference, is another great error in the management of the latter floodings. In general, as I have observed on preceding occasions, the best accoucheurs are those who interfere the least with the fingers or the hand; but if there be an exception to that rule, that exception lies in the management of these flooding-cases of the latter months; where, owing to the danger arising from the large discharges of blood, practices prompt and efficacious are peremptorily required. Denman, a cautious and experienced practitioner, remarks somewhere, I think, that if we are to err in those cases, we ought rather to err on the side of promptitude than of procrastination; adding, if I remember rightly, that it is rather a sign of wisdom than of officiousness, to show a readiness in these cases to discharge the water, or to deliver by the hand. Again:—If you have not seen much of flooding-cases, you are liable to be alarmed at the quantity of blood that is discharged; being induced, in consequence, to carry your hand into the uterus; when, perhaps, it would have been a better practice to have confided the suppression of the bleeding to the rupture of the membranes;—an operation at once safer and more easy. Further, the delivery of patients in a hurry is a great error. It is *more* than an error;—it is a *crime*! Into this crime, in an unguarded hour, you may be seduced, if you have too long delayed the delivery, when really required. Anxious to save your reputation and your patient, you accelerate. You bruise! You tear! You destroy! I now repeat what I observed once before:—In obstetrics, a thrust of the hand into the uterus, may prove as fatal, and will generally produce a more extensive wound, than the thrust of a bayonet! Waiting for pains is an error which you may commit. On this I have dwelt already. You have not forgotten "the silly rule!"* Where there are large floodings, the womb may be paralyzed; nor should you, therefore, if symptoms require it, be deterred from manual interference, merely because the pains are wanting. The absence of pains, if it proves anything, rather proves the necessity of obstetric assistance; because it proves that the natural efforts are inadequate to the expulsion of the fœtus.

SECTION 3.—AFTER-FLOODINGS.

By "after-floodings," you are to understand those discharges of blood, which take place subsequently to the expulsion of the child; before or after the birth of the placenta. As these floodings differ a good deal with respect to their circumstances, I propose to consider their several varieties.

* See page 201.

a. Varieties of After-Floodings.

From Retention of a part of the Placenta, or a Clot of Blood.—After the birth of the child, we sometimes meet with large discharge of blood from the uterus; and these discharges may either be produced by the presence of a portion of the placenta, which has been left behind in the womb, unperceived by the accoucheur; or, without such retention of the placenta, they may now and then be occasioned by the lodgment of a clot of blood. We may suspect that part of the placenta is retained, if pains like those of labour occur; if, too, the discharges from the womb are fetid; and if the bleeding have stopped and made its appearance again, perhaps some three or four days after delivery; and this suspicion once excited,—if circumstances require,—an examination may be made; when, if there be any thing in the uterus, it will most probably be found lying in the mouth of that organ. The treatment of these cases may be dismissed in few words. So long as the symptoms are not pressing and dangerous,—and they generally are not in cases of this kind,—so long it is not necessary for the practitioner manually to interfere. The various remedies prescribed on a former occasion, may, if you please, be tried; and, among others, the ergot of rye; or you may throw saline injections, or cold water, into the rectum; or other means may be used to urge the contraction of the womb. But should the bleeding become obstinate,—so as to place the life of the patient in danger,—you would then be justified in throwing astringent fluids into the uterus;—a drachm of alum, for example, being dissolved for this purpose in a quart of water; or, if there were any substance in the uterine cavity, you might find it necessary to put your hand into the vagina, and your fingers into the uterus; so as to bring away that substance, by the removal of which, in many instances, the hæmorrhage would become promptly arrested.

With Vomiting.—Again, in women of a peculiar constitution, you sometimes meet with an after-flooding of a very different kind described by my valued predecessor, Dr. Haighton, but which I have never hitherto seen myself; whence I presume, that it is not of very common occurrence. In these cases, a sudden pain is felt in the region of the uterus, with concurrent vomiting and flooding. It soon ceases; then recurs; and this, too, repeatedly; till at length the woman loses so much blood, that her life is endangered; or perhaps she perishes. These bleedings do not, in general, assail the patient immediately after the birth of the child; but occur, perhaps, an hour or two after the expulsion both of the fœtus and its placenta. It appears, too, that there is a tendency to a repetition of these floodings in subsequent labours; so that if a woman have had an attack of this kind after one delivery, in her future labours she ought to be watched, for an hour or two, with more than ordinary care.

Internal or Concealed Hæmorrhage.—A more common, and more important, perhaps I may say a more *fatal* variety of these eruptions, is of a third kind; distinguished by a title familiar to most obstetric

ears; I mean that of "*internal* bleeding." In these hæmorrhages, a clot of blood forms over the neck of the womb; and, the hæmorrhage proceeding, the blood accumulates unobserved in the cavity of the uterus. To this case, on account of its importance, I have already had frequent occasion to advert. A pint or two may, in this manner, accumulate in the cavity of the uterus. Occasionally, too, we meet with a variety of after-flooding, though different in pathology, yet analogous in practice; I mean a concealed hæmorrhage in the bed. A woman lying in the centre of a large bed, two or three pints of blood accumulate about her, and form a sort of pool there; —the patient, perhaps, being so enfeebled, that she does not direct your attention to it; and seems, sometimes, to overlook it herself. In either case, dissolution has been the consequence (I may say) repeatedly. The accoucheur is, perhaps, in a room adjoining that of the patient. He is suddenly summoned to her apartment; and, on reaching the bed-side, he finds her dying, or dead; for, on such occasions, women are sometimes very suddenly hurried from us.

When blood accumulates in the bed, it is readily detected by raising the coverings. If the blood collect in the cavity of the uterus, this also may be easily ascertained by examination. Laying the hand upon the uterus externally, above the symphysis pubis, instead of finding the womb round, hard, and not bigger than the head of the fœtus, you feel it, perhaps, as large as the adult head; yielding under pressure; and discharging, not without gurgling, large quantities of blood, fluid or coagulated.

External Hæmorrhage.—Of all the after-floodings, however, by far the most common is the *external* bleeding;—sometimes *preceding*, sometimes *following*, sometimes *accompanying*, the abstraction of the placenta. Large quantities of blood may be discharged. If the woman lie near to the edge of the bed, you hear or see the blood, as it pours upon the floor. This gushing is followed by asphyxia, or a state approaching it; and, from that time onward, there is frequently no further gush, but merely a draining;—a few ounces of blood coming slowly away. In these cases, if the woman have not lost much blood, she generally rallies in the course of four or five hours;—sometimes very rapidly. Sitting at the bed-side, doubtful whether the patient will recover or not, you find her rising and sinking;—to rise and sink again repeatedly; but still, upon the whole, gaining ground on her complaint; so that, at the end of four or six hours, you have the satisfaction to pronounce her to be, in great measure, secure from danger. But if the constitution be of that kind which ill sustains the loss of blood, or if the discharge be very great, then the woman may die; and she may either die suddenly (say in a few minutes), or (which is more frequent) she may live for one, two, or three hours after the first large eruption of blood; so that you have an opportunity of performing the operation of transfusion.

Those hæmorrhages, let me add, usually supervene within about twenty or thirty minutes after the delivery of the child; so that, as

some one has remarked (judiciously enough), they not unfrequently occur just about the time when the accoucheur is washing his hands; being on the eve of quitting the apartment of the patient, and pleased to think that his duties are completed.

b. Treatment of After-Floodings.

With a view to their management, various as these floodings are, they may be commodiously divided into two kinds;—those, I mean, in which the discharge is sparing; and those in which the eruption of blood is at once abundant and dangerous.

Necessity of Uterine Contractions.—If you are called to a case in which, after the birth of the child, a great deal of blood has been discharged from the uterus,—should asphyxia threaten, and should the bleeding be arrested,—in conformity with principles already frequently enforced, beware of manual interference. I have observed already, more than once,—and, in consequence of its importance, I reiterate the remark,—that whenever women are reduced to the lowest ebb, in consequence of large losses of blood, it is always more or less dangerous to disturb the genitals, unless with the utmost caution; for, in consequence of this disturbance, the bleeding may be renewed, and asphyxia and death may ensue. If, however, the system have recovered some share of vigour, and the flooding show a disposition to return; or if, as not unfrequently happens, you are called to floodings in which, though the discharge has been copious, still (on examining the patient) you feel satisfied that there is no immediate danger, manual assistance becomes proper enough; and one of the first measures to be taken, is that of endeavouring to secure the contraction of the uterus. When explaining the nature of these floodings, I observed to you, that the principal means which nature employs to arrest the discharge of blood from the uterus, is the contraction of those muscular fibres, which enter so largely into its composition. The womb contracted, its muscular fibres are shortened. They press upon all the blood-vessels which are disposed and buried among them; and, by this contraction, they close up the vascular orifices which open upon the uterine surface;—much in the same manner as if they were tied by so many ligatures. Hence, in after-floodings, though not negligent of other practices, we ought to give our main attention to this contraction of the womb;—the best security against a further discharge. To excite the uterine contractions, we are advised by some to carry the hand into the cavity of the uterus, and to move it about there;—an operation which, I believe, requires to be performed but rarely. It is an operation, also, to which I am exceedingly averse; being always unwilling to carry the hand into the uterus, unless there be an inexorable need; for lacerations may now and then occur. There are others, again, who think they can secure the contraction of the womb by binding the abdomen;—a practice by no means to be despised. They put a broad bandage round the abdomen;—interposing a pillow between

the abdomen and the bandage; then, drawing the bandage as tight as may be,—so as to occasion a pressure on the abdomen in front,—they endeavour, in that manner, to prevent the enlargement of the womb; and, in so doing, they at least prevent an accumulation of blood there. This bandage may be applied in the very beginning of the labour; and if this precaution have been taken, it will be easy, without disturbance, to draw it tighter after the birth of the fœtus; and this practice is not to be neglected. You ought not, however, to confide to mere bandaging. On tightening the bandage, do not forget to interpose the hand; and, grasping the uterus (to be felt through the abdominal coverings) compress,—shampoo it lightly, and roll the hand over its surface;—taking care, in so doing, not to occasion much pain. Distinguishing the womb, in this manner, through the coverings of the abdomen,—grasping it,—shampooing it, and rolling the hand over its surface, you may, in general, stimulate its contraction as effectually, as if you were to introduce your hand into its cavity; and much more safely.

Conditions of the Uterus after Delivery.—It may not be amiss to remark here, that, in flooding-cases, and indeed after all deliveries, there are different states in which the womb may be felt; and which states I formely described.* In laying the hand upon the abdominal coverings, endeavouring to feel and grasp the uterus, you will sometimes find it nearly as large as the adult head;—a proof that it is uncontracted; and a presumption that blood may be accumulated in its cavity. In other and more frequent cases, on grasping the womb, you find it small;—not much larger than the head of a fœtus; but, though contracted, it feels soft and pulpy, and yields readily to pressure. In other cases, again,—especially where the hæmorrhage has been arrested,—the womb, thoroughly contracted, feels at the same time round and firm, and as hard as the fœtal head; and this, too, permanently; under which condition of the uterus, the patient is generally thenceforward secure against any dangerous eruption of blood. There is a fourth,—a sort of intermediate condition, in which you may sometimes observe the womb. At one moment it feels contracted and hard; at another very soft and yielding, and perhaps enlarged; the contraction of the womb being not permanent but only temporary;—the muscular actions occurring more especially, perhaps, when cold is applied, or when the hand is rolled over the uterine surface. Now, of all these conditions, the two latter alone secure the patient against further bleedings; and, more especially, that condition in which the uterine contraction is permanent. If you find the womb thoroughly contracted, (round and hard), then,—provided it permanently remain so,—flooding will rarely, if ever, ensue. If, again, you find it round and hard, yet occasionally softening, in general your patient is secure; though not so certainly as when the uterus is in the other condition. If the womb be partially contracted (permanently soft and pulpy), or if you find it uncontracted altogether,—in these circumstances there is

* See pages 116 and 117.

great danger lest the flooding should be renewed; and of course the patient remains insecure.

The management of the placenta is of the first importance in after-floodings; and the following rules, relating to this point, are not without their use:—In after-floodings, if the placenta *have been removed*, you ought by all means to ascertain whether the whole has been taken away; and, further, whether, in this abstraction of the placenta, the womb has not been inverted. In the hurry and tumult of a flooding, it sometimes happens that, in drawing down the placenta, the practitioner draws down the womb too;—inverting it the more readily because, perhaps, it is relaxed and paralyzed by the eruption of the blood. Should you draw forth the uterus beyond the external parts,—so that it lies between the limbs,—the inversion can scarcely be overlooked; but if, in consequence of the inversion, the womb have been drawn down into the vagina merely, the inversion may then remain unnoticed; and, in this way, bleedings may be sustained;—the cause being unknown. A case of this kind has been recorded by Denman.

A Portion of the Placenta remaining.—Again:—In the hurry and tumult of a flooding, when abstracting the placenta, you may bring away a part only; leaving in the uterus (unawares) one-half, one-third, or a still smaller portion. Of this accident I have seen several instances. Retentions of this kind sometimes give rise to floodings; and this not only when the larger portions are retained, but the smaller also; and I strongly suspect, that much inconvenience may be now and then occasioned by portions of the placenta not larger than the hand of a new-born infant; so that, in those floodings which occur after the placenta has been removed, it becomes of no small importance to ascertain whether or not the whole has been abstracted.

You may ascertain that no portion of the placenta is left behind, by taking the placenta which has been removed, laying it out upon a napkin, and carefully ascertaining whether its structure be entire. Doing this, if one part of the placenta is absent, you easily discover it; and if the whole be there, you see it at once.

Inversion of the Uterus.—When inversion of the uterus is suspected, the best mode of ascertaining the truth is, by laying the hand above the symphysis pubis; when, if you can feel and grasp the uterus in its natural situation, it follows that no inversion has taken place; but should you not discover the uterus above the pubes; or, on examining the vagina, should you find the womb lying within, and forming a tumour, soft, round, and large as the fœtal head; or should you find the uterus, as before observed, lying forth between the limbs,—the inversion becomes evident enough. Polypus*, or efflorescent excrescence, must not be confounded with inversion of the uterus. The sudden appearance of these, however, after delivery, is rare. When inversion is detected, the sooner the womb is reduced the better; but, of this we may treat hereafter.

* From πολυς, *many*; and πους, *foot*;—from its sending off many ramifications, which resemble legs.

Floodings before the Placenta is removed.—In after-floodings we are sometimes called to cases, in which the bleeding has occurred after the birth of the fœtus;—*the placenta still remaining* in the cavity of the uterus. Now if, in these cases, the woman be lying in a state approaching to asphyxia,—the flooding being arrested,—it is unwise to interfere manually; but if the case is of the ordinary kind; and if, though the floodings be copious, the symptoms are not very pressing,—the received practice seems, on the whole, to be a good one; and the sooner you remove the placenta, the sooner the womb will contract, and the sooner the hæmorrhage may be expected to cease. With respect to the management of the placenta, therefore, our practice may be comprised in a few words. In general, where there is flooding after delivery, we remove the placenta as soon as may be; leaving it undisturbed where we apprehend that the woman might faint, and die under renewal of the bleeding. But if the placenta have been abstracted already, before the case comes under our care, then we are anxious to satisfy ourselves that inversion of the womb has not taken place, and that no portion of the placenta has been separated by laceration.

Employment of Refrigerants.—When, under large eruptions of blood from the uterus, the woman lies in a state approaching to asphyxia,—cold in all her members,—refrigerating applications to the central parts are scarcely requisite; though,—in conformity with popular feeling, and the prepossessions of friends,—napkins moistened with vinegar-and-water, or water simply, may be applied;—in a manner formerly recommended. But if, under a continuance of the after-floodings, the surface be warm, the pulse distinct, and the vascular action lively,—a condition of the patient by no means common in these cases,—then the ordinary refrigerant applications become proper enough; and ought to be used with diligence and effect. For this purpose, procure a large body of very cold water, and add to it a pint or two of vinegar. Then folding a napkin,—so as to form a surface large enough to cover the central parts in front, or posteriorly,—either besprinkle it plentifully with the fluid, or drench it;—afterwards wringing it partially dry. The napkin thus prepared, lay it on the lower part of the abdomen; and, having done this, apply another napkin (in the same manner) to the loins; changing those napkins as often as the surface acquires warmth;—every two or three minutes, for example; or oftener;—as may be required. In very warm weather, and in warm climates, even ice (when accessible) has been recommended; but of this I have no experience. Cold water may be injected into the rectum; and I know not that any ill effects would result from this practice; which is well calculated to excite contraction of the uterus. I have seen some of my obstetric friends dash a cupful of water over the abdomen; while others have taken the hearth-brush (always at hand); and, dipping it into the refrigerating mixture, they have showered the water upon the abdominal surface, by means of this homely instrument. Bladders of cold water are sometimes placed under the axillæ. Ice has

been introduced into the vagina;—not, however, without the risk of freezing and mortification. By these or other means, a strong impression may certainly be made upon the system; and so far, therefore, they properly recommend themselves to our attention; but, for general use, the most convenient method of refrigeration is by means of a napkin;—as before stated; and, if you wish to produce a sudden and brisk impression on the body, after refrigerating the napkins, you may throw them promptly upon the parts in front or posteriorly. That the application of cold assists in suppressing the hæmorrhage, seems to be proved by experience; and, without refining in our speculations, the fact alone is sufficient to evince the fitness of the practice;—under the conditions before laid down. Should you ask me to explain the manner in which the application of cold proves effectual in suppressing the bleeding, I should reply that it operates, most probably, in two modes:—first, by lowering the action of the vascular system, as we all know that cold will do; and, secondly, by producing a sudden impression on the skin; which seems, by sympathy, to occasion a contraction of the uterus; for (I think) I have myself observed, when a wet handkerchief has been suddenly applied to the lower parts of the abdomen, that, immediately afterwards, on placing the hand beneath the handkerchief, the womb (soft before) might be felt round and firm and hard;—as if prompt contraction had been produced by the sudden refrigeration.

Faintness and Asphyxia.—In large bleedings, after the birth of the child, you will generally find your patient more or less prone to faintness and asphyxia; and as the management of these symptoms will occasion you no small share of solicitude, you had better study them before you are called upon to act. In these cases, unless immediate death threaten, you need not be in great haste to resuscitate the patient; for when the vascular action is depressed, the blood has a greater tendency to coagulate, and close up the bleeding orifices. Under this lowered action, there will be a smaller chance of the detachment of the obstructive clots; and,—a small quantity of blood flowing through the uterus in a given time,—even though the orifices of the vessels remain open, only a small discharge can take place. On all these accounts, therefore, syncope*, wisely intended by nature to put a stop to the bleeding, ought not to be interrupted. In the very first case of this kind which may fall under your care, alarmed by the collapse, you will feel a disposition to stimulate your patient; but against this error I forewarn you. As long as the faintness is not dangerous, so long let it continue; and generally, in these cases, the syncope is rather alarming than dangerous. On the other hand, however, if the collapse produced by the inanition is extreme, and if there is danger lest the syncope (characterized by symptoms formerly enumerated) should terminate in asphyxia and death, it then becomes necessary (by a stimulus, or other means) to sustain the vascular action. For this purpose, as I have told you

* From *συν, with*; and *κοπτω, to strike down.*

already, the domestic stimulus (rum, brandy, or gin) is perhaps the best; and may be given, in quantities of two or three table-spoonfuls —either pure, or with an equal quantity of water,—every ten or, twenty minutes;—according to the effect it may produce. That the spirit is in action we know, if the patient become garrulous and intoxicated; that it excites the vascular system we know, if the pulse rises; and, in all cases, if you find the spirit in operation,—so that the asphyxia gradually yields,—the further administration of it may be suspended. It is according to the effect produced, remember, that this stimulus must be given. If you give merely a few table-spoonfuls in this condition of the system, you will find that it produces but little effect; for the stomach is half-dead, and moderate doses of stimulus are of little avail. As already observed *, I have found it necessary to give half a pint of spirit, and even more,—and this even to young girls,—in the course of two or three hours;—the tendency to asphyxia being very strong. While administering this, you will put your patient in a position fitted, as far as possible, to prevent the asphyxia;—with the head depressed, and the limbs raised by means of pillows. The patient, however, must not be stirred much, in order to obtain this position; but if, by chance, she is lying near to the side of the bed, let the head fall down over the edge, and gently raise the lower limbs;—so as to keep the blood, as much as possible, about the brain; for, while the blood circulates there, asphyxia (I conceive) cannot occur. Nor, while treating of the means for preventing asphyxia, must I forget to mention that nourishment should be given; though there is little hope of its being well digested. Beef-tea, bread-and-milk, preparations of eggs, *et id genus omne*†, may be administered, to the amount of half a pint. Of these, eggs, and bread-and-milk, have the advantage of being very readily prepared. If the patient is obviously sinking, I have told you already, that the principal remaining remedy is *transfusion*.

That plugging the vagina is always improper in after-floodings, I am not prepared to assert. In obstinate drainings it may be of service. Be careful, however, that no internal bleeding occur under the use of this remedy; and this will be best prevented by grasping the womb with the hand.

Recapitulation.—Here, then, are the leading practices to be recommended in those alarming collapses, which are the consequence of after-floodings. If the faintness be slight, you need not actively interfere; but if the faintness be very deep, and approaching to asphyxia, then stimulate; place the woman in such a position as may keep the blood about the head; administer nourishment; and, no other hope remaining,—provided you possess the requisite dexterity,—perform the operation of transfusion.

After-Management of the Patient.—While you are pursuing these practices, of course you will be most anxious to know whether you

* See page 195.

† "And every thing of that kind."

are gaining ground, and whether or not the hæmorrhage is suspended. In after-floodings, after the first gush, there is not usually a copious discharge of blood; but a small drain from the vascular orifices is apt to continue. Now it is of no small importance to know, whether this flux from the womb is arrested or not; and this may be best ascertained by clearing the genitals, and applying a clean napkin below the part on which the patient lies, and against the orifice of the vagina. If you find, after an application of two or three minutes, that the napkin is not stained at all, or that the stain is small and pale, then,—provided you have felt and grasped the uterus, so as to expel any blood that may have accumulated there,—you may rest satisfied that the bleeding is wholly, or in a great measure, arrested. If the bloody stain be extensive and deep, of course you will draw an opposite inference.

When flooding is arrested, bind up the abdomen very firmly, with as little disturbance as may be. Gaitskell's bandage may be of service. A pillow may sometimes be interposed, with advantage, between the abdomen and the bandage. In these cases of copious bleeding after delivery, you will be led to consider whether or not you may quit the apartment of the patient, after you have put a stop to the discharge; and on this point, therefore, some comment becomes necessary. Most women do well under after-floodings; for these bleedings are generally more alarming than dangerous. Remember this; for it tends to tranquillize, and may allay needless perturbations. No woman, however, is thoroughly secure after a large and dangerous flooding, till she have survived the first gush for four or five hours; though the continuance of life after the gush, for two or three hours, must be looked upon as in a high degree encouraging. In *small* bleedings much precaution is not necessary; but when *much* blood has been lost, it is requisite that some one should remain with the patient for three or four hours, at least, after the flooding is arrested.

After large floodings, you ought not to move the patient. Let her remain, in a perfectly quiet condition, for twelve or twenty-four hours; secured as much as possible from moisture, or whatever else might tend to her discomfort. I state to you again that, by yielding to the entreaties of the patients or their friends, and suffering a removal of the body from one side of the bed to the other,—the women themselves making no exertion, but being lifted like the dead,—fatal asphyxia may be produced. I myself, in two cases, occasioned such a disturbance of the vascular system, that I really thought the patient would have expired. One case I know, in which the woman did die. The practitioner left her an hour or two after the flooding; the nurse suffered her to sit up; the bleeding was renewed; jactitation came on; and the woman ultimately perished.

Thus much, then, respecting the management of the more *copious* and *dangerous* after-floodings;—in ordinary practice, happily, not of frequent occurrence.

Treatment of Sparing After-Floodings.—It is by no means uncom-

mon, after delivery, to have more *sparing* bleedings;—floodings in which not more than half a pint, or a pint of blood is discharged. In bleedings of this kind, the active practices just enumerated and explained, are not required;—a much simpler method of management being found to answer very well;—a method which may be comprised in few words. In these after-floodings of the more sparing kind, you may draw the curtains; sprinkle the floor; diminish the fire; tell the patient to restrain her tongue (often very garrulous after delivery); take away the placenta, with the usual degree of caution; lay the hand on the uterus, and grasp it; apply a little cold water; have a little patience; and the hæmorrhage is over. Do not let me alarm you needlessly! Do not needlessly have recourse to vehement practices! Remember that, in recommending such practices, I have been treating of those after-hæmorrhages in which profuse quantities of blood are coming away from the uterus. Most after-hæmorrhages are more alarming than fatal. They are not, however, to be despised. To two women, dead from this cause, I have been called in one night!

Errors to be avoided.—There are some *errors* which you are apt to commit, in dealing with these floodings; and on these we will next remark. In the hurry of extracting the placenta, you may invert the uterus without perceiving it. You may, too, carry your hand into the uterus without need;—a practice to which I am decidedly averse. When the blood gushes away externally, you cannot fail to observe the flooding; but where there is a discharge of blood internally, or into the middle of a large bed, you may overlook it. Watch, therefore, and beware! It is of great importance to keep the womb thoroughly contracted;—by laying your hand upon the womb, and grasping it. A capital error, therefore, may be committed, by not securing the contraction of the uterus. Examine yourselves on the very first case which may fall under your care; and see whether you have not neglected the state of the uterus altogether! The leaving of the patient too soon, is a great error. You should remain with her five or six hours after a dangerous discharge of blood has been stopped. This is not necessary in ordinary cases, where merely a few ounces of blood have come away; but after the more copious bleedings, it is a very necessary caution.

Some Women peculiarly liable to Floodings.—There are some women who, from idiosyncrasy, are peculiarly liable to bleeding; and very undesirable patients they are; for the probability is, that they will ultimately die under your hands! Hence it becomes a question, in cases of after-floodings, whether we can use any means of prevention. As I am in general called to cases in which the flooding is commenced before my arrival, I have had very little opportunity of seeing the effect of any preventive practice; and cannot, therefore, from my own experience, enlarge upon this topic. When there is a tendency to bleeding, Denman and others have recommended that you should not accelerate the birth of the child. After the head has been expelled, you ought not to draw forth the shoulders and

abdomen. If the womb expel the fœtus, by its own efforts, it will contract more completely; and less bleeding, therefore, is to be looked for when the placenta becomes detached. When the child is about to come into the world, or when it is just born, a gentle stimulus may be given; and, notwithstanding any little increase of the vascular action which it may occasion, the stimulus seems to be of service, by assisting that uterine contraction on which the prevention of the bleeding is mainly dependent. When there is a proneness to flooding, we are advised by Denman to maintain the patient in a sedentary posture, when the fœtus is about to pass into the world; for it is supposed that, in this position, there is a less tendency to bleeding, than where the patient is lying, at this time, in the usual manner. The leaving of the placenta in the upper part of the vagina, is another preventive recommended by some practitioners. It is supposed that the lodgment of the placenta in the neck of the uterus, or the upper part of the vagina, will stimulate the womb to a more thorough contraction; and by so doing operate as an effectual preventive of flooding. In pursuing the rules formerly recommended for managing the birth of the placenta, you will find yourselves in conformity with this practice; for it has been already observed that, in commencing your obstetric career, before you abstract the placenta, you ought (in ordinary cases) to leave it in the genital cavity for fifty or sixty minutes after the expulsion of the fœtus.

Illustrative Preparations.—Thus much, then, respecting the preventives of after-floodings. Let me now describe two preparations, which illustrate the subject. The first consists of that part of the uterus to which the placenta was coherent; the texture of the uterus being *uncontracted.* The vessels, numerous and large, open upon the surface by unclosed orifices;—the source of those dreadful bleedings to which, when uncontracted, the womb is so obnoxious. The other preparation is the counterpart of the former. It exhibits one-half of the puerperal uterus, but in the *contracted* condition. Upon the surface, exposed by section, many large vessels appear; but they have become closed from the constriction of the surrounding muscular fibre;—secured, as it were, by so many ligatures. Hence, in after-floodings, the importance of ensuring the contraction of the womb! Let it not be forgotten at the bed-side!

CHAPTER VII.

LABORIOUS PARTURITION.

SECTION 1.—ACCIDENTS OCCURRING DURING LABORIOUS PARTURITION.

Although the use of instruments contrived for the extraction of the fœtus, is to be looked on as a great evil in any case; yet, in labours of difficulty or danger, it sometimes happens that the use of these instruments occasions a smaller evil, than that which would arise from the commission of labour to the unassisted efforts of nature. It is in these cases, and these cases only, that the employment of instruments becomes justifiable; and to the consideration of such cases ("laborious labours" as they are denominated) we shall now proceed;—commencing with the consideration of the more important accidents to which, in this variety of it, delivery becomes obnoxious; whether *during* parturition or *afterwards*. First, let us give our attention to those accidents which occur, more especially, during delivery.

Rupture of the Trachea or Bronchi.—It is not frequently that a disruption of the larger air-tubes occurs in the progress of laborious parturition; yet this accident is sometimes observed;—the trachea* or bronchi† giving way. After much exertion, the neck and face swell; an erythematous‡ flush of the integuments is produced from the accelerated circulation; and the patient, at the first glance, appears to labour under a sudden attack of erysipelas§. The flatulent nature of the swelling manifests itself on making an examination, by the usual crepitus ‖ perceived on compressing, and lightly shampooing the skin, with the tips of the fingers. Should emphysema¶ occur, delivery is desirable. To retain the breath and force downwards, is likely to aggravate the disease; so that the emission of the voice may be recommended. After delivery,—if I may judge from the single case brought under my notice,—the aperture, seldom capacious perhaps, heals spontaneously; and the air is absorbed, without inflammation. The patient under my care (a stout Irishwoman, disposed to clamour and to make violent efforts) was, in a former labour, attacked with bronchial laceration; and recovered, on both occasions, without a single bad symptom. The second time she was delivered by the help of the long forceps.

Vascular, or Cardiac Lacerations.—In protracted and violent labours, the vascular system may give way; nor is the patient always

* From τραχυς, *rough.*

† From βρεχω, *to pour;*—because the ancients believed that fluids were conveyed into the stomach by the windpipe (βρογχος), while solids went by the œsophagus.

‡ From ερυθρος, *red.*

§ From ερυω, *to draw;* and πελας, *adjoining;*—so named from the tendency of the neighbouring parts to become affected.

‖ From *crepo*, "to make a noise".

¶ From εμφυσαω, *to inflate.*

of a plethoric habit. Sometimes the *smaller* parts of this system, sometimes the more *capacious*, are burst; and the blood may become extravasated into any of the three great cavities;—the head, the chest, or the abdomen. After a most laborious labour, the patient, a young lady, suffered a very severe pain; and the fœtus suddenly burst into the world; but, at the same moment, the blood began to gush from the lungs, and the patient was speedily suffocated. A woman, by no means of a plethoric habit, after uterine hæmorrhage, —neither very violent, nor long continued,—suddenly fell back upon the bed, and expired. On inspection afterwards, the mouth of the womb was found to be dilated to the breath of a dollar;—the shoulder presenting. The right ventricle of the heart was laid open to the extent of one or two inches, as if it had been wounded by a knife; and the pericardium contained an ounce or two of blood. When the heart bursts, a very small bleeding seems to accompany the cessation of its action. I am indebted for this case to a very sensible friend;—Mr. Bryant, of Kennington.

Though not a certain preventive of vascular or cardiac laceration, the abstraction of blood from the arm seems to be the remedy more especially deserving trial. It is not always with repletion, nor under the more violent efforts of the uterus, that these disruptions occur; nor is there, in general, a previous warning. They are, however, to be apprehended; more especially if the system be full of blood, and the uterine efforts be violent. Delivery seems to be clearly indicated, when these ruptures are reasonably to be apprehended; and though the abstraction of blood from the arm is by no means a certain security against laceration of the heart or vessels; yet, as a prudential measure, this remedy ought to be tried. Voluntary urging, in these cases, is undesirable. The calmer the patient is, the better.

Rupture of the Genitals.—In the commotion of labour, the genitals sometimes give way in the upper part of the pelvis; the body of the womb occasionally yielding, and still more frequently the neck or vagina. Longitudinal lacerations are not common. In general, the rending is transverse; and lies opposite the promontory of the sacrum, or the symphysis pubis;—the regions most obnoxious to laceration. Frequently, the rent is carried completely through the peritoneum; so that the hand might be carried up among the intestines. Occasionally, the rent penetrates to the peritoneum, without passing through it;—the inner textures, vaginal or uterine, alone giving way; nor am I fully convinced that these lacerations, when seated in the upper part, are much less dangerous than the preceding. The fœtus may be expelled by the same effort which lacerates the uterus (as in one case which fell under my own notice); or, the genitals yielding, the head may remain impacted in the pelvis;—the body of the child alone lying forth through the opening into the peritoneal sac; or, lastly and most frequently,—the womb or vagina yielding,—the whole fœtus, with its secundines, may pass through the laceration, so as to lodge among the intestines.*

* Dr Blundell has, in his Museum, a cast in which the fœtus is so situated.

These lacerations of the genitals may be produced variously; and not always with just blame to the obstetric attendants;—sometimes by rude attempts to introduce the hand; sometimes by the ill-directed introduction of the forceps or the lever; sometimes by the rash and rapid abstraction of the head; and sometimes by the long-continued and violent, but unavailing, efforts of the womb to expel the fœtus;—the uterus tearing under its own exertions. The symptoms and treatment of lacerations after they have occurred, we will consider at large on some future occasion;—confining our observations, at present, to the *prevention* of this tremendous accident. Lacerations may be sudden;—no premonitory symptom preceding; so that we have not always an opportunity of taking precautionary measures. Yet, now and then, the accident is foreshown, more or less distinctly, by the violence of the uterine efforts; and, above all, by unusual, and (as it were) unintelligible pains. "The cramp!"—the patient exclaims; and suddenly the womb gives way; or stabbings or cuttings, unusually severe, are felt in the region of the rent, for some minutes before the laceration. In scientific midwifery, violence has no place. I trust, therefore, that no pupil of mine will ever lacerate the genitals, by the clumsy use of the lever or forceps; by a hurried abstraction of the head; or by coarse and forcible attempts to introduce the hand into the womb or vagina. Sometimes, however, without this manual violence, the womb yields spontaneously; nor do I know any certain mode of preventing this, except by the abstraction. It is much to be regretted that (as before observed) we at present possess no certain and timely indication, by which the accident may be foreknown. A rending sensation, and a sudden collapse of the strengh, with a small discharge from the womb, are sometimes the first manifestations by which the laceration is indicated; so that there is no room for a preventive practice; nor may it be amiss to remark here, that when disruption has occurred, the case, though dangerous, is not hopeless; and that the abstraction of the child by turning, may be looked on as a principal remedy.

Laceration of the Perinæum.—Among the accidents of laborious labour, laceration of the perinæum, together with the parts adjacent, deserves especial commemoration. More rarely the head has forced its way through the lower extremity of the rectum and anus;—the vagina yielding posteriorly. In some few cases, the perinæum dilating greatly under the pressure of the cranium, an aperture has been forced between the genital fissure and the anus;—the child leaving the pelvis, and passing through the opening. In most instances, however, the perinæum gives way, in consequence of the fissure enlarging towards the anus;—sometimes directly and extensively; so that the sphincter ani is torn; and the anus and genitals, in consequence, form but one aperture. Now and then, however, the perinæum yields obliquely;—the rent being carried down on one side of the rectum, so that the intestine escapes; and very frequently, whether direct or oblique, the laceration is of small extent only;—perhaps not exceeding half an inch, or an inch. When the rents

are of small extent, they occasion but little inconvenience; when the intestine is involved in the injury, the retentive powers which restrain the fæces,—lost for a longer or shorter period,—are perhaps never thoroughly restored. When the laceration is carried downward obliquely to the side of the anus, the power of restraining the contents of the bowels remains.

Rude attempts to introduce the hand,—the rapid abstraction of the head by embryospastic instruments,—and the sudden eruption of the cranium from the pelvis, under the natural efforts, at a time when the perinæum is unprotected by the accoucheur, are the principal causes of laceration. Now and then, perhaps, the rent may be occasioned by the descent of the fœtal shoulders, when broad. If many children have been born before, lacerations are less likely to occur; as a rigidity of the part, met with in first labours,—especially if women are advanced towards middle life,—seems to be a principal cause disposing to this accident.

Bleeding from the arm,—fomentations of the genitals,—protective support of the perinæum, with resistance to the further progress of the head,—are the best preventives of the accident; and, though often urged to do so by friends about her, the patient should not force voluntarily, when the head is at the point of emersion, and the perinæum is in danger of giving way. Dangerous distention is easily ascertained by feeling the part. As, however, the whole subject will be considered more largely hereafter, I forbear, at present, from further remark.

Accumulations of Urine.—In laborious labours, the urethra is liable to be more or less obstructed; and large accumulations of urine in the bladder may arise in consequence. Inflammation of the cervix vesicæ, swelling there, perhaps spasmodic constriction of the upper part of the urethra, and compression of this yielding duct between the head of the fœtus and the front of the pelvis, are the most probable causes of these obstructions. The less the patient drinks, and the more she perspires, in these cases, the better. When the bladder is full, I have often perceived it through the abdominal coverings;—forming a large tumour, to be felt distinctly in the front of the abdomen, lying over the uterus. By cautiously bearing the fœtal head from the front of the pelvis, and passing along the urethra a small and flattened catheter, the urine may now and then be drawn off; but in laborious labours, when there is real difficulty, the catheter sometimes cannot be passed up. If the urine cannot be withdrawn, the delivery must be accomplished artificially;—provided the accumulation is becoming so large as to endanger the bladder; and, in general, retention of the urine indicates much pressure, and the risk of slough; and is an argument for delivery.

Laceration of the Bladder.—When the efflux of the urine is prevented, lacerations of the bladder may occur. Sometimes the body of the bladder gives way into the peritoneal sack posteriorly; sometimes the urine forces its way out in front;—so as to become diffused in the cellular web, externally to the peritoneum; and, in some cases

(not the least frequent), the back part of the neck of the bladder gives way into the vagina. If the urine be diffused in the cellular web lying between the front of the bladder and the abdominal coverings, the case must, I suppose, be deemed desperate. If the water escape from the bladder behind, so as to collect within the cavity of the peritoneum, I conceive (judging from experiments upon animals) that,—by withdrawing the urine, washing out the peritoneum with the proper cautions, and tying up the aperture formed by the laceration,—the life of the patient might now and then be preserved. From a successful case under the care of my friend Mr. Gaitskell, of Rotherhithe, I infer that, where the neck of the bladder is burst open behind, the part will sometimes close up;—provided a catheter be worn for a few weeks. In the case to which I have alluded, the closure was very remarkable and certain. The same practice failed in a second case, however; notwithstanding that the rent was less extensive. The laceration of the body of the bladder is occasioned by the accumulation of urine; and is to be prevented, therefore, by evacuating it;—whether by the catheter or the natural efforts. The disruption of the neck of the bladder arises from the accumulation of urine, joined with some descent of the neck towards the outlet of the pelvis. In this state of the parts, on entering the pelvic cavity, the head divides the bladder (as it were) into two chambers;—one lying above the brim, in front of the abdomen; the other below and behind the symphysis pubis. On this latter chamber, as the head advances,—whether under the action of the instruments or of the natural efforts,—great pressure is made; and by this pressure the bladder may be torn open;—the urine issuing in a sudden gush. Openings of this kind differ widely from sloughy openings of the cervix vesicæ. In the latter, there is loss of substance; in the former, there is merely disunion;—the former openings, perhaps, never heal; the latter sometimes do.

When urine accumulates in the neck of the bladder, behind the symphysis pubis,—that part bearing down before the head,—the bladder should be emptied with great care. Much attention is sometimes necessary to effect this. Sometimes the catheter cannot be introduced; or, if it be passed into the bladder, a complete evacuation of the urine cannot be obtained without compressing the bladder externally;—by first laying the hand on the abdomen below the navel, and afterwards pressing the cervix, where it prolapses behind the symphysis pubis. In these cases, of course, the head must not be brought forward too rapidly, by the lever or the forceps. These lacerations of the bladder are all of them rare. In general, the bladder should be kept empty in all labours. Little drink; much perspiration; spontaneous discharge of the urine; the catheter;—these are the principal means of securing this advantage. The *flat catheter* recommended by Ramsbotham,—an excellent accoucheur,—is an useful instrument. When the catheter is employed, force is always improper. Apertures occasioned by the catheter in the back of the cervix vesicæ, and (still more frequently) of the urethra, I

have myself seen. By gently pushing back the head of the child, room may sometimes be made for the admission of the instrument.

Contusions and Mortifications.—Dreadful contusions and mortifications are apt to occur in laborious labour. They are not unfrequent in consultation-practice. From the rude action of the hand, perhaps; from violent efforts to abstract the head, with embryospastic or other instruments; from frequently-repeated, but unavailing, labour-pains; and, above all, from impaction of the head in the cavity of the pelvis, between the front and back (the locked, or incarcerated head, as it is called);—by any of these causes, extensive mortifications*, sweeping all round the upper or inferior part of the vagina, may be produced. If these sloughs are superficial,—affecting the inner membrane only,—they are less dangerous; though adhesions, contractions, and indurations of the vagina are too often the ultimate result. If the labia pudendi, or the surface of the perinæum, be injured in this manner, the patient generally does well; but if the sloughs lie about and penetrate deeply, death (at the end of a few hours, or a few days) is not unfrequently the result;—the system giving way under collapse; or, should the patient escape, the bladder or rectum are not uncommonly laid open into the cavity of the vagina; in consequence of a detachment of the sloughs. Of the management of these sloughs, when produced, I may take occasion to treat hereafter; confining my remarks, at present, to the *preventive* treatment. The more common causes of them, already stated, are the rude pressure of the hand, the violent use of instruments, and the pressure exerted by the fœtal head;—whether above or below the brim of the pelvis. It is important to recollect these causes; in order that you may be on your guard against them. A frequent pulse by no means generally implies the risk of slough; but, on the other hand, while the pulse between the pains remains below one hundred and ten, I think the patient is tolerably secure. I am not prepared to assert, that the contusion producing slough, never occurs without collapse of the strength; but in general, an incipient failure of the powers gives us a useful intimation of the bruising of the parts. Many women, if the head remain above the brim of the pelvis, may do well, although they have been in strong labour for more than twenty-four hours after the discharge of the liquor amnii; but in long-protracted labour there is always danger; even when the fœtus lies free in the false pelvis above the brim, where the pressure is only occasional, (I mean during the pains). When the head is down between the symphysis pubis and the sacrum, so as to become incarcerated there, and permanently compress the parts between the front and back of the pelvis; and this, too, for hours together (five or six, for example);—women may suffer little notwithstanding. But wherever the head is locked up in the pelvis in this manner, there is always reasonable cause for apprehending that fatal contusion and slough will occur, unless the cranium be promptly liberated; for in these cases the pressure is not merely

* From *mors, mortis,* "death"; and *fio,* "to become".

occasional, but continued; and not slight, but very forcible;—the bladder and rectum being completely obstructed by it (the bladder especially); and the bones of the fœtal cranium becoming displaced. It is much to be wished that some experienced practitioner could discover for us a rule, by which we might determine with precision the moment when contusion, likely to terminate in these formidable sloughs, is commencing; for such a rule has not yet been formed. I may observe in general, however, that when the pulse is not permanently rising, or the strength failing, or the labour protracted beyond twenty-four hours of strong exertion after the discharge of the waters, if the head be above the brim; or more than three or four hours, if it be locked *loosely* in the pelvis; or more than half an hour or an hour, if more *firmly* locked;—then the patient is secure against slough; but if the converse of these conditions occurs, sloughs are to be apprehended. Let me add, as a more simple rule, that a pulse of one hundred and ten, and vigorous powers, are a plain and valuable indication of security; and that there is good cause for alarm and vigilance when the pulse rises, and the strength begins to fail, and the countenance acquires an expression of anxiety; and an aspect which leads the practitioner to remark, that "the patient appears very much worn."

Inflammation of the Cervix Uteri and Vagina.—In laborious labour it sometimes happens, that inflammations commence in the substance of the cervix uteri and vagina;—the rectum and bladder, perhaps, being more or less involved in the disease. A crust of buff upon the blood, an unusual tenderness of the parts between the pelvis and navel in front, and a permanent frequency of the pulse, are perhaps some of the most decisive characters of this accident; and venesection and delivery may be looked upon as the most effectual remedies. Fomentations, leeches, laxatives*, and similar remedies, may be proper after delivery; but of these hereafter.

Puerperal Irritability.—During easy parturition sometimes, but more frequently under violent efforts, the pulse rises permanently to one hundred and twenty in the minute; the heat of the surface increases; the tongue becomes browner; the face is flushed, as in typhus† fever; the cry of the woman is sharper and more frequent; and she shows herself impatient of her pains, irascible, morose, and perhaps at length delirious‡. All these symptoms may vanish on delivery; or they may continue after parturition is completed;—terminating at last in puerperal§ mania‖, or other troublesome cephalic¶ affections. If the attack be slight, it may be found to yield

* From *laxo*, "to loosen".

† From *τυφω, to smoulder*; because the fever has the opposite of an openly violent and energetic character.

‡ From *deliro*, "to rave."

§ From *puer*, "a child"; and *pario*, "to bring forth".

‖ From *μαινομαι, to rage.* It is the most violent of the four kinds of insanity:—1. Mania. 2. Monomania. 3. Amentia. 4. Dementia.

¶ From *κεφαλη, the head.*

under the abstraction of stimuli*, and a venesection of sixteen or twenty ounces; if more violent, it may require the use of the tractor†, forceps, or perforator. Wine, and other fermented liquors, are clearly improper. The symptoms are, perhaps, sometimes produced by the abuse of these excitements. This affection may be denominated "puerperal irritability."

Failing of the Strength.—In laborious labours, the strength sometimes fails;—the degree of collapse varying greatly. If the depression of the powers be extreme;—the pulse frequent, but failing; the body cooling; the pain remitting; the countenance falling; and death appearing, as it were, in the face;—there are generally, I believe, in such cases, extensive and deep contusions; and though the patient may perhaps recover, yet death (in a few days, or a few hours) is to be expected. Delivery seems to be indicated here. A still-born child is probable. But when collapse occurs in these laborious labours, it is often only in slighter degree; and, independently of contusion or slough, it may be produced by the fatigue arising from much labour-pain, want of sleep, pacing the chamber, or other analagous causes. An opiate, or other anodyne,—in quantity sufficient to give the patient sound sleep and rest,—may sometimes be of service. Delivery is desirable; but if all other symptoms were favourable, I should be unwilling to administer instrumental assistance, merely because the patient was a little weary.

Convulsions.—Among the accidents of laborious labour, convulsions, may be enumerated; but happily their occurrence is not frequent; or, to speak more correctly, they are rare. Insensibility, and spasmodic concussion‡ of the whole frame, concurring frequently with the labour pains, are the leading characters of the disease. Large bleedings, refrigeration of the head by ice or cold lotions, purgation§ of the primæ viæ‖, and delivery, are the principal re-

* From *stimulo*, "to stir up";—derived from στιγμος, *a sting* or *spur*.

† From *traho*, "to draw."

‡ From *concutio*, "to shake together."

‖ The stomach and intestinal tube; called "*primæ* viæ" (*first* passages), because food passes first through them. The lacteals, into which the nourishment next passes, are the "*secundæ* viæ" (*second* passages); and the blood-vessels, which are supplied by the lacteals, the "*tertiæ* viæ" (*third* passages).

§ In order to enlarge the contracted circle of remedies within which practitioners are apt to confine themselves, we subjoin a list of Purgatives, taken from that great modern master of the Materia Medica, Dr. Duncan. I. Vegetable.—1. Viola Odorata (Violet-Flowers). 2. Vitis Vinifera (Raisins). 3. Sinapis Alba (White Mustard-Seed). 4. Cassia Fistula (the Pulp of the Pods). 5. Tamarindus Indica (Tamarinds). 6. Prunus Domestica (Prunes). 7. Rosa Canina (Hips). 8. Sambucus Nigra (Elder-Berries and Bark). 9. Leontodon Taraxacum (Dandelion-Root). 10. Fraxinus Ornus (Manna). 11. Ficus Carica (Figs). 12. Hordeum Distichon (Barley). 13. Saccharum Officinarum (Raw Sugar). 14. Olea Europæa (Olive-Oil). 15. Ricinus Communis (Castor-Oil). 16. Croton Tiglium (Croton-Oil). 17. Pynus Sylvestris (Oil of Turpentine). 18. Gambogia (Gamboge). 19. Pistachia Terebinthus (Chian Turpentine). 20. Amyris Gileadensis (Balm of Gilead). 21. Copaifera Officinalis (Copaiba-Balsam). 22. Convolvulus Scammonia (Scammony). 23. Convolvulus Jalapa (Jalap). 24. Euphorbia Officinarum (Euphorbia). 25. Pinus Larix (Venice

medies: but of this hereafter. Flushing of the face; throbbing of the carotids; noises in the ears; failures of sight, of articulation, of feeling, or of motion in particular members of the body, together with a shuddering of the muscles;—these, I believe, are the more common premonitory symptoms; and convulsions are the more to be apprehended if the patient have been attacked with the disease before. Bleeding, and (if of easy accomplishment) delivery, are the best preventives of the attacks.

[Sometimes before any signs of commencing labour have appeared, sometimes with the first pains, at other times not till the labour has made considerable progress, or even after the birth of the child, the patient is attacked with strong convulsions. The face is violently contorted; every muscle of the body becomes rigid; and a rattling in the throat is heard. This is followed by a sudden relaxation of the muscles; the limbs become convulsed; the teeth are forcibly pressed together; and the tongue, being at the time protruded, is generally very much bitten. Frothy saliva, tinged with blood, issues from the mouth; "a sharp hissing noise" is produced, by breathing through the fixed teeth and the foam; the eyes work about in a shocking manner; and, altogether, the patient presents a most horrid spectacle. This state of convulsion lasts for an indefinite time; then gradually ceases; and the patient sinks into a sleep, or rather stupor, during which the breathing is stertorous*.]

After-Floodings frequent.—After-flooding is very common in laborious labours; and is, perhaps, rather salutary than injurious. Treat it according to the rules laid down. The womb is, from fatigue, indisposed to contract after these deliveries. Beware, therefore, of carelessly hurrying forth the placenta, lest inversion should occur.

Turpentine). 26. Pinus Canadensis (Canadian Turpentine). 27. Linum Catharticum (Purging-Flax). 28. Rhamnus Cartharticus (Buckthorn). 29. Cassia Senna (Senna-Leaves). 30. Spartium Scoparium (Broom). 31. Geoffroya Inermis (Cabbage-Tree-Bark). 32. Arctium Lappa (Burdock). 33. Cucumis Colocynthis (Bitter-Apple). 34. Momordica Elaterium (Wild Cucumber). 35. Menyanthes Trifoliatum (Buck-Bean). 36. Spigelia Marilandica (Indian Pink). 37. Gratiola Officinalis (Hedge-Hyssop). 38. Iris Florentina (Orris-Root). 39. Aspidium Filix Mas (Male Fern). 40. Helleborus Niger (Black Hellebore). 41. Helleborus Fœtidus (Fetid Hellebore). 42. Nicotiana Tabacum (Tobacco). 43. Colchicum Autumnale (Meadow-Saffron). 44. Veratrum Album (White Hellebore). 45. Rosa Centifolia (Damask Rose). 46. Rheum Turcicum (Rhubarb). 47. Rumex Aquaticus (Water-Dock).—II. Animal. Honey.—III. Inorganic.—1. Magnesia (Calcined Magnesia). 2. Magnesiæ Carbonas (Common Magnesia). 3. Magnesiæ Sulphas (Epsom-Salts). 4. Potassæ Sulphas (Sulphate of Potash). 5. Potassæ Supersulphas (Supersulphate of Potash). 6. Potassæ Tartras (Soluble Tartar). 7. Potassæ Supertartras (Cream of Tartar). 8. Potassæ Acetas (Acetate of Potash). 9. Sodæ Murias (Common Salt). 10. Sodæ Phosphas (Tasteless Purging-Salt). 11. Sodæ Sulphas (Natron). 12. Sodæ et Potassæ Tartras (Rochelle-Salts). 13. Calomelas (Calomel). 14. Pilulæ Hydrargyri (Blue-Pills). 15. Pulvis Autimonialis (James's Powder). 16. Tartras Antimonii (Tartar Emetic). 17. Sulphur (Brimstone).

* "Synopsis of the Various Kinds of Difficult Parturition. By Samuel Merriman, M.D."

The method of managing the birth of the secundines, was explained at large when we treated of natural parturition*.

Death of the Fœtus in Laborious Labours.—After laborious labours, the fœtus is frequently still-born;—in consequence of compression and contusion of the brain. The form of the cranium is frequently altered; and the scalp is generally much swelled. Pressure on the cord within the womb, may also occasion a still-birth. No still-born child ought, in these cases, to be rashly pronounced irrecoverable. The diligent and effective use of resuscitants, can alone enable us to determine whether restoration be practicable; for it well deserves remark, that fœtuses subjected to the higher degrees of compression, are sometimes unexpectedly revived; while, in other instances, our attempts to resuscitate, though actively urged, are wholly ineffectual; although, from the slightness and short continuance of the pressure during the labour, we have entertained sanguine expectations of success. Artificial respiration, and the warm-bath, are principal remedies here; and these means ought to be in readiness.

Swelling of the Labia, &c.—The labia pudendi, and the parts about the anus, sometimes swell greatly in laborious labours. The probable cause of this intumescence is obstruction of the vessels above;—thereby occasioning an effusion of blood into the cellular tissue. Delivery is the best remedy. These swellings indicate pressure; and ought always to awaken vigilance.

[Sometimes, but very rarely indeed, one of the labia becomes suddenly and enormously enlarged;—either towards the conclusion of labour, or immediately after delivery. This accident is produced by effusion of blood in the cellular membrane of the part; and, in a short space of time after its appearance, the skin bursts from the violence of the distension. It occasions very great pain; but a most important circumstance respecting it is the surprise it occasions, and the alarm it gives when not well understood. I believe it is void of danger;—not having seen or heard of any dangerous consequences from it; or ever found any thing necessary to be done, except to wrap the tumefied part in a flannel wrung out of warm water-and-vinegar; and, on the discharge of the coagula (which should not be hastened), to dress the sore with some soft liniment. It is remarkable that the labium always bursts on the inside, as if it were from mechanical distension; and, as the pain is sometimes violent, and the patient full of apprehension, it will be expedient to give a proper dose of the tinctura opii in some cordial †.]

SECTION 2.—EFFECTS OF LABORIOUS PARTURITION.

After laborious parturition, the woman sometimes recovers as readily as if nothing extraordinary had occurred during the delivery. It occasionally happens, however,—and that, too, where the

* See pages 118 to 124.

† Denman's "Introduction to Midwifery"; Seventh Edition; Edited by C. Waller, M. D.

labours have been managed with the best possible care,—that a variety of morbid symptoms manifest themselves;—more especially during the first few days. To the consideration of these symptoms, and their treatment, we shall now proceed.

Tumefaction and Sloughing.—After parturition has been accomplished,—whether by the use of instruments or otherwise,—if the labour have been laborious, much swelling of the exterior parts (the labia pudendi and their adjuncts) by no means unfrequently occurs; and this may be accompanied with sloughs;—sloughing of the inner surface of the perinæum, or sloughing of the inner parts of the labia themselves. These sloughings and swellings,—the result of compression and contusion,—are best treated by fomentations and poultices; and the oil of turpentine seems to be of service, in accelerating the separation of the sloughs. Of course, the general state of the health will require attention. The oleum terebinthinæ (pure, or mixed with two parts of the oleum olivæ) may be applied on tow.

Suppuration, with Hectic Fever.—After laborious labours, suppuration may take place within the pelvis; and matter (to the amount of four, six, eight, or more ounces) may collect, externally to the vagina and peritoneum, in that cellular web which is interposed between the viscera, below the brim. Much irritation of the hectic* kind supervenes. There is sickness, incrustation of the tongue, purging, sweating, and wasting; the pulse is one-hundred-and-twenty, one-hundred-and-thirty, or even one-hundred-and-forty in the minute; and the symptoms altogether assume a very alarming appearance. In the course of a few days after the delivery, the woman may die; or, where the symptoms are less violent, the cysts in which the pus lodges may give way, and the matter escape in various directions;—by the rectum, the vagina, or (perhaps) the urethra. To detect the matter in these cases, may not always be a very easy task. Throbbings, shiverings, irritation, hectic, and careful examination internally, are, perhaps, the best diagnostics. Cases of this kind must be managed on general principles. An ascertained accumulation of matter, may justify the use of the abscess-lancet.

Collapse.—After laborious labours, the system sometimes gets into a state of collapse;—the result of that extensive bruising, to which I referred on a former occasion. If the symptoms of collapse are not very considerable, the patient may rise out of them at the end of a few weeks;—recovering, not so much in consequence of any remedy that may have been applied, as from the gradual restoration of the contused parts under their own healing efforts. If, on the other hand, the collapse be very considerable,—the body cold, the countenance fallen, the perspirations clammy, the pulse one-hundred-and-forty (or more) in the minute, the manner of the patient giving indications of debility and oppression,—then any treatment, even the most powerful diffusive stimuli, will (I fear) be found of very little avail; and the patient will go on sinking until she die;—at the end of twelve, twenty-four, thirty-six, or at most eight-and-forty

* From ἕξις, *habit.*

hours after the time of her delivery *. I have known death, from this cause, occur as late as the tenth day.

After laborious labours, a good deal of inflammation may sometimes hang about the abdominal viscera; and more especially those viscera which lie in the vicinity of the pelvis. If we examine the os uteri and parts adjacent internally, or the vicinity of the navel externally, the inflammation manifests itself by tenderness on compression; and this, too, where the bowels and bladder have been thoroughly evacuated; so that no overcharge of those organs can be the cause of the uneasiness. Together with all this uneasiness of the parts in the vicinity of the pelvis, there is a crusted tongue; and a pulse at one-hundred-and-twenty,—sometimes one-hundred-and-thirty, or one-hundred-and-forty; though the pulse, in those cases, does not, I think, ordinarily become very frequent. In some instances, the inflammation may be seated in the peritoneum;—usually in a circumscribed form. More generally, the peritoneum appears to escape; and the substance of the uterus and vagina, or the cellular web lying externally to the vagina and other pelvic viscera, is the

* We give, from Dr. Duncan, a complete list of Stimuli:—I. Vegetable.—1. Drymis Aromatica (Winter's-Bark). 2. Guaiacum Officinale (Guaiac). 3. Ruta Graveolens (Rue). 4. Citrus Aurantium (the Orange). 5. Citrus Medica (the Lemon). 6. Canella Alba (Canella-Bark). 7. Polygala Senega (Rattlesnake-Root). 8. Melaleuca Leucadendron (Cajeput Oil). 9. Myrtus Pimenta (Allspice). 10. Eugenia Caryophillata (Cloves). 11. Anthemis Pyrethrum (Pellitory of Spain). 12. Arnica Montanum (Leopard's-Bane). 13. Capsicum Annuum (Cayenne-Pepper). 14. Laurus Cinnamomum (Cinnamon). 15. Laurus Cassia (Cassia-Bark). 16. Laurus Nobilis (Bay-Tree). 17. Laurus Sassafras (Sassafras). 18. Laurus Camphora (Camphor). 19. Myristica Moschata (Nutmegs and Mace). 20. Aristolochia Serpentaria (Virginian Snake-Root). 21. Asarum Europæum (Asarabacca). 22. Croton Eleutheria (Cascarilla-Bark). 23. Dorstenia Contrayerva (Contrayerva). 24. Piper Nigrum (Black Pepper). 25. Piper Longum (Long Pepper). 26. Piper Cubeba (Cubebs). 27. Juniperus Sabina (Savine). 28. Arum Maculatum (Wake-Robin). 29. Zingiber Officinale (Ginger). 30. Amomum Zedoaria (Zedoary-Root). 31. Amomum Cardamomum (Lesser Cardamum). 32. Acorus Calamus (Sweet-Flag). 33. Amyris Gileadensis (Balm of Gilead). 34. Pistacia Lentiscus (Gum-Mastiche). 35. Pistacia Terebinthus (Chian Turpentine). 36. Toluifera Balsamum (Balsam of Tolu). 37. Copaifera Officinalis (Copaiba-Balsam). 38. Myroxylon Peruiferum (Balsam of Peru). 39. Styrax Officinale (Storax). 40. Styrax Benzoin (Gum-Benjamin). 41. Euphorbia Officinarum (Euphorbia). 42. Terebinthina Vulgaris (Common Turpentine). 43. Terebinthina Veneta (Venice Turpentine). 44. Balsamum Canadense (Canadian Turpentine). 45. Juniperus Lycia (Olibanum). 46. Bubon Galbanum (Galbanum). 47. Ferula Assafœtida (Assafœtida). 48. Pastinaca Opoponax (Opoponax). 49. Gummi-Resina Ammoniacum (Ammoniacum). 50. Gummi-Resina Sagapenum (Sagapenum). 51. Valeriana Sylvestris (Valerian). 52. Crocus Sativus (Saffron). 53. Cardamine Pratensis (Cuckow-Flower). 54. Cochlearia Armoracia (Horse-Radish). 55. Cochlearia Officinalis (Scurvy-Grass). 56. Sinapis Alba (White Mustard-Seed). 57. Sinapis Nigra (Black Mustard-Seed). 58. Allium Sativum (Garlic). 59. Allium Cepa (the Onion). 60. Allium Porrum (the Leek).——II. Animal.—1. Moschus (Musk). 2. Castoreum (Castor).——III. Inorganic.—1. Petroleum (Rock-Oil). 2. Empyreumatic Oils (Animal Oil, Oil of Amber, Burnt Feathers, &c.). 3. Volatile Oils (Oil of Turpentine, &c.). 4. Narcotics (Opium, &c.). 5. Intoxicators (Ether, Distilled Spirits, &c.). 6. Tonics (Wormwood, &c.). 7. Tonic Metals (Copper, Silver, Zinc, &c).

seat of the inflammation. It is satisfactory to know, that these inflammations generally do well, if suppuration do not occur; and that is by no means very frequent. Violent practices are uncalled for, and improper. Do not confound the disease with puerperal fever. Thirty or forty leeches,—say thirty on an average,—should be applied above the symphysis pubis. Now and then, instead of the application of leeches, blood (to the amount of sixteen ounces) may be abstracted from the arm. Laxatives, refrigerants*, and the antiphlogistic regimen for four or five days, will commonly be found to overcome the symptoms. Of the remedies enumerated, leeches are my principal reliance; and when the patient has a moderate share of strength, I am accustomed, after the leeches, to lay on three poultices in succession; each for two hours;—so as to encourage the bleeding. The poultices should be large, warm, and soft.

Puerperal Irritability.—After laborious deliveries, the patient is sometimes affected with a certain puerperal irritability, not without its danger; and this occurs sometimes even in women of the most placid temper. To this irritability I have taken occasion to advert in a preceding Section†; for it occasionally commences before the delivery is completed. Anxiety, agitation, susceptibility, perhaps morosity, are very strong characteristics of the affection. The head and face are hot; the pulse is frequent (one-hundred-and-twenty or one-hundred-and-thirty in the minute), with a certain smartness and quickness of the beat; the sleep at night is broken; the dreams are wild; and sometimes there is a disposition to delirium;—the patient talking at random. In severe cases, the mind becomes disordered altogether. When, as more generally happens, the symptoms, for three or four days together, do not rise above the level here given, they gradually subside; and the patient ultimately recovers. The chamber may be cooled and darkened; twenty or thirty leeches may be applied to the temples, perhaps repeatedly; the scalp may be shaved, and the head thoroughly refrigerated by cooling lotions, and bladders charged one-third with ice;—the temperature being moderated by the interposition of one or more folds of flannel, if necessary. Relaxation of the bowels; opium, in the larger and more tranquillizing doses; and perhaps digitalis, in a quantity sufficient to operate on the system, may be found of service. Leeches seem, on the whole, to be preferable to cupping or venesection. A given quantity of blood taken away by leeches, reduces vascular action more decidedly, and acts more effectively on the body at large, than the same measure when abstracted by cupping or the lancet. In

* Dr. Duncan gives the following list of Officinal Refrigerants:—I. Vegetable.—1. Citrus Aurantium (the Orange). 2. Citrus Medica (the Lemon). 3. Oxalis Acetosella (Wood-Sorrel). 4. Tamarindus Indica (Tamarinds). 5. Prunus Domestica (Prunes). 6. Rosa Canina (Hips). 7. Lactuca Sativa (the Lettuce). 8. Rumex Acetosa (Common Sorrel). 9. Morus Nigra (the Mulberry).——II. Inorganic.—1. Dilute Mineral Acids (especially the Sulphuric). 2. Vegetable Acids. 3. Acid Salts (Supertartrate of Potass, &c.). 4. Neutral Salts (Nitrate of Potass, &c). 5. Acetate of Lead. 6. Tartrate of Antimony.

† See page 285.

cases of this kind, it is desirable to get the milk into the breast, and to keep it there; for when phrenitic* attacks occur, the milk sometimes disappears suddenly;—an accident always to be regarded with some apprehension. When bleeding has been premised, and the skin is disposed to perspiration, the effect of larger doses of opium is sometimes very satisfactory. I have seen a sweat break forth upon the whole body;—the pulse descending from one-hundred-and-thirty to ninety or one-hundred in the minute. A diaphoretic † may be combined. The pulvis-ipecacuanhæ-cum-opio ‡ is no inconvenient formula. When the irritability is purely hysterical, with quiet and patience, it usually passes away. Flatus, tears, groundless apprehensions, and a cloudy mind, among other characteristics, will be found of much use in the diagnosis here.

Rigors, Sweatings, Wastings, &c.—Rigors, wastings, sweatings, vomitings, purgings, and aphthæ of the mouth, may occur after laborious labours;—the pulse rising to one-hundred-and-twenty or one-hundred-and-thirty in the minute, and the strength collapsing. In cases of this kind, I suspect there are often inflammation and excoriation of the inner membranes of the stomach and bowels; than which, with the exception of slough, nothing more certainly destroys the vigour of the system. Bear this in mind, when contending with such affections; and take your measures accordingly; as in similar attacks occurring after floodings. Aromatics, chalk-mixture, opium, or extract of logwood may be given;—more or less abundantly, according to the effect produced; and if the purging continue in spite of all our efforts, I should recommend the removal of the patient into the country, as soon as may be. A rising ground is to be preferred. I have seen the most obstinate purgings give way under change of air. Should the weakness of the patient require it,

* From *φρην, the mind;* and *ιτις, inflammation.*

† The following is Dr. Duncan's list of Diaphoretics.—I. Vegetable.—1. Guaiacum Officinale (Guaiac). 2. Ruta Graveolens (Rue). 3. Sinapis Nigra (Black Mustard-Seed). 4. Papaver Somniferum (Opium) 5. Polygala Senega (Rattlesnake-Root). 6. Copaifera Officinalis (Copaiba-Balsam). 7. Sambucus Nigra Elder-Flowers) 8. Cephaelis Ipecacuanha (Ipecacuanha). 9. Valeriana Sylvestris (Valerian). 10. Inula Helenium (Elecampane). 11. Arnica Montana (Leopard's-Bane). 12 Arctium Lappa (Burdock). 13. Rhododendron Chrysanthum (Oleander). 14. Capsicum Annuum (Cayenne-Pepper). 15. Solanum Dulcamara (Woody Nightshade). 16. Hyssopus Officinalis (Hyssop). 17. Melissa Officinalis (Balm). 18. Mentha Pulegium (Pennyroyal). 19. Rosmarinus Officinalis (Rosemary). 20. Salvia Officinalis (Sage). 21. Laurus Sassafras (Sassafras). 22. Laurus Nobilis (Bay-Tree). 23. Laurus Camphora (Camphor). 24. Daphne Mezereon (Spurge-Olive). 25. Aristolochia Serpentaria (Virginian Snake-Root). 26. Croton Cascarilla (Cascarilla-Bark). 27. Dorstenia Contrayerva (Contrayerva). 28. Smilax Sarsaparilla (Sarsaparilla). 29. Acorus Calamus (Sweet-Flag).——II. Animal.—1. Moschus (Musk). 2. Castoreum (Castor).——III. Inorganic.—1. Alcohol. 2. Wine. 3. Ether. 4. Volatile Oils. 5. Empyreumatic Oils. 6. Salts of Ammonia. 7. Antimonials. 8. Mercury. 9. Heat. 10. Exercise. 11. Diluents.

‡ The "Pulvis Ipecacuanhæ Compositus" of the Pharmacopœia of 1836. A great deal of information respecting this Pharmacopœia, in a small compass, will be found in a very useful little work, with a very absurd title:—"Sparks from the Wheel of a Man wot grinds"; published by Butler, St. Thomas's Street.

an invalid-carriage may be used during the journey; and a medical friend should accompany her. Solid food is less likely to keep up the diarrhœa, than liquid aliment.

Retention of Urine.—After laborious labours, the patient is sometimes affected with retention of urine; which, in general, need not alarm. The catheter may be introduced two or three times a-day; for the less the bladder is loaded, the better. These retentions are the result of inflammation, intumescence, and perhaps some little spasm about the neck of the bladder. They are frequently accompanied, too, with those inflammatory abdominal symptoms which I have been describing. Leeches, fomentations, and the catheter, are the best remedies. Abscess near the urethra may prevent the flow of urine.

Weakness of the Bladder.—After laborious labours, again, weakness of the bladder is by no means unfrequent. The patient could retain the water well enough before parturition; but after delivery this power is lost. It drips from her continually; and this occurs independently of any solution of continuity by rupture or sloughing. Sometimes the contents of the bladder will come gushing away under efforts of the abdominal muscles. This incontinence may last for months or years; but more generally, unless the contusion of the bladder has been considerable, it does not last for more than a few weeks. Of the method of managing these cases, I shall hereafter speak at large. Suffice it, at present, to observe, that much aqueous beverage, and frequent ablution of the vagina by the syringe and tepid water, are the principal remedies. Blistering above the symphysis pubis, or on the lumbar region, deserves a fair trial, when the case becomes chronic.

Rupture of the Bladder.—In these laborious labours, if sufficient attention has not been paid to the evacuation of the bladder, it now and then happens that the back part of that viscus gives way; making a direct opening into the vagina;—two or three fingers, perhaps, being admissible at this opening. Emptiness of the bladder is the best security against these accidents; which, indeed, are not of common occurrence. If, however, they unfortunately take place, the best method of treating them is by introducing the catheter into the bladder, and keeping it there;—a sheep or bullock's bladder being attached to the lower extremity, so as to collect the water. I know of one case in which a very extensive laceration occurred; and where, by this method of treatment, the aperture healed completely; so that the woman, though the retentive powers were weakened, could, on the whole, retain the contents of the bladder pretty well. In this case there was a legal investigation; and I examined the woman, more than once, with no small care; and though, on the first examination, I could with ease introduce both fingers into the cavity of the bladder (where the catheter might be felt naked), yet, on examining some weeks afterwards, I found the aperture closed so perfectly, that scarcely a trace even of the cicatrix could be detected.

Sloughing of the Vagina, &c.—Where there has been a great deal

of pressure in laborious labours,—whether from the abuse of instruments or other causes,—sloughing may occur;—the vagina or rectum being consequently laid open. When a slough is forming on the cervix vesicæ, the patient, at first, is incapable of passing her urine; so that the catheter becomes necessary. After a few days, however, the accoucheur has the satisfaction to learn, that the water flows under the natural efforts; but, no long time afterwards, he is mortified to hear that the retentive power of the bladder is lost;—the water, at the end of a week or two, dripping from the vagina continually. About this time, there comes away something which is said to be a piece of skin; and,—when washed, immersed in water, and examined,—it is found to consist of a portion of the bladder and vagina. Examination at this time detects an aperture in the bladder; sometimes small, but occasionally large enough to admit one or two fingers. The method of preventing these sloughs, I have already stated. I have already observed, that the accoucheur should never permit a woman to be in labour too long, especially when the pulse is rising; that he ought never to allow the urine to accumulate largely; and that, more especially, when using instruments, he should always have before his eyes, the risk of contusion, laceration, and sloughing, to guard him against too much force. When sloughing of the bladder occurs, I am sorry to say we are not, at present, in possession of any effectual remedy for it. Attend to the general health of the patient, in order to give the healing powers fair play; but, without denying the possibility of closure, I may be allowed to observe, that I never saw a single case,—and I have been called to many,—in which the aperture has been completely healed. A great reduction of its dimensions is sometimes observed; so that there is scarcely room for the passage of a catheter; but, almost invariably, a fistulous communication remains. By means of the actual cautery, this might sometimes be healed; but the practice is rough.

A slough of the rectum is known by the escape of the feculent matter. Happily this accident, more dreadful than the mortification of the bladder, is of much less frequent occurrence. Now and then, however, it does take place in country-practice, and also in that of the metropolis; and several cases of this kind have fallen under my observation in Guy's Hospital. A closure of the aperture might, I conceive, be accomplished by ligature, in some cases; and, in others, by an operation similar to that for hare-lip; and I mention this the rather, because this complaint is so exceedingly distressing, that every thing (not unreasonable) may be fairly recommended to relieve it. In the course of time, the edges of the aperture become callous; and solid fæces may then be retained.

Pressure on the Nerves.—In consequence of laborious labours, a good deal of pressure is sometimes made on the nerves;—the obturator, and great sciatic especially. The trunk of the obturator nerve lies much exposed, immediately below the brim of the pelvis; and is therefore liable to forcible compression, when the fœtal head is coming away. As to the great sciatic nerves, their origins being

seated on the *sacro-iliac synchondrosis*, are of course much exposed to compression, if the head be large or the pelvis small. In laborious labours generally, the nerves do not suffer; or, at most, very slightly. Perhaps, as the head descends, the woman exclaims,—"The cramp!"—and she requests some person to rub her limbs. By and by, the birth is completed; and after delivery the pain is felt no longer. In some cases, however,—of rarer occurrence,—the nervous structure suffers so severely, that the patient remains more or less paralytic for months after her delivery. It is a satisfaction to know, that though the nervous structure does not possess a self-healing power of rapid operation, nevertheless it is not so destitute of that restorative energy as some have imagined. Nerves divided by the scalpel will re-unite; as was well shown by the experiments of Haighton; and by the case of the celebrated Polish general, Kosciuskow, which I formerly mentioned; so after labours followed by numbness and weakness of the limbs, recovery may occur; although it requires a length of time (several months for example) for the purpose.

SECTION 3.— THE EMPLOYMENT OF INSTRUMENTS.

When the birth of the child is obstructed,—whether from rigidity of the parts, or from the bulk of the fœtus, or from the unfavourable position in which it lies,—it becomes necessary occasionally, though but rarely, to have recourse to artificial means of delivery. These artificial means are reducible to the following, as the principal:—premature delivery, the Cæsarian operation, and obstetric instruments. We shall first give our attention to instruments;—always a great obstetric evil, but not always to be avoided.

Dreadful are the evils resulting from the employment of obstetric instruments! And dreadful, too, are those evils which result from neglecting their administration, when really required! All obstetric instruments are an evil. Every additional obstetric instrument is, I think, an additional evil; and, though he is an able accoucheur who contrives a serviceable instrument, he is abler still who teaches us how to dispense with it. Though instruments are of great value in individual cases, in the sum of their effects upon the sex they have, perhaps, proved rather a curse than a blessing. Happy might it have been for women generally, and still happier for their offspring, if instruments had never been invented! All this may be true; and yet it may be equally true that, among many cases, there are a few,—in unhealthy districts especially,—in which the use of an obstetric instrument is a smaller evil than its rejection; and in such instances it becomes our duty to operate.

Good sense has invented and varied some obstetric instruments; whim, innovation, and sciolism,—not to add the spirit of professional adventure,—have contrived still more. It was remarked, by one of the ancient philosophers, that time was his estate. Considering it, as I do, one of our most valuable possessions, I must be excused, therefore, for not wasting any part of it by entering into barren contentions about the defects and excellencies of these various con-

trivances. To those who are fond of talking and disputing on obstetric subjects, these instruments may furnish an amusing and inexhaustible subject, on which to exercise their garrulous eloquence; but those who wish to give themselves more to action than to disputation, will do well, I conceive, to confine their attention to the consideration of those instruments which are best approved by practice. *Ars longa, vita brevis**. The solid part of the profession contains more than enough to fill the very small compass of the longest life!

Of instruments contrived to assist the birth, in laborious labours, the most valuable are,—the tractor, the forceps, the perforator, the crochet, the blunt-hook, and the craniotomy-forceps. Of these instruments, the three latter are designed to facilitate the birth of the fœtus, by reducing its bulk; and may be called *embryotomic*; while the two former (*embryospastic* instruments, as they may be denominated) are contrived to abstract the fœtus without injury either to the mother or her offspring. First, then, let us consider embryospastic instruments;—the forceps, long and short; and the tractor, or lever.

CHAPTER VIII.

EMBRYOSPASTIC INSTRUMENTS.

SECTION 1.—PRELIMINARY STEPS.

The State of the Patient.—When called to a case requiring the use of embryospastic instruments,—that is (to speak in plainer language) the tractor, or the forceps, long or short,—I would advise the accoucheur, before commencing the operation, to examine the state of the patient. In some cases the woman is in a state of collapse. She has been bruised and lacerated before he entered the chamber; and perhaps he is summoned to the bed-side only to see her die. I have already pointed out the symptoms by which these fatal injuries may be known. In other cases, the patient is in a state of inflammatory excitement; particularly where the accoucheur has properly called for assistance in good time. The skin is hot; the tongue is white; the pulse is high; and, on taking away a pint or more of blood, it appears cupped and buffed. In some cases, too, the woman is still vigorous, quiet, and placid, when the necessity for instruments is brought under deliberation. The patient, therefore, after a laborious labour, may be in any one of these three conditions;—composed, excited, or exhausted; nor ought you to commence the use of instruments, till the state of the system has been determined. If there be excitement, bleed.

When making an examination,—which should always be done before having recourse to embryospastic instruments,—the patient,

* Art is long; life is short.

in some instances, bears it well enough; but in others the parts are inflamed, swollen, and irritable; and will not sustain the slightest touch. In these cases, bleed from the arm to the amount of sixteen ounces,—more or less; foment the softer parts; and administer thirty or forty drops of the tincture of opium, or a corresponding quantity of Battley's Anodyne*; and in this manner, as in the case of turning, prepare the parts for the operation.

State of the Soft Parts.—Before proceeding to the use of embryospastic instruments, ascertain clearly what is the state of the os uteri, vagina, and softer parts. If these parts are rigid, do not even think of using the forceps or lever. The very thought is almost sufficient to bruise, lacerate, and destroy! But if, as is more generally the case, the os externum and os internum are wide open, and the softer parts completely relaxed,—contraction of the bones being the cause of the deficiency of room,—the accoucheur is so far justified in having recourse to the operation. Remember this particularly. If the mouth of the womb is shut, and the external parts are rigid, the employment of the tractor or forceps may destroy the patient; but if, on the other hand, the womb is open, and if the softer parts are relaxed, and the head is down among the bones of the pelvis, then the lever or forceps may be applied with the fairest prospect of advantage.

Empty the Bladder and Rectum.—Again, before applying embryospastic instruments, even where the parts will allow it, the bladder should be emptied by the natural efforts, or the catheter;—provided, indeed, the catheter can be introduced; for that is not always accomplishable. Nor must it be forgotten, when instruments are under consideration, that the loaded state of the intestine may require enemas.

Ascertain the Position of the Head.—Before instruments are applied, the position of the head ought to be made out, with the greatest precision. Instruments, the forceps especially, never can be manœuvred well, unless the bearing of the head be first ascertained with nicety. Without this knowledge, the accoucheur may, indeed, use the instruments, and may bring away the child; not, perhaps, without an overweening self-complacency: but, after having seen a great

* The following is a list of Narcotics, taken from Dr. Duncan:—I. Vegetable.—1. Aconitum Napellus (Monk's-Hood). 2. Helleborus Niger (Black Hellebore). 3. Delphinium Staphisagria (Stavesacre). 4. Menispermum Cocculus (Cocculus Indicus). 5. Papaver Somniferum (Opium). 6. Papaver Rhœas (Red Poppy). 7. Rhus Toxicodendron (Sumach). 8. Amygdalus Communis (Bitter Almonds). 9. Amygdalus Persica (Peach-Leaves). 10. Prunus Laurocerasus (Cherry-Laurel). 11. Conium Maculatum (Hemlock). 12. Lactuca Virosa (Opium-Lettuce). 13. Lactuca Sativa (Common Lettuce). 14. Strychnos Nux Vomica (Nux Vomica). 15. Atropa Belladonna (Deadly Night-Shade). 16. Datura Stramonium (Thorn-Apple). 17. Hyosciamus Niger (Hen-Bane). 18. Nicotiana Tabacum (Tobacco). 19. Verbascum Thapsus (Great Mullein). 20. Digitalis Purpurea (Fox-Glove). 21. Gratiola Officinalis (Hedge-Hyssop). 22. Laurus Camphora (Camphor). 23. Crocus Sativus (Saffron). 24. Colchicum Autumnale (Meadow-Saffron).—II. Inorganic. 1. Hydrocyanic Acid. 2. Oxalic Acid.

deal of operative practice, I am persuaded that it is impossible ever to operate scientifically, unless the position of the head be first ascertained. When sufficient dexterity has been acquired by practice, the place of the head may be made out, by bringing the patient near to the edge of the bed (where she ought always to lie when these instruments are used); and, lubricating two fingers of the left hand (generally the most convenient), passing them up to the womb, as far as may be. Proceeding in this manner, the child's head may be felt; and the vertex-presentation may be known by the roundness, the softness, the fontanels, and the rising of parietal bones; not to omit the hair upon the scalp. The presentation thus made certain, it is easy to distinguish the situation, by passing the fingers along the sagittal suture. At the one extremity of this suture, may be found the little fontanel;—of triangular shape, of small size, and with three sutures concurring. At the other extremity, you detect the great fontanel;—of large size, diamond-shape, and with a conflux of four sutures (the frontal *, the sagittal †, and the two legs of the coronal ‡). There is only one part of the head where four sutures meet; and that is the great fontanel. There are several parts where *three* sutures meet; and hence it requires more tact to discriminate the little fontanel. Where the little fontanel is, there is the occiput; where the great fontanel is, there is the face; so that, in this manner, the accoucheur can make out the situation of the different parts of the head, with tolerable facility. But further, by observations upon the ear of the child, the observations on the fontanels may be confirmed. Unless there be an extraordinary want of room, two fingers may be passed between the symphysis pubis and the head, and there the ear of the child will be found; this, by inference, indicating the situation of the face and occiput to the sides of the pelvis. If the flap of the ear can be felt, this inference becomes still more complete; for,—care being taken not to double this part,—the flap always lies towards the occiput; and the part which is sessile, towards the face. Thus, then, under the vertex-presentation (the most common of all; and on which, therefore, I have enlarged the most fully),—by the hair on the scalp,—by the roundness,—the softness,—the fontanels,—the sutures,—and the ear, it is easy to make out the position of the head; and this knowledge is peremptorily necessary to him who wishes to operate with instruments in a dexterous and scientific manner. Instruments are excellent in gentle and judicious hands; but most destructive if they fall into the hands of the violent and the ignorant!

Where there is a presentation of the *face*, the accoucheur may sometimes be compelled to have recourse to instruments; and, I apprehend, the presentation of the face will be easily made out; for,

* From *frons, frontis*, "the forehead."

† From *sagitta*, "an arrow";—so named, it is said, because it lies between the coronal and lambdoidal sutures; like an arrow between the string and the bow.

‡ From *corona*, "a crown";—because it indicates the place where the ancient crown or garland was worn.

I am persuaded, he will easily be able to distinguish the mouth from other apertures; though I have not always met with those who possessed discrimination enough for this distinction. The accoucheur's finger should be well accustomed to the touch of the face, in the new-born child;—its eyes, its nose, its mouth, and all its various features; and if he familiarize himself with the feel of these parts, there can be no difficulty in making out the presentation, and the situation also.*

I repeat it, then. Before attempting to introduce an instrument, in laborious labours, sit down at the bed-side;—tranquilly, considerately, and (if necessary) repeatedly; as often, indeed, as the investigation may seem to require; and then make out by examination, to your thorough satisfaction, what is the position of the fœtus; for this knowledge is peremptorily necessary to the dexterous administration of instrumental practice. This point ascertained, before proceeding further, ascertain, moreover, what is the nature of the difficulty with which it may be necessary to contend. In general, when deliveries are laborious, the obstruction arises from one of three causes;—rigidity, disproportion, and unfavourable position of the cranium;—of all which we shall hereafter treat separately. Which of these causes may be in operation (separately, or in conjunction) in the case under care, should be thoroughly investigated; so that, if any obstetric friend were to enter the room, and say,—"You are going to use your instruments!—Why?"—the accoucheur might be able to give an answer, consisting of something more than mere words.

Position of the Patient, &c.—When instruments are to be used, it is proper to place the woman in a convenient position;—that position being selected which may be the most commodious to the operator. Some may prefer the sedentary posture; some the recumbent; some, that the woman lie on the right side; others, upon the left. These things are relative to the habits of the operator; and to dispute about them is futile. For myself, I generally place my patient on the left side, close to the edge of the bed;—with the shoulders forward, the loins posteriorly, the knees and bosom approximated, and the abdomen facing a little downward. Nurses are in the habit of putting a patient in a position just the reverse of this;—I mean with the loins anteriorly, and the shoulders behind. Keep clear of the bed-post. Sterne hated wooden bedsteads. I am sure the accoucheur has reason to hate those with four posts. If the patient wish to bear with her feet against the bed-post, she may be indulged in smaller difficulties; but, in using the forceps (especially as the delivery proceeds), the post will be in the way. In laborious labours, the operator must also choose his own position by the bed-side. In

* "First ascertain correctly the presenting part; which it is sometimes very difficult to accomplish; especially when there is a puffy tumour of the scalp. It requires you to have the attention riveted on the investigation. You must try to feel the ear. I knew two capital students, who differed about its position; and I found they were both wrong."—*Dr. Mackintosh's Lectures on Midwifery.*

general, I kneel, and have a chair in readiness; so that, if fatigued, I may sit down. This precaution I should advise others to adopt also.

These, then, are the principal steps to be taken, before using the embryospastic instruments. The operator having taken an appropriate position, let the woman be placed in the position described;—close to the edge of the bed; so that the pelvis may lie under the hand. Ascertain what is the nature of the difficulty. Ascertain, too, the position of the child; and do not blindly pull down with the instruments, without this previous knowledge. Let the bladder be emptied; and the rectum too, if necessary; and let the softer parts be fomented and relieved from the great irritability. If the patient is in a state of collapse, be on your guard; for she may die immediately after, or before the delivery. If she is merely in a febrile state, or in good general health, be watchful still; though she may be expected to do well. Generally, before using the embryospastic instruments, it is proper to take away fourteen or sixteen ounces of blood. It is always absolutely necessary that the parts should be thoroughly relaxed, and that the dilation of the os uteri should be complete.

[Few know how to apply instruments; but all should be dexterous in their use. Before introducing them, you must warm them; which is best done by placing them (folded in a cloth) in a basin, and pouring on them *hot*, but not *boiling* water; for if applied cold, they give rise to a cutting or burning sensation. The woman must lie across the bed; and you must be in a comfortable situation yourself, so that nothing may distract your attention. If your shoe pinches, therefore, take it off; or if your feet are cold, warm them. See that the os uteri is well open, and that the bladder and rectum are empty; and acquaint yourself fully with the relative position of the child. If this were not ascertained correctly, you would not know in what direction to turn the head when you had grasped it. Before the instruments are introduced, they, as well as your fingers, should be well lubricated.

We are sometimes obliged to deceive people for their good; and therefore you must not let the patient know you are going to apply instruments; for if a woman knows they have been used, at the next pregnancy she always thinks she is to die. But you are not to deceive the relatives. Always tell the husband you are going to employ them.*]

SECTION 2.—FILLETS.

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

It has been supposed that fillets were used, in the practice of midwifery, as early as the time of Hippocrates; but whenever they were invented, they have since undergone a variety of changes; by which it was intended to gain some advantage, or to avoid some inconve-

* Dr. Mackintosh's unpublished Lectures on Midwifery.

nience. Fillets have been constructed of silk, cotton, linen, or leather of divers kinds; strengthened, or rendered more commodious for application, by the addition of cane, whalebone, wire, or very thin and narrow plates of iron;—variously braided and worked together, according to the opinion or judgment of the contriver.

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

The peculiar advantages expected to be derived from fillets were these. They were supposed to be applicable with great facility in every direction of the head, or when the latter was too high to allow of the use of any other instrument recommended with the same intention; to supply us with sufficient power to extract the head, when detained an unreasonable time, by any cause, to the hazard of the mother or child; and to do less injury to either, on account of the softness and pliability of the materials of which they were composed.

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

For these and perhaps various other reasons, fillets (of every kind) gradually declined in estimation; and they are now wholly neglected. They may be considered as among the first attempts of art to give relief; and as having been superseded by other contrivances, equally safe and more efficacious.*]

[As a proof of the inefficacy of the fillet to answer the desired purpose, in cases of real difficulty, the following case may be adduced. The Editor† believes it to be the last example of its employment in England. The record is taken from Dr. Merriman's "Synopsis of the Various Kinds of Difficult Parturition";—a work replete with practical information:—

"Probably there is no practitioner now living in England, who has witnessed the use of the fillet in natural presentations. I am induced therefore to relate, as a matter of curiosity, the particulars of a case in which this instrument was employed. I have somewhat abridged it from the manuscript statement of my uncle, the late Dr. Merriman.

"When young in practice, he was engaged to attend a woman of

* Denman's "Introduction to the Practice of Midwifery." Seventh Edition.
† Dr. Waller.

her second child. In her first labour she was delivered by a midwife; the child came by the feet; and, after a very painful labour, it was still-born. When her second labour came on, preceded by a discharge of the liquor amnii, she sent for Dr. Merriman; who, finding the pains to be very insufficient, left her. For two days, little progress was made; but, on the third, the os uteri began to dilate, though very slowly;—the head continuing very high in the pelvis. The loss of the first child having made the friends of this patient very anxious respecting her, it was proposed that another accoucheur should visit her; and this being agreed to, Dr. R.,—a native of France, and an accoucheur of much celebrity,—was sent for. On examining the patient, he gave it as his opinion that she might be speedily delivered, if assisted by the fillet; and politely proposed that Dr. M. should endeavour to deliver with that instrument; but he declined the offer, both because he was not convinced that any instrument was then required, and because he doubted whether the fillet could be applied or acted with. Dr. R. therefore proceeded to the operation.

"'A strong new fillet being procured, and the proper noose made, it was dexterously enough introduced; and, though it put the woman to a great deal of pain, was at length fixed, and drawn close round the neck of the child. The Doctor then began pulling with considerable force; but, as the fillet galled his hands, he procured a common rolling-pin, round which he tied the ends of the fillet; and pulled again with very great force, till he exerted the whole of his strength;—perhaps not judiciously enough waiting for, and taking advantage of, the pains.

"'This exertion put the patient to inexpressible torture, but did not seem to answer the end proposed; for the head advanced but very little, and was probably turned to one side by the fillet; which, from the nature of its hold, could only draw in one direction, and that perpendicularly from the part to which the noose was fixed. This,—whether the noose be fixed on one side of the neck, over the occiput, or over the chin,—must have a tendency to drag down that part first; and, consequently, the head must be doubled on the neck, and the difficulty thereby increased, rather than diminished. That this was really the case, the event showed; for, by the prodigious force used in pulling, the fillet at length came away; bringing, enclosed in its noose, some of the skin and flesh, with one of the vertebræ of the neck.

"'This was an undeniable proof that the fillet had actually cut off the child's head, which was left in the pelvis. There remained, therefore, no remedy, but to try what could be done by opening the head and extracting with the crotchet; and, luckily, the head was by this time so engaged in the bones of the pelvis, that it was not pushed back into the uterus by the attempt to perforate the skull. This perforation was made in one of the ossa parietalia, and not in the vertex; by which it plainly appeared that the head had been drawn to one side by the fillet. At length, with much difficulty, the head was extracted, and the body easily followed.

"'Immediately after delivery, the lochia ceased, a violent fever

with delirium came on, and the abdomen was prodigiously tumefied. On the second day, the patient grew stupid and insensible; and, in a few hours, she died.'

"I have frequently heard my uncle say, that the screams of this poor woman, under the operation, were greater than he ever witnessed in any other case of labour.

"From many inquiries that I have made, I have reason to believe this was the last time that the fillet, in natural presentations, was used in London.

"In Hamilton's "Elements of the Practice of Midwifery" (1775), page 194, is recorded the extraordinary case of a young woman, who, when apparently in the agonies of death, was deserted by her medical attendant, after he had by some means separated the head from the body. This poor woman was afterwards delivered, first of the body, and then of the child's head, by Mr. Robert Smith, a celebrated surgeon at Edinburgh; and ultimately recovered. It is probable that the separation, in this instance, was effected by injudicious and violent force with a fillet." *]

SECTION 3.—THE LONG FORCEPS.

The long forceps, from end to end, measure about fourteen inches; and when properly applied at the brim of the pelvis, they lie obliquely, with the point directed towards the navel, and the shank upon the perinæum. By a distinguished surgeon of the last century, Levret, the long forceps were laterally incurvated; in consequence of which, on placing the forceps in the pelvis, the handles are thrown forward from the sacrum, and the perinæum is rendered more secure. Forceps, both straight and incurvated, I have repeatedly used; and after some experience of both, I decidedly prefer the straight. Lateral curvature may somewhat protect the perinæum; but its most certain security is derived from the prudence and gentleness of the accoucheur. The blades of these long forceps, in the method of using them hereafter recommended, may be applied to different parts of the head; but, as they are more generally laid over the forehead and occiput, it is to these regions of the cranium that they are with the greatest nicety adapted; and they conform to the cranium with great exactitude. Unless the blades be elastic, however, absolute adaptation can (I conceive) never be obtained; for while the form of the instrument remains unchanged, that of the head itself varies. Smellie's lock is decidedly the best. The lock should be loose;—so as to admit a conjunction of the blades, although they may not be brought into exact apposition with each other; for, in applying them to the head, this apposition cannot always be obtained. The instrument should be strong, and free from points or edges. Cleanliness renders it desirable that the forceps should not be coated with leather.

* Editorial Observations in Denman's "Introduction to the Practice of Midwifery." Seventh Edition.

I do not like to see an *elegant* pair of forceps! Let the instrument look like what it is,—a formidable weapon! "Arte, non vi" —may be usefully engraved upon one blade; and "Cave perineo"* —upon the other.

Cases, most frequently requiring their Use.—There are various cases in which the long forceps may be used; but as it is my object always to simplify my remarks as much as possible, I shall confine myself, on this occasion, to that case in which the use of them is most frequently necessary; and which, properly understood, will enable you to comprehend their management in all other cases. This case, of all others the most frequent in its occurrence, consists of those laborious labours in which the child's head is detained at the brim of the pelvis;—the face lying to the one side, and the occiput to the other; and a large head, a narrow pelvis, or other causes, impeding the descent.

Manner of their Introduction.—In cases of this kind, first warm the forceps; not by displaying them in the room, or holding them openly before the fire; but by plunging them into water of a proper temperature; or by grasping the blades in the hand; and then you prepare for introduction. If the forceps be straight, you may introduce either blade first; but if they have a lateral curvature, select your blade, so that (when introduced) the concavity of it may lie towards the symphysis pubis, and the convexity towards the sacrum;—the shank, in consequence, receding from the sacrum. The blade being selected, take the handle of it in your right hand, and then slide up one or two fingers of the left into the cavity of the uterus; so as to interpose those fingers between the cervix uteri and the child's head; an operation which, if you are qualified to use the long forceps, you may very readily perform. That, in this stage of the process, it can never be proper to carry the whole hand into the pelvis, I will not venture to assert; but in general such a measure is needless; and being needless, you will (I presume) agree with me, that it is highly improper; since there is a risk of lacerating the vagina. Let it be at the side of the pelvis that you interpose two fingers between the cervix uteri and the child's head; for at the side it is that the pelvis is generally most roomy. Having done this, you pass the blade of the instrument upon the fingers; and very gently work the blade of the instrument along the side of the pelvis; where it ordinarily meets either the face or the occiput of the child, over which it glides and lies. Finding this, recollect the aphorism,—"*arte, non vi.*" Use the utmost tenderness and gentleness; not forgetting that you are operating on the softer sex; and that a single rude thrust may pass the blade through the vagina. Often ask the patient whether you are giving her pain. And here let me remind you of what was before stated;—I mean that, the head being at the brim of the pelvis, the basis of the cranium lies above and anteriorly; while the summit is placed below, and towards the coccyx and the point of the sacrum. In accordance with this position of the head, then, the blade must be placed; that is, the point must be directed towards the umbilicus,

* "Take care of the perinæum."

and the shank must bear backward upon the perinæum; when the instrument will be found to lie very commodiously upon the head. The first blade being placed in this manner, you secure it in its position with the thumb and the two last fingers of the left hand; afterwards insinuating the two remaining fingers (the first and second); so as to prepare the way for the introduction of the second blade. To pass up this part of the instrument, take the handle in the right hand (as before); and,—having interposed the fingers between the child's head and the cervix uteri, and towards the back of the pelvis, so that the back of them lies near the sacro-iliac synchondrosis,—pass the second blade along the fingers in the back of the pelvis, till you get it about half way to its destination. Having thus passed it half way towards its destination, along the back of the pelvis, you work it with gentleness; carrying it in a lateral direction, till you have transferred it completely from the back to the side of the pelvis; and then you carry it high up, so as to lay it over the child's head;—the point being directed towards the umbilicus, and the shank being carried backward upon the perinæum; in such a manner that the two blades are brought, as nearly as may be, into apposition with each other.

Of the two blades, first introduce that which lies below in the left side of the pelvis; for you will find, on trial, that in this mode the junction at the lock will be most easily accomplished. And here, perhaps, you will ask me why, in introducing the second blade, I do not carry up the instrument first along the side of the pelvis. The truth is, this may sometimes be done commodiously enough; but unless the pelvis of your patient lie close upon the edge of the bed, the furniture, under this method of introduction, frequently lies in the way;—an inconvenience which you may avoid by first sliding the blade, as directed, along the hollow of the sacrum; care being taken to keep clear of the aperture leading to the rectum. When, in this manner,—with the utmost gentleness, slowly, and without affected rapidity,—the blades have been applied to the head, I lock them;—careful, in forming the junction, that neither the linen of the patient, nor the perinæum, is intercepted by the joint. If any portion of the perinæum be included when you lock the blades, the woman exclaims,—"You are cutting me!"—when, of course, it becomes necessary to separate them immediately, and to unite them afterwards with more caution. When the lock is completed, you may then (if you please) tie the handles by means of a riband;—taking care, however, not to draw the ligature too closely, lest you should occasion the blades to grasp the cranium so forcibly, as to compress the brain, and kill. Draw the ligature with that degree of tension only, which will give the blades their bearing on the head. This is all the pressure the case requires; and, in every operation of midwifery, the less force you use the better. Thus much respecting the *application* of the instrument.

Co-operate with the Natural Efforts.—Having applied your instrument, before you proceed to abstract the fœtus, recollect the two

aphorisms already mentioned;—"*arte, non vi*", and "*cave perinæo*". Having duly prepared the mind,—by considering how requisite it is that you should be very gentle, and how great are the injuries which you may inflict by rudeness and violence,—proceed. And here, as we enter on the next step of the operation, be it observed, that if there are no pains,—which sometimes in the worst of labours there are not,—you must draw down in the absence of the uterine action; but if the woman have her efforts every five or ten minutes, instead of making the operation entirely artificial, you ought to wait and co-operate with the pains;—often rather *leading* the head into the world than *pulling*.

Imitate Nature.—Even where pains are wanting, although you cannot co-operate with the natural efforts, yet I would advise you to imitate Nature, the fruitful mother of all the arts. Do not, in these cases, continue pulling without intermission, till you have got the head through the pelvis; but make an effort, and then pause for some four or five minutes:—again making an effort, and again pausing; and proceeding in this manner, till you gradually work forth the head. Do not forget, during the intervals of cessation, to examine the pulse, and to observe the countenance. That the smallest force which may bring the head through the pelvis is the best, you will no doubt all agree. Those who have been engaged a great deal in *difficult labours*, may now and then venture on the higher degrees of effort;—to be conceded only to such as have had much experience; but, in general, I would advise you not by any means to use great force; for if you do, the child is generally still-born; and, by contusion, fatal injury may be inflicted on the soft parts of the mother. If gentle efforts are insufficient to bring the head easily through the brim of the pelvis, I believe the better practice is to have recourse to the perforator.

If the pulse be one-hundred-and-twenty or one-hundred-and-thirty, before you commence your operations, it is clear that you cannot, from counting the beats, take an intimation whether or not the softer parts have sustained injury; but if, before the forceps are applied, the pulse is under one-hundred in the minute, then, should contusion be produced by your efforts with the instrument, the rise of the pulse will indicate it. Without a rise of the pulse, contusion (I incline to think) rarely occurs; and if you find the pulse mounting from one-hundred-and-ten to one-hundred-and-twenty, one-hundred-and twenty-five, or one-hundred-and-thirty in the minute, it is always proper to beware. After every effort with the forceps, therefore, count;—waiting two or three minutes, so as to allow the beats to subside after the muscular exertion; and count completely round the circle. If you find it below one-hundred, no serious injury has been inflicted. If the frequency is increasing, although it do not necessarily follow that serious injury has been inflicted, yet the existence of contusion becomes probable; and further efforts must not be made without much further consideration. In using the forceps, I am myself careful never to neglect, between the efforts, this exa-

mination of the pulse. In drawing with the forceps, the instrument not unfrequently slips from the head;—this, perhaps, being rather an advantage than an evil, as it may preclude too much extractive force. It is easy to replace the instrument; and repeatedly, if necessary.

Manner of abstracting the Head.—In abstracting the head with the forceps, you will find it an advantage to swing the instrument a little from side to side;—giving it an oscillatory movement. Sway the instrument *extensively*, and you will lacerate the perinæum! It is only a *confined* motion that may be safely tried. Many efforts are not usually required. If, when the head is detained at the brim, it cannot be brought through the superior aperture by five or six pulls, it may be better to resign the attempt altogether;—either wholly or for a time. An imaginary line, stretching from the umbilicus to the coccyx, is the line in which the cranium passes the brim; and in this direction, on the whole,—the forceps, however, bearing a little forward from the perinæum,—the embryospastic force should be applied. At this time the perinæum must be guarded with solicitous care.

On using the long forceps, according to the rules here prescribed, the cranium will frequently be found to descend with facility; more especially if the uterine efforts co-operate. When, however, the coarctation of the bones of the pelvis is more considerable, the abstraction of the head may not always be safely accomplishable. Now, in these cases, if immediate delivery be necessary, you must have recourse to the perforator; but should this not be requisite, you may withdraw blood. Then watch the patient, and wait a few hours; when,—the head becoming moulded by the uterine efforts, and descending lower in the pelvis,—the fœtus may be safely brought away, under a second essay of the forceps. Thus, in the *evening* of the day, I have seen a living fœtus abstracted by the forceps, where no prudent use of the instrument could have withdrawn it in the *morning*. The cranial bones of the fœtal head are connected by cartilage; and the cranium, in consequence, becomes capable of readily changing in form, and diminishing a little in bulk;—the principal adaptation being obtained by the marginal lapping of the one parietal bone over the other; and by some little advance of the os occipitis, which may get forced beneath the edges of the ossa parietalia.

With gentle embryospastic effort; *co-operating* with the pains, or *imitating* the pains; swaying the instrument a little from side to side; abstracting, on the whole, in a line stretching from the navel to the perinæum and coccyx; very careful not to lacerate the perinæum; not repeating the efforts too often, or using a force too great;—by these measures you gradually bring the head forth through the brim. When once you have passed the superior aperture, you generally find the further progress of the delivery easy; for it is at the brim alone, most frequently, that the narrowing exists. When the cranium is at the outlet, some (inconsiderately) proceed with the extractive efforts;—promptly bringing forth the head; but, at the

same time, lacerating the parts; and laying the rectum and genital fissure into one opening. This is one of the nicest parts of the delivery. The vessel may strike and founder, in the entrance of the port. At this time, therefore, different practices may be adopted. We may withdraw the instrument, and commit the birth to nature; or we may continue the application of the forceps to the head;—gently assisting the descent with the instrument; or, removing the long forceps from the face and occiput, we may lay the blades over the ears, or we may use the lever, or the short forceps;—as hereafter described. For myself, when the head is at the outlet, if the emersion require assistance, I generally retain the long forceps in their original situation over the face and occiput; and then, supporting the perinæum with the hand, I gently lead the head towards the mons veneris;—very careful not to lacerate. But if, as is generally the case, the natural efforts are fully adequate to complete the delivery, after the passage of the brim, I then remove this dangerous instrument; and, merely sustaining the perinæum by manual pressure, to these efforts I trust. Should the forceps be used in this stage of the delivery, I advise you to hold the handles by the thumb and a single finger only;—a useful hint that you are not to employ too much force! As the head emerges, the face becomes turned into the hollow of the sacrum. This turn you ought to encourage; for, by means of it, the long diameter of the head is brought into correspondence with the long diameter of the outlet.

Errors in their Use.—The grand *error* you are apt to commit, in using the long forceps, is *force*. In violent hands, the long forceps are a tremendous instrument! Force kills the child;—force bruises the softer parts;—force occasions mortifications;—force bursts open the neck of the bladder;—force crushes the nerves! Beware of force, therefore! "*Arte, non vi*!" There are other errors, too, against which I beseech you to guard. You may use the forceps without need;—you may try to use them when the parts are rigid, and the os uteri is not fully expanded;—you may attempt to apply them without knowing the position of the head;—you may oscillate the instrument too extensively from side to side;—you may draw without intermission, instead of imitating the pains;—you may close the handles too forcibly by the hand or ligature;—you may hurry the head through the outlet;—you may neglect to throw the face towards the sacrum;—you may forget the perinæum;—you may fail to conduct the head, when it emerges towards the abdomen and the mons veneris; drawing it too much upon the perinæum. The fool-traps are set closely here! It is difficult to enumerate or to avoid them all!

SECTION 3.—THE TRACTOR OR LEVER.

The next instrument, the use of which I propose to demonstrate, is the tractor or lever;—an excellent instrument, and of great effect in dexterous hands. If skill and judgment are wanting, even the tractor may inflict dreadful injuries; but, in such hands, still greater mischief may be expected from the long forceps. To you, therefore,

I recommend its use as the safer instrument of the two;—possessing also, in an eminent manner, the advantages of portability and ready application.

Different Kinds of Levers.—By different practitioners, in different times, a variety of levers have been contrived; but one of the best that I know, and that which (I believe) is generally allowed to be excellent, is the lever which was used by the late Dr. Lowder. It somewhat resembles a single blade of a pair of forceps; whence it is often called "the *single blade*." Its length should be about fourteen inches. For the convenience of the pocket, it may be composed of two parts;—separating in the middle, and uniting by a screw-joint; which may be secured by a small catch or spring. The handle of the instrument should be large;—particularly at the end; where it should be roughened, in order to yield a more tenacious grasp. The shank should be strong; for I have heard of its breaking short when in operation. I think it is as well, provided you are going into the country, to have two blades; one with a bold curve, the other less incurvated. The lever with the milder curve, is introduced more easily, but is liable to lose its hold. That with the bolder curve is introduced with greater difficulty: but, when once applied to the head, it keeps its place with greater tenacity; and enables you, therefore, to use a more effective effort.

Cases requiring its Use.—The cases in which the lever may be employed are various, and I might bewilder you by relating many; but as with the long forceps, so here, with a view to practical information, I think it convenient to confine my remarks to a single case only; for this case, comprehending in itself all the general principles of management, will enable you to understand the method of manœuvering the lever, in all the other cases where instrumental help may be required. Now the case on which I propose to describe the use of the lever, is that in which I have already been describing the use of the long forceps; and which, among laborious labours, is of all others the most common in its occurrence. I refer to that labour in which the cranium is detained at the brim of the pelvis, in consequence of a want of room between the front and back.

Rules for its Use.—By different teachers and different practitioners, you will find that different rules are laid down for the management of this instrument. Of these, however, the best (in my judgment) are those of Lowder, as improved by my friend Mr. Gaitskell, of Rotherhithe; and which I shall subjoin at the end of the Section*; for, to me, they apper excellent. When you are about to use the instrument in Lowder's mode, the rectum should be cleared (if necessary), and the bladder should be evacuated. The woman ought to be placed upon her left side, near the edge of the bed, with a bearing of the feet upon the posts; the softer parts should be thoroughly relaxed; the os externum and os internum should be open; and, in a word, all those preliminary and precautionary measures should be observed, which were enumerated when we treated of the long forceps. Before you use the tractor, too, you should

* See pages 312 to 315.

have a clear reason for resorting to it; so that if any body should enter the room, and ask why you are going to use the lever, you might be able to give him a good and sufficient answer;—"Because there is a contraction of the brim of the pelvis"; or "Because there is a bearing on such and such a bone; so that, without assistance, the cranium cannot descend." Moreover, you cannot use the instrument with science or safety, unless you have ascertained clearly what is the position of the head; and if your skill is such that you deserve to be trusted with an instrument of this sort, you will be able, with proper examination, to make out this position with ease.

Let us suppose, then, that these precautionary measures have been taken. Let us suppose the parts to be lax; the rectum and bladder to have been emptied; the posture of the woman to be commodious; and the position of the head to have been ascertained;—the face, for example, lying to the *left*, and the occiput to the *right* side of the pelvis. Let us suppose, too, that the deficiency of room, and the nature of the obstruction, have been clearly proved and detected. Under such conditions, how are we to use the instrument?

When you are going to introduce the lever, the head being at the brim, you had better first pass up all the four fingers of the left hand; and, taking care that you do not lacerate the parts,—of which there will be but little risk, if they are thoroughly relaxed,—you may interpose those fingers between the side of the occiput and the sacro-iliac synchondrosis;—and this with a view of preparing the way for the insinuation of the blade. This point accomplished, you may then take the instrument with your right hand, and glide it up between the fingers and the side of the occiput;—*arte, non vi*;—as usual, with the utmost gentleness;—taking five or ten minutes for the introduction, if necessary;—recollecting that the end proves everything; and that, if no injury be inflicted and the patient do well, it matters little whether you occupy ten *minutes* or ten *seconds* with the introduction; for although a needless tardiness is to be condemned, in instrumental practice, hurry is more dangerous than delay. Having in this manner, then, placed the blade upon the side of the occiput, you withdraw your fingers, and lay hold of the shank at the screw (that is, at the centre of the instrument); and,—still grasping the handle (of large size) with the right hand,—you manœuvre the instrument a little; so as to bring it over the back of the occiput, into the side of the pelvis. At this time the tractor takes the position of the long forceps;—lying over the back of the head; with the shank behind and the point advanced;—in a word, in a line which stretches through the middle of the superior aperture, from the umbilicus to the perinæum; and thus, the blade bearing firmly on the occiput, you have great power over the head.

The instrument being applied in this manner, you grasp the handle with the right hand, and the middle of the shank with the left; and (by the co-operation of the two) pressing down upon the cranium, you support a steady bearing on the occiput; without, however, resting on any part of the mother as a fulcrum; for the

instrument ought to be used, not as a *lever*, but as a *tractor*. Securing the head in this manner, you wait for a pain; and when the uterus is in action, you draw;—sometimes drawing a little even when the pains are feeble; for, by drawing, the strength of the pains may occasionally be increased. The head advancing, and the pain ceasing, pause;—not suffering the operation to be altogether artificial, but co-operating with nature. The pains recurring, draw again; and thus, by repeated efforts,—sometimes two or three only, sometimes twenty or thirty,—you bring the head down through the brim into the cavity of the pelvis, at the same time depressing the occiput; when, very generally, the whole of the difficulty is overcome. The head being, in this manner, brought down into the cavity of the pelvis, by the first step of the operation, we usually, at the close of it, find the chin lying on the chest; and the head, in consequence, occupying but little room; for it is an excellence in the tractor,—not only that it draws down the head,—but that, depressing the occiput, it at the same time brings the chin upon the chest; so as to put it into the position most favourable to transmission;—as formerly explained.

In making these efforts with the tractor, remember that the smallest force adequate to your purpose, is the best; that a judicious and well-managed gentleness, is peremptorily requisite; and that death will ensue from violence. After every effort, therefore,—as in using the long forceps,—you ought to look at the countenance, and count the pulse; ascertaining, in this manner, whether you are or not inflicting injury on the softer parts.

When the head is in the pelvis, the natural efforts will frequently expel it; and therefore,—as in using the long forceps,—it may often be better to commit the birth to the natural efforts. I will suppose, however, that the natural efforts are inadequate for this purpose. In this exigency, it becomes proper to give further assistance with the tractor; changing altogether the position of the instrument. For this purpose, first carry up two or three fingers of the left hand over the face of the fœtus; interposing them between the head and the bones upon the back of the pelvis, near the synchondrosis, where the face usually lies; then, taking your instrument in the right hand, glide the blade over the face of the child;—carrying it so high that the fenestra* (by which I understand the opening in the middle of the blade) may admit the chin, with the limbus† resting upon it. Having accomplished this, withdraw your fingers, and lay hold of the shank at the screw-joint, as before; and,—giving a lateral movement by the co-operation of the two hands,—so change the position that the shank lies over the ear; the screw, which is in the middle, being in a line with the vertex, and the point of the tractor still resting on the chin; so that the instrument lies over the side of the cranium, like one of the blades of the short forceps. Having, in this way, obtained a very secure hold of the one side of the cranium, planting

* From *fenestra*, "a window".

† The border surrounding the aperture.

two fingers (the first and second) on the other side, you lay hold of the shank with the thumb and two remaining fingers; and grasp the head as securely as if within a pair of forceps. The pains coming on, you then draw down without violence; counting the pulse after every effort, as before. In drawing the head down, you are careful to direct it as much in the axis of the outlet as may be;—conducting it *towards* the mons veneris and *from* the perinæum; for, by so doing, you greatly diminish the risk of lacerating this part.

Errors liable to be committed.—In using the tractor, the following are the *errors* which you are liable to commit. You may introduce the lever before the softer parts are thoroughly relaxed, and before the os externum and os internum are open. Contusion, laceration, and death, may be the consequences of this error. Again, when the head emerges from the outlet,—particularly if (as is frequently the case) the head be large,—you may, in an unguarded moment, tear the perinæum; so as to lay the genital fissure open into the anus. You will observe, further, that the lever is to be used in two modes; —being applied over the occiput, when the head is at the brim; and over the sides of the head, when the latter is at the outlet. Hence another error which you may commit;—I mean the applying of the lever without considering the situation of the head (whether it be at the brim or the outlet of the pelvis); and unless this be ascertained, assistance cannot be administered with this instrument in a scientific manner. The using of continual extractive force, without waiting for the pains, is another grand error which you may commit. Here, as on so many other occasions, the stoical maxim is excellent:—"Sequere naturam";—"Imitate nature", as far as may be; first, because occasional efforts are less likely to injure the woman, than continual extractive force; and secondly because, without the assistance of the pains, the instrument may prove, in a great measure, powerless. To continue bearing with the blade upon the cranium, when you are not drawing down, is another error. If you have a fold of the umbilical cord between the head and the instrument, by a continual bearing on them, you may interrupt the circulation and destroy the child; and even if you have not, continued and strong pressure may so far injure the brain, that the child comes into the world still-born. Remember, therefore, when you are drawing, that it is during pain only that the effort should be made; and that when the pain ceases, the tractor should be raised a little from the cranium.

[The vectis should be thirteen inches in length; one-half to form the handle, the other the curve. The handle should be made of hard wood; rendered rough for the purpose of obtaining a firmer hold, and made to screw off and on. When the instrument is made with a hinge-handle, it is very inconvenient to introduce; therefore this construction of the instrument should never be adopted. *First*, the os externum and internum should be perfectly dilated and relaxed, the amnion-waters discharged, and Nature allowed to exert her own power, before Art steps in to her aid. *Secondly*, the urinary

bladder and rectum should be both emptied, either by Nature or Art, before the introduction of the instrument;—for the purpose of removing the obstruction which a full bladder occasions, as well as of protecting adjoining viscera from mechanical injury. *Thirdly*, the patient should be placed in a proper position. On the left side is the best; with the breech close to the edge of the bed, and the knees drawn up to the abdomen. *Fourthly*, the position of the fœtal head should be exactly ascertained; that the long axis of the head may be adapted to that of the pelvis. It should also be borne in mind, that the long axis of the upper brim of the pelvis crosses the lower one at right angles. When, therefore, the woman is on her side, the long axis of the upper brim is vertical, and the long axis of the lower is horizontal. By discovering the anterior fontanel, it will not be difficult to make out where the forehead of the fœtus is placed; and by this may be marked all the other relations of the different axes of the head, and their correspondence with those of the pelvis. *Fifthly*, the instrument should be well greased, with soft pomatum or lard; the woman placed in a proper position; the fœtal head correctly made out; and the urgency of the case such as to justify the employment of an artificial power.

The preliminaries being settled, the next thing is the safe introduction of the instrument. To do this with facility and safety, the accoucheur should kneel on a pillow by the side of the bed, and introduce all the fingers into the vagina, as far as the brim of the pelvis, at the side of the sacral promontory (either right or left, according to the situation of the occiput). As he passes up the instrument, the fingers should be gradually withdrawn. The instrument is now to be pressed up into the cavity of the uterus; being careful that it is in the inside, and not on the outside; and gliding it over the parietal bone, till the screw part of the handle presses on the fourchette of the os externum. This attained, the handle should now be held firmly with the right hand; while the index and middle finger of the left,—fixed about two inches from the screw-part, within the vagina,—become a fulcrum. On this fulcrum or point of support, the instrument, by the action of the right hand on the handle, is made to move from the sacro-iliac symphysis, towards the hollow of the ilium. In this way it describes the section of a circle, and glides on to the occiput. Should the occiput point to the right ilium, the left hand must be employed; if to the left ilium, the right must be used. When a labour-pain takes place, the accoucheur should gently aid it, by drawing down in the line of the axis of the pelvis; that is, in an imaginary line, directed from the umbilicus through the centre of the pelvis. In this way the occiput in depressed, while the chin approaches the child's breast; and its head is reduced to the smallest compass, and is thus enabled to pass through the cavity of the pelvis. As soon as the occiput is brought so low as to press on the perinæum, the instrument should be withdrawn, and re-introduced with the usual precautions. The object now in view,

is to place the instrument over the face of the child. To effect this, the hand must be passed up, as at first directed, to the right or left sacro-sciatic symphysis, according to the situation of the face. When the instrument gets above the brim of the pelvis, a finger or two must be inserted by the side of the instrument, and pressed on it till it passes over the forehead on to the face, so as to embrace the chin. An imaginary line drawn through the centre of the child's mouth, ear, and occiput, is the present situation of the instrument, and quite the reverse of what it was before. The practitioner has nothing now to do, but to draw down during the time of pain;—increasing his power according to the degree of resistance. The mechanical turn of the head,—namely, the face of the child to the hollow of the sacrum, and the occiput to the arch of the pubis,—generally takes place spontaneously during the descent of the head; though sometimes, but not in one case in a hundred, this mechanical turn of the head wants watching; lest the face should turn forward, and the occiput backward.

Having concluded my observations on the use of the vectis, I shall now enumerate the various ways in which this most valuable instrument may be abused. *First*, an attempt to introduce the vectis before the external parts are properly relaxed, and the os uteri fully dilated, or the ammotic fluid discharged. *Second*, an incautious mode of passing the instrument; so as, by the violence and wrong direction, to rupture the parietes of the uterus. *Third*, the employment of an extracting power, without bearing in mind the different axes of the pelvis, and the position of the fœtal head in relation to those axes. *Fourth*, the passing of the instrument on the outside of the uterus, instead of within its cavity. *Fifth*, the use of power without waiting for natural pain; so as to make a labour completely artificial. *Sixth*, the keeping of a constant pressure on the fœtal head in the interval of the labour-pains; which endangers the life of the child, by compressing the funis, and stopping the circulation of the blood. In this way, I firmly believe, the destruction of many children is accomplished by the vectis. When the waters are discharged, and the cavity of the uterus lessened, the funis falls on the face like a coiled rope; and is exposed to the hazard of mechanical compression. To prevent this accident, I never use the instrument but during a pain; and when the pain ceases, I raise the instrument about half-an-inch from the face, to prevent the destruction of the child.

From these observations, then, it follows that the vectis is an instrument in surgery,—of which midwifery is a branch,—which is dangerous or useful according to the hand that uses it, and the head that directs it; and it may be said of it,—as of every other instrument, and of every other remedial agent employed in the various departments of medical science,—that it is neither a safe nor a beneficial means of aid, unless it becomes such in consequence of its judicious and discriminating employment. The excellent observation of

Boerhaave,—"Nullum ego cognosco remedium, nisi quod tempestivo, usu fiat tale"*, is as applicable to the use of obstetrical instruments, as to any substance employed in the practice of physic.†]

SECTION 4.—THE SHORT FORCEPS.

If the accoucheur have dexterity enough to make use of the long forceps, it will rarely happen that he will find it requisite to have recourse to those which are short. When the head of the child is so low down in the pelvis, that it lies within the reach of this instrument, it will in general be found that no instrumental assistance is required; and I have already observed that, without a peremptory necessity, instruments are not to be used at all. Even in those few cases where there is, at the outlet, such a deficiency of room, or other obstruction, as to impede the passage of the child, and to render it necessary to have recourse to instrumental assistance,—should the long forceps be rejected, the vectis or tractor, already recommended, will be found sufficient to abstract the fœtus; so that, in this case also, the short forceps is not required. On this account I have rarely had recourse to this instrument;—an instrument, however, in some cases, and especially to those who are unskilled in the use of the tractor or long forceps, not without its advantage. These forceps are distinguished from the longer ones by their brevity; whence they are denominated "the *short* forceps";—being formed for seizing the head, when it is lying very low in the cavity of the pelvis, or at the inferior aperture.

In some cases the blades of this instrument may be applied with advantage over the face and occiput. The instrument, however, is intended to lie upon the sides of the head;—the lock being in apposition with the vertex, and the point with the chin, while the ears lie in the fenestra. Accordingly, if the head be of the standard and ordinary make, the short forceps, when applied to the cranium in this manner, will be found to fit exceedingly well.

Different Kinds of Short Forceps.—Different varieties of the short forceps, have been recommended by different practitioners; but I forbear to enter into long disquisitions here; as the nature of these many varieties may be better understood by examining the instruments themselves. On two or three kinds of the short forceps, however, I shall offer a few brief remarks.

Curved Short Forceps.—Dr. Hamilton, the able obstetric professor in the University of Edinburgh, has proposed a pair of forceps (the contrivance, probably, of his earlier practice), of which I can by no means, in candour, approve. To omit the consideration of the shank-hinge which they possess, the forceps, I may observe, are formed with a lateral curve;—in the manner of the long forceps. This lateral curve, even in the long forceps, I am, on the whole, inclined

* I know of no remedy, except that which becomes so from temperate, judicious use.

† Mr. Gaitskell's "Observations on the Use of the Lever or Vectis; and the best Mode of applying this Instrument."—*London Medical Repository; No.* 119; *November*, 1823.

to condemn; and, therefore, though I am provided with both instruments, in the long forceps most used in my own practice, the shanks are not incurvated, but straight. We have all, however, a different tact in operating; and I can readily conceive that, to some, the curved long forceps may be preferable to the straight; yet, granting this,—without the proof of arguments that are not yet come to my hearing,—I never can allow that the *short* forceps derive any advantage from the lateral curve; which seems to me to render them less commodious. The object of curving the forceps laterally, is said to be that of protecting the perinæum, by carrying the shanks of this instrument forward from this part towards the thighs. Let us consider this a little. Suppose the head is at the outlet of the pelvis;—the face lying in the hollow of the sacrum, and the occiput lodging under the arch of the pubis. You apply the short forceps. Suppose, moreover, your forceps are straight. You place them on the head, with the lock to the vertex, and the point over the chin;—the whole length of the blade stretching across the sides of the head and the ear. When your instrument, though straight, is properly applied in this manner, there is no approximation of the shanks to the perinæum, so that the protection of the lateral curve becomes useless;—the part being in no danger from the instrument, even when its shanks are straight. Now apply the *curved* forceps in the same case. The shanks recede a little further from the perinæum, it is true; but the perinæum was cleared before; and this additional retreat, wholly unnecessary, is no additional security. Or take another case. Suppose the head to be at the outlet of the pelvis, or near it;—the face lying to the one side, and the occiput to the other; and suppose, further, that you apply a pair of short forceps straight in the shank; and draw down according to the rules which I shall presently prescribe. When the head is in this situation, if the blades be placed in the usual position over the ears,—one lying against the pubes, the other against the sacrum,—the shanks rest but little upon the perinæum; and even if they bore towards the perinæum more forcibly, under this application of the instrument, Dr. Hamilton's curve would not carry the shanks from the perinæum. What is the effect of the lateral curve? Does it protect the perinæum? No; it merely carries the handles of the forceps down to the side of the pelvis. It does not remove the shanks from the perinæum one iota! To me, then, it appears that the lateral curve, always more or less incommodious, is of little or no advantage to the perinæum;—whether the instrument be placed in the front and back of the pelvis, or on the sides. The short forceps with a lateral curve, therefore, I decidedly disapprove. If you use this instrument at all, give a preference to the straight.

Straight Short Forceps.—There are two forms of the straight forceps which, I think, deserve your approbation; though much nicety, in the shape of the instrument, is really not of much importance. The two forms of the forceps are those of Dr. Orme, and those of my predecessor Dr. Haighton;—a man to whom I owe everything that is good, both in precept and in example. Dr. Orme's forceps are

to be commended for their exact adaptation to the sides of the head; and are formed with the blade and the fenestra so narrow, that the opening will scarcely admit the fore-finger. The main defect chargeable upon this instrument is, that when laid over the side of the head (in the usual manner), the limbus enlarges the cranium where, if instruments really be required, it is generally too large already;—I mean over the protuberances of the parietal bones. Now Haighton's instrument has the advantage of a large fenestra; and the limbus (by which I mean the bar of iron forming the blade, and containing the fenestra), is made a little thinner; so that,—the protuberance of the parietal bones lying in the fenestra on a level with the limbus, or even projecting a little beyond,—there is no addition of bulk over the protuberances; and the head is not further enlarged where, in general,—as before observed,—it is already too bulky. If there be any defect in the Haighton forceps, it consists in the breadth of the blades; which is so great, that they are not very easily passed up through the genital fissure. It has been complained of in this respect; but it is to be recollected here, that you are never to use this instrument, except where the softer parts are thoroughly relaxed; when the blades will pass with facility. If the softer parts are rigid, so that the introduction may be attended with difficulty, you ought not to make use of them at all.

Cases requiring the Short Forceps.—The cases in which you may use the short forceps, are principally the three following:—First, those cases in which the head is at the outlet of the pelvis; and in which the face lies in the hollow of the sacrum, the sagittal suture bears on the perinæum, and the occiput lodges under the arch of the pubes;—the position of the head, in ordinary labour, when the fœtus is upon the point of entering the world. The second case, somewhat different from the former, is that in which the head has descended to the outlet of the pelvis; but where the face is lying *forward*, upon the symphysis pubis;—the occiput and vertex bearing on the perinæum and the sacrum; and where, owing to the great pressure on the perinæum and parts adjacent, there is great obstruction to the passage of the head. The third case (of intermediate character) is that in which the head lies in the cavity of the pelvis; but with the face lying towards the one side, and the occiput towards the other side;—that turn, or partial revolution of the cranium which precedes delivery, and places the occiput under the arch of the pubes, being as yet unaccomplished. In all these three positions, then,—the cranium being descended into the cavity of the pelvis,—the use of the short forceps may be required;—when the face lies in the hollow of the sacrum; when it lies forward; and when it lies to the one or the other side.

Their use in the First Class of Cases.—There is nothing easier than to use the short forceps, in the first and simplest of these cases;—where the head is at the outlet of the pelvis, and the face is in the hollow of the sacrum, and the occiput lies out under the arch. The accoucheur, taking one or other blade of the short forceps,—for if

there be no lateral curve, choice is unnecessary,—passes up two of the fingers of his left hand between the vagina and the child's head, on the left or under side of the pelvis, so as distinctly to feel the ear; —always of ready access, when the head is thus low down in the pelvis. This preparatory measure taken, he then, with the right hand, gently insinuates the blade between the fingers and the cranium; placing the point over the chin, and the lock over the vertex; —the position of which parts he has previously ascertained. Having in this manner, with the utmost gentleness, placed the blade on the head, he keeps it in that position with the thumb and two fingers, while he interposes the other two fingers (the first and second, I mean, of the left hand) between the vagina and the cranium, in the right or superior side of the pelvis; and, as before, with the right hand, he carries up the second blade in apposition to the former;— the lock being apposed to the vertex, and the point to the chin, and the two blades being placed in correspondence with each other, so as to secure the head. The head being secured in this manner, and care being taken to include no portion of the perinæum, the practitioner waits for pains, if there be any expectation of them; and then, —recollecting the perinæum, which is on the stretch and in danger of laceration,—he leads the head forward a little; pauses; examines; observes the pulse and the countenance; and afterwards, as pain recurs,—with caution and gentleness,—he repeats his attempts. Beware of pressing the head too forcibly between the blades; lest you crush the head, and bruise the cerebral mass. Make no pressure upon the head, except when drawing. Abstract the head gradually; —by little and little. In making the effort, be very careful to draw towards the symphysis pubis and the thighs; so as to keep clear of the perinæum as much as possible. The grand danger to be apprehended, in performing this operation, is the laceration of the perinæum. Watch! Beware! Security may sometimes require the inspection of the perinæum; but that is rare. If necessary, it may be accomplished without much exposure.

Their Use in the Second Class of Cases.—The second case already mentioned, as admitting the use of the short forceps, is that in which the head is at the outlet of the pelvis; with the face on the symphysis pubis, and the occiput on the sacrum;—the sagittal suture bearing on the perinæum. In this case, for the safety of the woman, I do believe you will often find it better to lay open the cranium; as the forceps may bruise, or tear; and after all, perhaps, may abstract a dead child. But before you have recourse to so dreadful an instrument,—an instrument only short of being murderous,—you should make every prudent attempt to liberate the child uninjured; whether by the lever or forceps. Applying the short forceps, then, in the same manner as before,—with the lock on the vertex, the point over the chin, and including the head,—you draw down;—careful as you do so, to throw the chin on the chest, and to bear the occiput from the perinæum and sacrum; and leading it, as much as possible, towards the thighs;—all which may be very easily effected. Besides

this method, however, there is yet another in which the delivery may be accomplished; and that is, by *rectifying* the position of the head. Including the head (as before) in the forceps, you turn the face a little to one side, before you draw down. Then pausing awhile, you again turn the face a little more to the side of the pelvis, and draw,—very careful of the perinæum,—until you gradually and safely work the face into the hollow of the sacrum; when, the unfavourable situation being rectified, the head comes away easily enough;—probably under the natural efforts, unaided by further instrumental assistance.

The grand *error* to be avoided, in this case, is the making of such pressure on the soft parts, when the head is abstracted, as may occasion sloughing or laceration of the perinæum; more especially when the soft parts are greatly distended, or when the head is extraordinarily large. The fœtus too frequently dies in consequence of this pressure; and hence the remark with which I opened;—I mean that, in cases of this kind, I am not sure that it will not often be the wiser practice to sacrifice the fœtus at once, by laying open the cranium; as we may thus preserve the person of the mother from these formidable injuries.

Their Use in the Third Class of Cases.—The third case in which I may describe the use of the short forceps, is that in which the head is at the outlet, as before; but in which the face lies to the one side, and the occiput to the other. In a case like this, it is rarely necessary to use instruments at all; but want of room, or a failure of pains, or a large and unexpected eruption of blood from the uterus, may render the use of instruments necessary. In cases of this kind, you may apply instruments in two ways. You may lay the forceps in the sides of the pelvis, over the face and occiput; after which you may gently place the face in the hollow of the sacrum, and the occiput under the arch; afterwards cautiously abstracting the head;—with or without the application of the forceps, in the usual manner, over the ears. Or, instead of operating in this manner, you may (if you please) apply the instrument from the first in the ordinary mode, over the sides of the head; and this you should always do where you can; for the blades are made to fit the head in this manner. If, however, you apply the forceps in this way over the ears, in the case under consideration, you must place one blade in the front of the pelvis, and the other behind, where the ears are lying;—proceeding on the principles already laid down for the use of the instrument in the sides of the pelvis. For this purpose it may be convenient to introduce, first, that blade which is to be interposed between the cranium and the front of the pelvis. Having secured the head, you draw down; and, conducting the face into the hollow of the sacrum,—gently, gradually, and with great care of the perinæum,—you deliver as before.

The turning of the face by mistake into the front of the pelvis, instead of placing it on the sacrum, is a principal error against which you must guard, in managing these cases. When you have secured

the head, remember that you are to turn the face into the hollow of the sacrum, and afterwards to abstract the fœtus in the ordinary way. Doing the reverse of this, you throw the *occiput* into the hollow; and thereby create the very difficulty before considered, and which it is so necessary to avoid. If you will give nature fair play, as you draw down, I believe you will generally find that the face will, of itself, turn round upon the back of the pelvis; or, at all events, that only small and gentle assistance will be required.

There is one other *error* which you may commit in using the short forceps. Most extravagant it is; and tremendous as extravagant! I mean the introducing of one blade into the rectum, and the other into the vagina; the recto-vaginal septum becoming enclosed between the blade and the head. The error is possible; but is scarcely pardonable. The man who is guilty of such an enormity, ought to relinquish the name of "an accoucheur"!

I have a preparation of the perinæum, where the genital fissure and the anus are formed into one aperture. Repeatedly have I seen this accident!—Therefore be cautious!

SECTION 5.—RULES FOR DETERMINING WHETHER EMBRYOSPASTIC INSTRUMENTS SHOULD OR SHOULD NOT BE USED.

The practitioner who has a moderate share of mechanical genius; who, moreover, thoroughly understands the process of examination; and who (as every accoucheur ought to do) has acquainted himself with the general obstetric anatomy of the pelvis, the child, and the soft parts in connexion with the pelvis;—such a practitioner, with the help of a little experience, can find (I conceive) but very little difficulty is using embryospastic instruments. To mere dexterity in the use of these instruments, therefore, I would give but small praise. Nay, the most intellectual accoucheurs are, sometimes, the very men who are the least skilful in the use of these instruments; for it is in the selection of those cases in which the use of instruments is really required, and in the determination of the precise moment when we ought to interpose with instrumental help, that the judgment of the practitioner appears.

Their Abuse and Neglect.—The worst of consequences arise, no doubt, from the neglect or rejection of instruments, where they are really demanded by the nature of the case. Bruises, sloughing, inflammation, suppuration, the death of the mother, and the death of the child, may all be the result. Nevertheless, the cases in which patients may suffer because instruments have not been employed when they have really been required, are by no means frequent in their occurrence; and therefore it is impossible for men in general practice to err frequently, even in abstaining from the use of instruments in all cases. Really, if you go down into the country, even without the lever and forceps, you may be in practice a considerable time before you find your need of them; though, as your circle of action enlarges, you are likely to feel the want of these arms at last.

If you must err, then, take my advice; and err rather by the neglect or rejection of instruments, than by their too frequent use; for the cases in which you may use instruments without need, are as numerous as the cases that may fall under your care, with the exception of the very, *very* few in which these weapons are really required. In the common course of practice, great evil results from using instruments where they are not required. Young men, who feel they have skill enough to manage these implements, sometimes feel a prurient propensity to have recourse to their use. When, however, you lay your hand upon the tractor or forceps, remember that the accoucheur who is meddlesome may be guilty of occasioning laceration of the perinæum, rupture of the vagina, compression, and death of the child, inflammation of the abdomen of the mother, and many other fatal consequences, which I have myself had occasion to see;—a list of offences, surely, sufficient to alarm the prudent.

Knowledge of Cases requiring them.—To *individuals* it is, no doubt, an advantage that obstetric instruments should exist; though to the *sex at large* it is, perhaps, an evil and a curse; for, if we were to take the aggregate of all the evil and all the good which results from the use of instruments, I do believe it would be found that the total evil has considerably exceeded the advantage derived from this artificial assistance. It is not merely important to you to learn to use instruments;—for if unskilful in using them,—in a large town, at least,—you may often procure assistance; but it is of the highest importance that you should, moreover, learn to know the cases in which the use of them is required; so that, whether you operate yourself, or choose to put in requisition the assistance of others, you may be able to select cases which are fitting, and to ascertain the proper moment for action. To the consideration of the latter point I next proceed.

Circumstances in which they may be allowable.—If an accoucheur of much experience, engaged in a very large practice, can use the lever with great dexterity, I could pardon him for employing this instrument occasionally, to save a little time; provided he felt fully satisfied that he could operate without injury, either to the mother or her offspring. A sort of amnesty may, I think, be extended to the man who does this; yet, after all, the practice is not to be commended; and as to the employment of instruments pragmatically and officiously, and where any danger may result, it ought never once to be thought of.

In consultation-practice, you will sometimes be called to cases in which the friends are anxious; and the practitioner is worn out by the harassment of spending many hours at the bed-side, with a mind full of perplexity. The patient herself, especially if she has been delivered by instruments before, is importunately desirous that instruments may be employed again. In cases of this kind I have, in some instances, had recourse to the forceps, and delivered the woman with safety. Nevertheless, I have considered myself culpable for so doing. The mere desire of the woman, or of the accoucheur who

has been previously in attendance, or of the friends themselves, furnishes no sufficient reason whatever why you should use the instruments; for life may be at stake; and you are not to recommend instruments in an adulatory manner,—merely to flatter the feelings; but because, in reason, you perceive that they are peremptorily required.

When women are narrow in the pelvis, it sometimes happens that they have been repeatedly before delivered by the use of the lever or forceps. Six or eight children, perhaps, have been born;—all of them under *instrumental* practice. If a skilful and forbearing accoucheur,—not a meddlesome one,—have been in attendance upon the woman, that is a strong presumptive argument why you should use instruments again; but, after all, it is only a *presumptive* argument. It deserves to be considered as a *make-weight* in the scale; but nothing more. A woman may have borne six children, all under the use of instruments, and yet the seventh may not require their employment; because the child, born prematurely, may be of small size; or because it may be one of twins or triplets; or because, from other causes, it may be unusually soft and small.

Measurements of the Pelvis.—When engaged in practice, you will, no doubt, feel disposed to determine respecting the necessity for instrumental aid, by making your measurements of the pelvis. In the preliminary observations*, I endeavoured to explain how the pelvis is to be measured; nor would I have this measurement (more especially at the brim, between the symphysis pubis and the promontory of the sacrum) to be neglected. Nevertheless, I have the satisfaction to tell you,—and I say "*satisfaction*", because the declaration implies a diminution of difficulties,—that it is *not* by the nicer measurement of the pelvis, that you are to decide upon those cases in which you are to use the embryospastic instruments. If the pelvis be contracted or distorted in a high degree, you may often, on examination, ascertain, at once, that unassisted delivery is impossible; but, in general, when the tractor or forceps are proposed, the contractions are small. In these nice cases, to determine within a line or two what is the measure of the pelvis, must often be a point of difficulty to the experienced; and, not unfrequently, be beyond the skill of an ordinary practitioner. Moreover, although the pelvis be measured with unhoped-for exactitude, we must still remain in doubt as to the bulk of the head; which is very various. It is true, indeed, that this point might be ascertained by carrying the whole hand into the uterus; but then this is an operation of danger, and should never be had recourse to if avoidable. On these accounts, therefore, although the examination of the pelvis ought not to be neglected, I should not advise you to take principally from these measurements the determination whether you will, or will not, have recourse to instruments.

Appearance of Dangerous Symptoms.—The appearance of any dangerous symptoms, is sometimes adduced as an argument for the

* See page 37.

use of instruments; and I allow its force, if the symptoms arise from the prolongation of the labour; and if delivery seem to be the only effectual means of overcoming those dangerous symptoms. If there be tenderness of the abdomen; collapse of the strength; irritability of the nerves; restlessness; a rising pulse, mounting from one-hundred-and-ten to one-hundred-and-twenty, thirty, or forty, in the minute;—all these are certainly strong arguments for having recourse to instruments. It was only the other day I was obliged to make use of the long forceps. The woman had been in labour for thirty-six hours; and as dangerous symptoms began to manifest themselves, I felt myself compelled to deliver.

The Prolongation of the Labour.—The mere prolongation of the labour, too, is certainly a reason, and a good one, for the use of instruments. You should measure the term from the dilatation of the os uteri, and the discharge of the liquor amnii;—that being the epoch, or time, at which the heavier pressure begins to bear upon the soft parts; and the period after which, therefore, this pressure is likely to become injurious. It may be laid down as a sort of general rule, that no woman should be left in strong labour for more than twenty-four hours after the discharge of the waters. I say "in strong labour, *after the discharge of the waters*"; for if the liquor amnii have not escaped, and no dangerous symptoms be apparent, it matters little whether she has been in labour for a week, or a day. In the ordinary course of things, no danger need be apprehended. But if, after the discharge of the water, the woman have been in strong labour for twenty-four hours, she ought to be delivered on two accounts;—first because, after fruitless labour for twenty-four hours subsequently to the discharge of the water, it is unreasonable to expect that the natural efforts will expel the child; and secondly because, where labour is suffered to run on beyond a certain time,—even though no dangerous symptoms have yet appeared,—of a sudden, sometimes, when all seems fair and smooth, the vessel strikes and founders. The pulse rises to one-hundred-and-thirty or one-hundred-and-forty in a minute; the countenance falls; and speedily, or in a few hours afterwards, the woman dies. In these cases, there are usually extensive bruisings; and, now and then, very extensive lacerations of the womb.

Conclusion.—Thus much, then, respecting the general indications, which are pointed out as the criteria marking the necessity of having recourse to embryospastic instruments. I have communicated them all;—not for the purpose of your being guided by them (for I shall give you my own indications presently); but rather to prevent you from being *mis*guided. The prolongation of the labour, and the attack of dangerous symptoms to be effectually relieved by delivery only, I look upon as valid arguments in support of the use of instruments. But the convenience of the accoucheur; the wish of the patient or her friends; the use of instruments in former labours; the measurement of the pelvis;—these all are inconclusive reasons; and will not alone bear you out in the recommendation of instrumental

assistance. But here, methinks, I hear it said,—"As you tell us there is so much importance in selecting the proper moment for the use of instruments, can you prescribe for us no plain rule, by the observance of which the novice in midwifery may be kept near the line of correct practice?" This question, I think, I can answer affirmatively. The rule (which I have repeatedly taken occasion to mention, and which you will probably recollect on recital) is, that if a woman has not been in labour for four-and-twenty hours after the discharge of the liquor amnii, and if no dangerous symptoms are manifest, you ought not to interfere. Why should you? Why not wait? Meddlesome midwifery is bad. But, on the other hand, if the patient has been in strong labour for four-and-twenty hours; or if, independently of this strong labour for four-and-twenty hours, dangerous symptoms are apparent (to be relieved effectually by delivery only);—let your tractor or forceps be employed; for although it be true that the use of them is at all times an evil, yet, in these circumstances, to use them is a smaller evil than to refrain. But, further, there may be cases of an intermediate character; in which the arguments for delivery, and the contrary, may be so very nicely balanced, that, notwithstanding the rule prescribed, it may not be very easy to take your resolution. What, then, is to be done here? In this dilemma, the degree of your instrumental skill should decide. If you are dexterous, determine the point in favour of instrumental delivery; if unskilful, refrain.

Here, then, is the rule I would lay down, after as much consideration as I have been able to give the subject;—a rule which I would recommend you to follow, to the exclusion of all others, until you have formed for yourselves a better. If the woman has not been in labour for four-and-twenty hours, and dangerous symptoms do not appear, beware of instruments. If she has been in labour four-and-twenty hours, or if dangerous symptoms manifest themselves, then give instrumental assistance. Lastly, if the case be dubious,—so that it is doubtful whether instruments ought to be employed or not,—then, provided you are skilful in handling instruments, make use of them if you please; but should you be wanting in dexterity, then give a fair trial to the natural efforts; and if they fail you, have recourse to further assistance.*

[The following directions should be strictly attended to, previously to the use of instruments:—1. The patient and her friends should

* "Abundance of instances might be produced, of women who, from a hasty and improper use of instruments, have been placed in a state of the greatest possible danger; and have actually lost their lives, or been left in a state of misery and suffering, worse than death itself. Nor can there be a doubt, that many children have been sacrificed by premature interference with instruments. Now surely nothing ought to be dreaded more by every practitioner of Midwifery, than the reflection that a loss of life, or an existence of continual distress and pain, has been occasioned, either to the mother or child, by his impatience or want of caution. Yet, though it behoves us all to entertain a just dread of the improper use of instruments, it likewise becomes us to be careful, that this dread of instruments be not carried too far; for as much mischief may be done by delaying instruments too long, as by using them too soon."—*Dr. Merriman's "Synopsis."*

be apprized of the necessity of their employment; their intention and importance should be explained; and the parties should be assured of the safety of the operation. This is very requisite; in order that (if desired) other advice may be had; and, in all cases, it would be most safe for the practitioner to have further advice, before he resorts to the use of instruments. It divides the responsibility; satisfies the relations; and, if an 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 months afterwards. 2. The bowels and bladder should be evacuated, by clysters and the catheter, before the use of any instruments. It is almost unnecessary to remark, that the os uteri should be fully dilated, and the perinæum in a dilating condition. 3. The patient should be in the usual obstetric position, on the left side; in order that the operator may use his right hand more efficiently. 4. The instruments 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 their introduction. 5. They should be introduced during the intervals of pain, slowly and cautiously;—the greatest care being taken not to include any part of the mother. Two fingers of either hand should be passed into the vagina, so as to serve as a director; on which the respective blades of the forceps are to be passed. 6. Each blade of the forceps is to be gently moved, before locking, in order to ascertain that no part of the mother be included; and care must also be taken, by examining carefully with the fingers, that no part be included in the lock. 7. Unless the blades lock or meet accurately at the joint, the instrument is improperly applied; and either blade must be frequently withdrawn, until the proper adaptation of the locking parts shall be effected. 8. The instrument being properly locked, a ligature is to 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. 9. 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 be 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. 10. The infant's ear should be felt distinctly, before the short forceps are applied. 11. Recollect that the forceps are very rarely requisite;—not more than once in one thousand cases; and, also, that incisive instruments are three times less in use than the former.*]

* Dr. Ryan's "Manual of Midwifery."

CHAPTER IX.

EMBRYOTOMIC INSTRUMENTS.

Of all the operations of midwifery, there is none, perhaps, more easily performed, than that of perforation; and many a life, I fear, has fallen a sacrifice to this facility of execution. Of all the operations of our art, however, there is none more dreadful,—not to say "more *awful*"; for,—call it "embryotomy", "craniotomy", or by whatever elegant term you please,—in this operation a dagger is struck into the head of an innocent child, often still living; and the brains, being reduced to a soft pulp, are suffered to escape at the opening! Much evil, and some good, arises, in society, from not calling things by their right names! This practice, however, I am aware, grows out of the nature of man, and cannot be amended. Hellenize then, and Latinize, as much as you please. "Suaviter sonat" *; but never suffer a polished and classical appellation to bring before your minds an idea of this operation, divested of that salutary horror with which, I conceive, it ought at all times to be contemplated. Dreadful, however, as the operation is, the safety of the mother sometimes peremptorily requires its performance.

SECTION 1.—THE INSTRUMENTS EMPLOYED.

The severe and formidable instruments by which it is accomplished, are,—the *perforator*, the *crotchet*, the *craniotomy-forceps* (of which it is sometimes convenient to have two pair), and the *blunt-hook*; on all which I shall now proceed to comment; beginning with the consideration of the perforator.

The Perforator.—The perforator is designed to be passed through the child's head, by a sort of semi-rotatory, *boring* action;—the same which you would adopt in perforating a piece of board with an awl. The aperture is afterwards enlarged by dilatation; for which purpose the blades, while lying in the opening, are separated from each other. One of the first instruments employed for embryotomic perforation, was a pair of *large scissors*, recommended by Smellie; and after all, perhaps,—if armed with shoulders, and committed to *cautious* and *dexterous* hands only,—it is one of the best contrivances we can employ; for the cutting-edge of the scissors has its advantages. Since the time of Smellie, however, the form of the instrument has been modified;—the scissory edge having been removed. Such is the kind of instrument now received into British practice.

The instrument now in use opens and shuts like scissors; and, like them, is generally formed with a double point; but Mr. Lowdell (of Stamford Street) has, in my opinion, made a considerable improvement in the instrument,—and that very simply,—by giving it a single point; so that it enters the head with more ease and expedition; renders the operation safer to the mother; and more speedily extinguishes the remains of life in the child. To prevent the blades

* "It sounds euphoniously."

from entering the cranium too far, they are formed with a check, or shoulder, about one inch-and-a-quarter from the point; beyond which point they cannot be pushed.

Some of these instruments are made very light and elegant;—qualities of which I do not myself approve. A light perforator is apt to bend in the shank, or to break. Besides, a roughness of appearance well becomes the austere duties which it is designed to discharge. The instrument should be thick and strong in the shanks; for sometimes you have to open heads which are very firmly ossified; and where that is the case, if the head resists much, there is danger lest the handles should give way. In choosing a perforator, take care that the joint is very firm; otherwise, when the instrument is in action, disruption and dislocation may occur. It is better, too, that the blades should not touch each other laterally at the joint; in order that no part of the vagina may be enclosed and injured there. Except the point, all other parts of the instrument should be smooth and rounded. "Thou shalt not kill!"*—might perhaps, with great propriety, be engraved on one blade of the instrument. To the obstetric eulogist, Sir Anthony Carlisle, I commit the choice of a motto, from the same decalogue†, for the other blade!

The Craniotomy-Forceps.—The next instrument is the craniotomy-forceps;—of great use in the operation of embryotomy. The ancient accoucheurs were possessed of an instrument called the "rostrum anatis"‡; which was, in effect, the craniotomy-forceps. In the mutations of fashion, this instrument became obsolete;—being superseded by the crotchet; till it was again introduced by my valued predecessor. After laying open the head, Dr. Haighton was accustomed sometimes to make use of a pair of lithotomy *forceps*, armed with teeth. Dr. Davis, of George Street, Hanover Square,—who has bestowed a great deal of laudable exertion on the subject of instrumental midwifery,—has very much improved the ruder instrument of Haighton; which was not sufficiently powerful in hands less skilful than his own. Dr. Davis has contrived a very stout pair of forceps, which has a great number of teeth on one of the blades. These teeth, however, are faulty; because they are too short and delicate; and are apt, in consequence, to bend, and to wear away under corrosion; and to become, thereby, unfit to pierce the bones, as intended. Corresponding with these dental processes, you have, on the other blade, apertures into which the teeth are received, as into sockets; and thus, when the instrument acts as intended, they pass through the bone, and give you a hold sufficiently secure. This instrument, contrived by Haighton, and much improved by Dr. Davis, has been still further perfected by Mr. Holmes, of Old Fish Street; a gentleman who, to omit his other instruments, has produced the

* Exodus; Chapter XX; Verse 13.

† "Thou shalt not bear false witness against thy neighbour!"—alluding to Sir Anthony Carlisle's pamphlet on "The Impropriety of Men being employed in the Business of Midwifery."

‡ "The duck's bill."

best pair of craniotomy forceps that I know; and which I now always use. In his instrument there is no display of elegance; but it is a large, strong, and very powerful implement; not liable, when we are using it, either to bend or to break. The grand perfection of this instrument, lies in the size and strength of the teeth. On one blade there are three large dentiform * processes, very like the incisors of a rabbit (if I may be allowed to make such a comparison); and in the other blade are three cavities, in apposition with these, into which the processes pass, after thoroughly piercing the bones; so that there is no danger lest the forceps should slip away. Besides these chisel or scalpriform † teeth, there are several which are smaller; and which are designed to give you a hold of the scalp. To me, however, these smaller teeth appear to be unnecessary; for if you have a good hold of the bone, the hold of the scalp (not of much importance) will also be secure. The three large chisel-teeth constitute, in my opinion, the great excellence of Holmes's forceps.

The Crotchet.—There is yet a third instrument, generally used on the Continent, and in this country too, for the extraction of the head after perforation; and which, perhaps,—notwithstanding the contrivance of the craniotomy-forceps,—cannot be rejected from practice altogether;—I mean the crotchet. This instrument,—with a curved shank, a large handle, and a hooked extremity, broad and bluntly pointed,—is designed to be employed as a blunt-hook;—either externally, or within the head; in the way I shall presently explain.

The Blunt-Hook.—While treating of these instruments, I must not omit to mention another implement (not frequently required, however);—the blunt hook, as it is called. Of this instrument I have to remark, that its shank ought to be strong, its handle large, and its shorter arm not longer than necessary to give a secure hold of the axilla and arm, or any other part to which it may be applied. Bluntness is another desirable quality;—whence its name. A point is useless, and therefore to be condemned.

[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 hook bent at an *acute* angle, is destined to be applied in the hollow of the arm-pit; when the shoulders are retained in the pelvis, and the fingers cannot reach them. It will also serve to extract the knees at the inferior outlet of the pelvis; 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 outlet. M. Desormeaux thinks that the fingers will frequently serve instead of the blunt-hook.‡]

* From *dens, dentis,* "a tooth";' and *forma,* "resemblance."
† From *scalprum,* an instrument for engraving.
‡ Dr. Ryan's "Manual of Midwifery."

SECTION 2.—CRANIOTOMY IN CASES OF SLIGHT CONTRACTION.

Our remarks on the different instruments of embryotomy being concluded, we shall now proceed to consider the operation itself. For the convenience of observation, we shall divide it into two varieties;—that in which the want of room is inconsiderable; and that in which we have to act upon a pelvis contracted and distorted in a high degree. First, then, let us treat of craniotomy in those cases in which the contraction of the pelvis is less considerable.

Introduction of the Perforator.—If the contraction of the pelvis be slight, and craniotomy be required, those who are in the habit of using the long forceps, will probably have made trial of this powerful instrument, before they have recourse to the destruction of the child; and if it so happen that the long forceps are still applied to the head at a time when craniotomy is proposed, it will be better still to leave the instrument on the cranium; as its operation may tend to facilitate both the operation itself and the subsequent abstraction of the fœtus. In such cases, I would recommend you to close the blades of the forceps as forcibly as possible; so as to torpify the feelings, by producing a sort of coma. Let the handles of the forceps be then tied very firmly. This done, in commencing the operation, you take the perforator in the right hand, and pass two or three fingers of the left hand up to the sagittal suture;—feeling the latter, if possible; and, in ordinary cases, it may be felt readily. Conducting the instrument along the fingers, at length you reach the sagittal suture;—great care being taken not to touch any other part; and, by a semi-rotatory motion, you very readily enter the cavity of the cranium. The cranium once entered, without the smallest delay,—for the sooner the operation is accomplished the better,—lay hold of the two handles of the instrument, and draw them apart from each other, so as to enlarge the laceration;—for a free opening greatly facilitates the operation. In order to prevent the instrument from escaping when the aperture is dilated, you ought to be very careful, on entering the cranium, to press the blades onward to the *shoulders* of the instrument; so as to bring these shoulders into contact with the scalp and cranial bones; when there will be no danger of the instrument's becoming displaced. In general, I believe, *one* laceration will lay the head open to a sufficient extent. If, however, you are not satisfied with the size of the aperture, you may introduce the instrument a second time, at some little distance from the first opening; and (in the same way as before) enlarging by dilatation, you may lay the second opening into the first; forming what is denominated "the *crucial* laceration." The great object which you seek here, is a free opening into the cranium; and, in using the perforator, you should never be unmindful of this object.

Demolition of the Brain. — The head being laid open in this manner, with all practical promptitude, carry your instrument into the brain, and demolish its structure completely; so that if, unhappily, there be any life remaining in the child, all feeling

may be destroyed at once. Let the demolition be complete;—let the brain be converted into a perfect pulp. Feel what reluctance you may before you begin this terrible operation. The more the better! But when you have once begun, proceed promptly, without flinching. It is too late to look back! In demolishing the brain, it is desirable that you should break up the base as early as practicable; for this part, I suspect, is more immediately connected with vitality. Cases have happened in which the cranium has been opened, and part of its contents have been removed, and yet the child has come into the world alive;—to look, as it were, into the face of the operator, and reproach him with his cruel ignorance, or negligence! The very image of these horrors is enough to make the blood curdle! Never lay the head open, unless there be an absolute need for it; but when you do,—when you must craniotomize,—let all your operations be effectually performed!

Abstraction of the Fœtus.—When, in this manner, you have laid open the head and pulpified the brain, it next becomes your duty to abstract the fœtus. This you may sometimes accomplish with the long forceps;—the instrument, however, being very liable to become displaced in consequence of a collapse of the bones; and that more especially if the resistance be considerable. If, however, the difficulty be small, the fœtal head may be extracted in this manner, without much difficulty; but if the long forceps lose their place,—the head not descending,—you must then have recourse to the craniotomic forceps already described.

Before you introduce this instrument, I would have you ascertain with care what is the precise obstacle that precludes the descent of the head. Generally, in these cases, there is a small distortion of the pelvis. Let this distortion, then, be clearly detected. It commonly lies near the symphysis pubis, or the acetabulum. Frequently, however, there is a mere want of room from before backwards;—the symphysis pubis approaching the back of the pelvis, but without accompanying distortion. Having ascertained the difficulty, slide up the first two fingers of the left hand; and, of these two fingers, place one within the cavity of the cranium, and the other on the outside. Then, adjusting the instrument with those two fingers, you lay one blade within the head, and the other externally; so as to get the cranial bones between the blades. Before closing the instrument, examine very carefully (for you should not proceed with haste here); and satisfy yourselves that no portion of the mother is included between the blades. You had better ask the woman if you occasion pain; for, in these easier cases, you will give but little pain, if you operate neatly; and therefore absence of pain is a further evidence that you are not including any of the soft parts. Satisfied of this, you then close the blades very firmly;—piercing the bones with the dentiform processes of the instrument, so as to render the hold secure. This step of the operation effected, you then draw down;—co-operating during the pains, if there be any; as they will be found of powerful assistance. In drawing, it is desirable that the direction

of the bearing should be in a line stretching from the umbilicus to the point of the coccyx and the perinæum (great care being taken not to injure this part); for, when you are bringing the head through the brim, this line may be considered, practically, as representing the axis of the upper part of the pelvis; and you must direct your efforts accordingly. The ordinary craniotomy-forceps will frequently slip away. I should, therefore, recommend you to use those improved by Mr. Holmes. Even the best-contrived instrument may slip, and bring along with it the portion of bone to which it is fixed. This is a grave accident; because the edges and points of this piece of bone, if you are off your guard, may lacerate the passages. When, therefore, you are drawing with the craniotomy-forceps, I would further recommend you to lay the fingers of the left hand (all the four) in the vagina, in apposition with the instrument; so that, should the forceps slip, your hand alone may suffer;—the woman being protected. For the sake of the patient, and for the sake of your own hand also, I would advise you to abstract with caution;—always prompt and in readiness to stop short in your effort, should the instrument, or the bones, seem disposed to give way.

You will, now and then, find the head lying so high in the pelvis, that it is no easy task to apply the instrument in any way over the bones; or, if you do obtain a hold, the hold is marginal and imperfect; and the forceps are apt to slip away. Your better practice here, is to have two pair of forceps (and this number I generally carry with me); and, though the first pair be applied somewhat insecurely, you may still draw the head a part of the way down; though you may not be able to extract it altogether. Having accomplished this, you may then take the second pair of forceps; and, drawing the bones down with the first instrument, you may bring them thoroughly within the gripe of the second pair;—obtaining, in this manner, a firmer hold; which may enable you to act with power and effect. When the second pair of forceps has been applied, the first may be taken away.

In using the craniotomic forceps, all these minute points are well worth your attention. Get a secure hold of the head with the instrument; and guard against its detachment by slipping. Be prepared for the escape of the instrument;—whether alone, or with a portion of the bones. Draw down during the pains;—in order that you may have the full advantage of the co-operation of the uterus; and, above all, when you apply the instrument, take care that you include the parts of the cranium only; and not a part of the mother also;—a nicety not always unattended with difficulty; inasmuch as it is not always easy to distinguish what parts belong to the child, and what to the mother;—more especially when the head lies high up.

Abstraction by the Crotchet.—The craniotomy-forceps failing, you may endeavour to abstract the head with another instrument of no small power. This other instrument is the *crotchet*;—pretty generally known to accoucheurs. This instrument (as formerly de-

scribed) may be applied either externally or internally; and the latter (being the safer) is, on the whole, the better mode. I cannot designate, or mark out to you, any one particular part of the head, as a bearing-point, on which the instrument may be placed; but I may observe that, passing it into the cranial aperture with the right hand, and guiding it with the left, you may move it about till it fastens on some part either of the basis cranii, or of those bones which form the other parts of the receptacle for the brain. When you have, in this manner, secured a hold with your crotchet, there is always a danger lest the instrument should slip away;—either alone, or with part of the bones; and, therefore, you are to pass your fingers into the vagina before you draw;—placing the hand so as to receive the point of the instrument, if it slip. Be continually upon your guard against its slipping; and be careful to stop promptly, when you find it disposed to give way. As in using the craniotomy-forceps, so here in drawing, let the tendency of your effort be in the axis of the pelvis. Ascertain what is the difficulty, if possible; and if there be any uterine pains, take advantage of their co-operation.

Abstraction by the Finger.—In cases where the crotchet does not succeed in withdrawing the bones, there is yet a third expedient to be adopted; and that is, the abstraction of the cranium with the fingers, by means of the scalp and bones. If, as some are, you chance to be strong in the fingers, lay hold of the scalp or skin, which you may find hanging through the pelvis; and, by means of this, exert your extractive force. When thus drawn, the scalp, which is sometimes pretty firm, may have the effect of bringing all the bones together; and, thus getting them all included within a small compass, you draw down with better success. I have seen an operator succeed in this way, where the craniotomy-forceps had been previously tried with little avail. By one or other of these means, then,—by the forceps, or the crotchet, or the immediate action of the fingers,—and especially where there is not much contraction of the pelvis, the head may generally be abstracted; and that frequently with little difficulty. Of the means, the fingers are the safest; and next to these, the forceps. The crotchet is powerful; but not without its dangers.

General Treatment in Difficult Cases.—In these cases of slighter contraction of the pelvis, I would advise you, as your general practice, always to begin the extraction directly after you have laid open the head, and thoroughly pulpified the brain. Sometimes, however, you will find, on trial of all these modes of abstraction, that still the head will not descend. What is to be done here? Bleed your patient, if in a state of irritation, to the amount of ten or sixteen ounces, according to her strength; give her from thirty to sixty drops (not minims) of the tincture of opium; and let her, after first reposing a little, take her pains for a few hours; and, at the end of that time, you may find the head much lower in the pelvis; and, therefore, to be more easily brought away. You are not to despair, in this case;

—as if the delivery were impracticable. Violence, remember, has no place in scientific midwifery. If you cannot succeed with gentle efforts, wait to see what Nature may accomplish. You may the rather wait for the operations of our common preceptress and auxiliary here; because,—when the head has been opened, and the brain has been pulpified and discharged, and the bones are become collapsed,—in general, heavy and dangerous pressure on the soft parts of the mother ceases; and delay, therefore, is not likely to give rise to further contusion and mortification.

Difficulty in the Passage of the Shoulders.—After the cranium has passed the pelvis with difficulty, we sometimes meet with no small obstruction to the passage of the shoulders;—more especially if the pelvic bones be more distorted and contracted than ordinary; or if the shoulders be unusually broad. This difficulty may be surmounted occasionally, by first laying hold of the remains of the head, and drawing down the shoulders as low as may be; and then, by the action of the fingers, abstracting the arms;—a fracture of which is of small importance; as, from the previous craniotomy, the child is utterly dead. Thus, in a manner, the arms come through the outlet of the pelvis before the shoulders descend; and the difficulty occasioned by the great size of the shoulders is overcome. If, however, you cannot succeed in an operation of this kind, then you may take the *blunt-hook* (an instrument not often required, though sometimes needful); and,—grasping the handle in the right hand, while, with the left, you direct it into the axilla,—you then, by means of this instrument, draw down the one axilla. Afterwards, in like manner, you fix it upon the other, and draw it away;—considerable effort being sometimes required for this purpose. Should you, however, fail with the blunt-hook, the only further effective expedient with which I am acquainted, is the detachment of the arm from the trunk, or the evacuation of the contents of the chest. The blunt-hook, or a large perforator, is respectively the instrument best adapted to these operations. In dexterous midwifery, however, it rarely happens that measures of this kind are really required.

When talking of craniotomy, you will hear some practitioners speak of the abstraction of the brain; and for this purpose a sort of scoop has been contrived;—an instrument which I have not hitherto mentioned. The truth is that, if you follow the two rules before prescribed,—in other words, if you are careful first to make the cranial opening capacious, and secondly to pulpify the brain completely, by the craniotomy-forceps or crotchet (for either of these instruments, the crotchet more especially, may be employed for the purpose),—the brain will, of itself, become discharged at the aperture; and the scoop may be rejected. It is the great glory of British midwifery, that it is, on the whole, simple; and generally, in obstetrics, the simpler our modes of procedure, the better.

SECTION 3.—CRANIOTOMY IN CASES OF CONSIDERABLE CONTRACTION.

Thus much, then, respecting that variety of craniotomy which is performed in ordinary cases; where there is only a slighter degree of contraction at the brim. All craniotomic cases, however, be it remembered, are not of this kind. In consultation-practice, more especially, you will now and then be called upon to operate, where the pelvis is contracted in a very high degree; so that when the head is laid open, the abstraction may still be attended with no small difficulties. When operating in those cases in which the pelvis is contracted and distorted in the higher degrees, you must proceed on the general principles already prescribed; only with some little modification. If it is obvious, as it generally will be in those cases, that you must lay open the head at last, I suppose it will be agreed on all hands, that the operation should be early performed; in order that you may be fresh and unexhausted; and in order that your *patient* may not be exhausted, or otherwise injured, before you begin to operate;—so as to be worn out with the unavailing efforts of delivery.

Open the Head Freely.—When it is clear you are to lay open the head, you should be careful to open the head very fully; and to pulpify the brain very completely. This is necessary even in ordinary cases; but more especially in those now under consideration; where, unless you have evidently opened the head and fully pulpified the brain, you will not have that complete collapse of the bones, so essential to a ready delivery; for parts of the brain will remain in the cavity of the cranium; and room must, in consequence, be lost. The brain being pulpified thoroughly, and the opening into the cranium being made as capacious as may be, you may then proceed directly to the abstraction of the head;—taking advantage of pains, if there be any. Should you be unsuccessful in these attempts, then wait for ten or twenty hours (if no dangerous symptoms forbid); and, under the efforts of the uterus, the remains of the head may be pushed into the interior parts of the pelvis, more within reach of your extracting instrument.

Position of the Fœtal Head.—In all cases, but more especially if there be unusual difficulty, the position in which you place the head, when you are bringing it away, is of no small importance. Happily, it is by no means difficult, but rather easy, to place it in the position most convenient for transmission.

When the cranium is laid open, and its contents are taken away, some of its bones collapse; and its base, with the facial bones, remains. In a case of this kind, in which the cranial texture is completely destroyed, you may bring down the basis of the cranium parallel with the plane of the brim of the pelvis; but, in this position, the remains of the head, though small in bulk, still occupy much space in the pelvis. It seems, therefore, that if you bring down the basis of the scull parallel with the plane of the brim of the pelvis, advantage is

lost. There is a position of the head more favourable; and very important to be recollected at the bed-side. Place the basis of the scull parallel with the posterior surface of the symphysis pubis; and then much less room will be occupied by it. Further, when you place the basis of the scull in this manner, parallel with the symphysis pubis, it is not altogether a matter of indifference which part you draw down, as the most depending;—whether the face, or the ear, or the occiput of the child; for all of these may be brought down into the most dependent position; the basis of the cranium still retaining its parallelism with the symphysis pubis. If, for example, you draw down the *face* as the most depending part, you then, of course, have a simultaneous descent of the neck and occiput; but if the *occiput* is the part the most dependent, you will then have a combined descent of the face and neck;—forming together a mass of no inconsiderable bulk. The descent of the *ear* produces a sort of intermediate case; into the consideration of which it is unnecessary to enter.

It is obvious, then, from these remarks, that if the neck and face of the child descend together, the mass transmitted will be larger than that produced by the simultaneous descent of the face and occiput; and from these considerations issues the following rule:—When the cranium has been opened, and the brain has been removed, let the basis be laid against the posterior surface of the symphysis pubis; and let the head be brought down under a presentation of the face; for, in this position, the remains of the cranium will occupy the smallest space in their descent. In difficult cases, you may facilitate the descent by separately detaching the bones, as much as possible, before you bring the head away. If you have been waiting some ten or twelve hours after the operation of craniotomy, you may find the parts softened a little by putrescence, and their connexions loosened; so that a detachment may be easily effected; and, with the help of the forceps, the bones may be very easily abstracted. Care must be taken not to injure the soft parts, when these bones are taken out.

Recapitulation.—Such, then, are the nicer points of this dreadful operation;—few, indeed, but of great importance. Though craniotomy must be avoided if possible, yet if, early in the labour, it be perfectly evident that you must open the head, the sooner the operation is performed, the better. After the cranium has been opened, and the brain has been pulpified, if the head do not come away easily, wait for a few hours (ten or twelve for example);—then resuming your operations, place the basis of the scull parallel with the symphysis pubis, with the face below (so as to bring forth the head under a facial presentation); and then, if you can get away the bones separately, carefully remove as many of them as possible; for, in doing this, you not only reduce the bulk of the head, but greatly facilitate the escape of the pulpified brain.

SECTION 4.—SIGNS INDICATING THE NEED OF CRANIOTOMY.

If caution be necessary in deciding in what cases you are to have recourse to the forceps or lever, it is still more necessary in deciding as to what are the cases in which you may be justified in having recourse to the perforator; and I advise you always duly to investigate the point before you come to your determination; so that, upon reflecting afterwards, you may feel perfectly free from compunction and self-reproach.

It might be contended by some, perhaps, that we are never justified in having recourse to craniotomy, unless the fœtus be already dead; but this opinion is, I conceive, erroneous. With the dogmas of the divine, it is not in my province to interfere; and I am glad of it. Without "babbling about theology and syringes", therefore, I may be permitted to remark that, in British midwifery, the life of the patient (nay, her preservation from the graver lesions of her person) is to be looked upon as paramount to every consideration relating to the fœtus; and when these require the sacrifice, craniotomy becomes justifiable*. Before this operation is adopted, however, it must be admitted on all hands, that an overpowering and

* It is an established obstetric rule, that the woman should not die undelivered; and that attempts must be made to save her and her infant; or to save the one, even at the cost of destroying of the other. The question, whether it was lawful to destroy one life, in order to save the other, was submitted to the Doctors of Theology, at the Sorbonne, at Paris, in the year 1648. They answered that, in this case, *neither* ought to be destroyed, or assisted. Their decision was as follows:—"Nous soussignés, Docteurs en Theologie 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 la, il faut tenir a la maxime de St. Ambroise,—'Si alteri subveniri non potest nisi alter lædatur, commodius est neutrum juvare.' Déliberé a Paris; le 24 Avril, 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 that, according to Scripture, it should be first born (that is, *natus*), before it could be "born again" (*renatus*) by baptism. This difficulty was over-ruled, in 1773, by the Sorbonne Doctors; 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 industriâ 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 to the *fœtus*. The decision of the Sorbonne removed *one* objection to embryotomy; but admitted the *former* objection. In this country, 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. The French, German and American accoucheurs are in favour of the Cæsarian operation.—*Dr. Ryan's "Manual of Midwifery."*

† "We the undersigned, Doctors of Theology, in the Faculty of Paris, are of opinion, that if the child cannot be abstracted without being killed, it cannot, without mortal sin, be abstracted at all; and that, in such a case as this, we must abide by the maxim of St. Ambroise:—'If one cannot be assisted without another being hurt, it is not right to assist either.' Decided at Paris; April 24, 1648."

‡ "Provided the infant be alive; and that, by the skill or efforts of the physicians, the water can be brought into immediate contact with its body."

peremptory necessity, grounded on these conditions, should be clearly established; for (I conceive) before the tribunal of reason, this alone can clear the operation from partaking of the nature of murder! We shall therefore proceed to the consideration of those indications, by which this necessity is supposed to be demonstrated.

[In cases of dangerous parturition, the prerogative of deciding upon the life or death of the mother or child, was supposed by some to be inherent in the husband; to whose powers of judging or of feeling, appeals were to be made. This erroneous opinion, though I have formerly heard it mentioned in practice, being also contrary to the rights and interests of society, never could have satisfied the mind, or justified the conduct of any person, who should have submitted to be governed by it. Nor do these cases admit of such election; for if the husband had preferred the child, his wish of preserving it at the expense of the life of the mother, could seldom have been gratified. He, at any rate, could be no competent judge of the necessity of the case; and certainly could claim no peculiar dominion over the life of either of them. Were the mother, in any circumstances, to perish, the death of the child, unless under some very rare accident, would be an inevitable consequence. But I cannot persuade myself, nor can I think it reasonable or just, that the head of any child should ever be lessened on the testimony and judgment of any single person,—however well informed or experienced he may be,—if a consultation can be obtained.*]

Failure of the Forceps.—It may be contended by some, perhaps, that if we have made trial of the forceps or lever, and have been unable, with these instruments, to abstract the head, we ought then, without delay, to have recourse to the perforator. To this principle, however, I can by no means accede; for if the accoucheur be prompt in the employment of embryospastic instruments, he may sometimes find himself unable to abstract the head in the *morning*; although, in the *evening*, by means of the same instruments, a living fœtus may be brought away;—a fact of which I have myself been an ocular witness, in more than one instance. It is clear, therefore, when the tractor or forceps fail you, that the perforator should be had recourse to; provided immediate delivery be necessary.

In a Full-Sized and in a Contracted Pelvis.—You may sometimes hear it observed, that the perforator should be used when the pelvis is contracted in a high degree; and that you ought not to use it, if the apertures are of full size; nor is this rule to be altogether neglected. If the pelvis be so contracted that delivery, without the perforator, is clearly impracticable, then the sooner you employ the instrument the better; but unless the case be extreme,—so that the need of the perforator is obvious beyond all doubt,—to use the perforator merely because there is a want of room among the bones, would be most

* Dr. Denman's "Introduction to the Theory and Practice of Midwifery"; Edited by C. Waller, M.D. Seventh Edition.

criminal rashness. The truth is that, in those cases in which the pelvis is contracted in a slight degree only, you can seldom safely decide respecting the use of the perforator from the mere measurement of the pelvis; first because, unless much exercised in these inquiries, you may err in the measure; and secondly, because, if the head be small and soft, and the womb be active, the fœtus may come away unopened, notwithstanding the deficiency of room. On the whole, therefore,—although I would not have you neglect to examine the capacity of the pelvis,—yet, unless the contraction be extreme, I would recommend you not to rely on this measurement, in deciding whether or not you ought to have recourse to the perforator. In his work upon midwifery, Capuron relates two cases, in one of which the pelvis measured only three inches between the front and back; and in the other, not more than two inches and a half;—the full capacity of a well formed pelvis being four inches. Both these women, however,—as Capuron relates the story,—became the mothers of living children; and, from the whole account, we may draw this useful information;—that we must never rashly condemn the fœtus, merely because the pelvis of the mother is contracted. This fact indeed ought to *influence* our judgment; but ought not alone to *determine* it.

[Distortions of the pelvis may arise, in infancy, from *rachitis*; in more advanced life, from *malacosteon*, *exostosis**, *fracture*, or dislocation of the bones of the pelvis. From whichever of the above causes the deformity proceeds, the capacity of the pelvis will be so intrenched on, as to oppose an impediment to the passage of the child; not only in the *first*, but in all *future* labours. Yet, sometimes, the efforts of the *uterus* will be sufficient to force the child, with the head much compressed, through the deformed pelvis. Much, in such cases, will depend on the smallness and compressibility of the head; and on the strength of the pains. It becomes us therefore to be exceedingly cautious not to suppose, on slight and insufficient grounds, that the distortion is too great to allow the child to pass without the intervention of instruments; and particularly when there is a question about employing the *perforator* (an instrument always incompatible with the life of the child), we ought carefully to weigh every circumstance in our minds, and (if possible) *procure the opinion of some other experienced practitioner*, before we determine upon having recourse to it.†]

Previous Operation no Rule for its Repetition.—You are not justified in laying open the head merely because, in previous labours, the operation has been performed, and even repeatedly. Suppose, for example, five or six fœtuses have all been destroyed in previous labours;—the pelvis being confessedly narrow. A fact of this kind constitutes, no doubt, a presumptive evidence, that the operation may be again necessary; but the proof is not decisive; nor are you, therefore, justified in making use of the perforator, unless some

* From ἐξ, *out of*; and ὀστεον, *a bone*.

† Dr. Merriman's "Synopsis of Various Kinds of Difficult Parturition."

stronger reason can be given. Various circumstances, in subsequent deliveries, may facilitate parturition. The labour may be premature; or, though of full age, the fœtus may be softer, or much smaller than ordinary; and it may yield, in consequence, to the forceps or tractor; or even to the unassisted efforts of the uterus; so that, on all these accounts, it would be highly criminal to perforate, merely because the operation had been repeatedly performed on the same woman before.

[If you find the parts much inflamed, you are obliged to bleed, before applying instruments. Should the woman be too weak to bear depletion, you may have to open the head of the child. This requires great consideration; for the surgeon is obliged to be at once advocate, judge, jury, and executioner. Remember that an error in the conclusion at which you arrive, may cost the child its life! If there be restlessness, rigors, headach, anxiety, nausea or vomiting, coldness of the skin, tenderness and tympanites of the abdomen, and muttering delirium, in all probability the patient will die. Till some such symptoms make their appearance, you may wait. "Neque temerè neque timidè"—must be your motto.*]

State of the Fœtus.—Some practitioners, with laudable humanity, have maintained (as I have mentioned before) that perforation ought not to be performed, unless we have proof that the fœtus is dead in utero. I do believe that, in many instances, it is not necessary to lay the head open, till the fœtus has been subjected to so much compression, from theaction of the uterus, that its vitality has become extinct. Unhappily, however, even if we accede to this rule, it will not be found of easy application; as we are not always able to decide, with absolute certainty, whether the child is dead or not. From the symptoms which I shall presently state, we may sometimes ascertain the fact with a high degree of probability; but it often happens, that the child is dead without our knowledge; and frequently, when the fœtus has been pronounced to be dead, it manifests the signs of vigorous life, as soon as it has quitted the vagina. Should we, therefore, grant to the speculator, that the indication for the use of the perforator may be taken from the death of the child, we must still maintain that, in practice, the rule is exceedingly defective; inasmuch as it necessarily partakes of all that uncertainty, which belongs to those symptoms by which the death of the fœtus is supposed to be indicated. Not to weary you, however, with a critical enumeration of those indications for the use of the perforator of which I do not approve, I will now lay before you those which I employ in my own practice.

Rules for Using the Perforator.—Before the perforator is used, I endeavour to be fully satisfied that the security of the life or person of the patient peremptorily requires the delivery. I consider that the security of the patient demands delivery,—demands it with that degree of certainty which makes it our duty to operate,—provided the head has made little or no advance, although the woman has been in active labour for six-and-thirty or eight-and-forty hours after

* Dr. Mackintosh's unpublished Lectures on Midwifery.

the discharge of the waters; or provided that, however short the labour, the symptoms of danger or damage formerly enumerated in a former lecture, and to be effectually relieved by delivery only, are beginning to make their appearance.

Satisfied that the perforator is necessary, I endeavour further to ascertain, that the delivery is not to be accomplished either by embryospastic instruments or the Cæsarian incisions. If the delivery must at last be effected by the Cæsarian incisions, it must be admitted, on all hands, that craniotomy is unjustifiable; and I shall endeavour, hereafter, to lay down the principles by which we may determine this point. If the delivery may be safely accomplished without our embryotomic operations, by the mere use of embryospastic instruments (the tractor, I mean, or the forceps), then, although the fœtus in these difficulties is frequently still-born after all, to craniotomize would be unjustifiable. The safety and practicability of delivery by the forceps or the tractor, in any given case, must depend, not only on the conditions of the delivery, but on the dexterity of the operator; and, perhaps, the only certain method of determination, in dubious cases, must be taken from our making the attempt;—gently, dexterously, and resolutely; but yet cautiously, and with great care; lest we should lacerate or contuse. Suppose then, that delivery by the Cæsarian operation is unnecessary, and by embryospastic instruments impracticable;—suppose, moreover, that the safety of the life or person of the patient demands immediate delivery; with that degree of certainty on which, in surgery, it is reasonable to act. Under these conditions, it seems to me, we have made out a clear need for the perforator; and, however revolting the operation may be, craniotomy becomes justifiable. Before you open the head, have a second opinion. This is a good check upon temerity. The former need of the operation, the contraction of the brim of the pelvis, and the death of the fœtus, may all be allowed to exert some influence over your decision; but, be it remembered, your determination must not, in general, be taken from these considerations alone.

SECTION 5.—INDICATIONS OF THE DEATH OF THE FŒTUS.

When instruments become necessary,—the perforator more especially,—it is always desirable to know whether the fœtus is alive or not; and we will therefore proceed to remark a little on the diagnostics by which this point is to be decided. The three principal indications on which I rely, in endeavouring to ascertain the decease of the fœtus, are,—a desquamation of the cuticle; a complete solution of the connexion between the cranial bones; and a total cessation of the pulse in the umbilical cord, for twenty or thirty minutes together.

Desquamation of the Cuticle.—You will sometimes find, in labours, that the cuticle comes away from the head in large flakes;—an occurrence, however, by no means frequent; or, if frequent, not (I

think) often observed. If you perceive the cuticle separating from the scalp, in the same manner as it desquamates from dead bodies in the dissecting-room, you may always suspect that the fœtal vitality is extinct. Though the desquamation of the cuticle, however, is a strong *presumptive* argument in affirmation of the death of the fœtus, it certainly is not *demonstrative*; for cases have been related,—and, among the rest, one by Dr. Orme,—in which the cuticle has separated in consequence of cutaneous disease; the child being alive notwithstanding. So rare, however, are these cases, that I should feel disposed in practice to look on them as of no account, were it not that human life is at stake.

Disruption of the Cranial Bones.—When the child is dead, I generally find that this fact may, after a time, be acertained by the dislocation of the bones of the cranium, and their complete detachment from each other; so that the cranial contexture seems to be thoroughly broken up. In cases of this kind, you feel all the bones at liberty; and floating, as it were, in the mollified brain. Hunter used to compare the head, in this condition, to a bag of shells. Mere mobility of the bones, without displacement and solution of union, is no proof whatever of death. Children declared on this evidence to be "still", have, to my knowledge, begun to cry lustily, immediately on entering the world. I repeat, therefore;—in order to demonstrate that death has taken place, the bones must be detached and afloat.

Condition of the Funis.—In laborious and other labours, it sometimes happens, that the umbilical cord lies within reach of the fingers; —descending along with the abdomen, in *crural* presentations; and, in presentations of the *vertex*, occasionally hanging down with the head. When the cord descends in this way, if its pulsations are distinguishable, we may certainly infer that the fœtus is alive; for this pulsation arises from the beat of the heart; but if the cord be cold, brown, flaccid, and destitute of pulsation, you may then (I think) be satisfied that the fœtal life is extinct. At the same time remember that, where the cord comes down, a suspension of the pulsation, for a few minutes, may arise from syncope; and that such temporary suspension is no certain proof of death;—no certain proof of that complete extinction of vitality, which renders resuscitation, by the tracheal pipe or warm-bath, hopeless. By the condition of the cord, death is demonstrated in those cases only in which that part is found to be soft, cold, and brown; or, for half-an-hour or an hour together, totally destitute of pulsation.

These, then, are the three principal evidences on which I rely, in endeavouring to ascertain the decease of the fœtus; and, of the three indications enumerated, it appears to me that the second (the total disruption of the osseous structure of the cranium) will, in practice, be found of greatest value.

Signs Appertaining solely to the Mother.—[Besides these symptoms, others (appertaining solely to the mother) have been mentioned; and have been looked upon as of some validity, in proving the death

of the child. The chief of these are,—vomiting; shivering; extreme langour and weakness; livid paleness of the countenance; discoloured and sunken eyes; noise in the ears; offensive odour of the breath; and discharge of flatus from the womb. But none of these can be admitted as sufficient, in themselves, to prove the death of the fœtus. They ought to have their weight in determining the necessity of using artificial means to expedite delivery; inasmuch as they evince the perilous state of the mother; but, even then, they ought to be very closely scrutinized, before they are accepted as proofs of danger; since they have occurred, separately, in many women, who have been in no particular hazard.*]

[*Recession of the Milk, and Flaccidity of the Breasts*†.—Should the child die when a woman is far advanced in her pregnancy, and before the commencement of labour, these signs are seldom wanting. But if they were to be offered as proofs of the death of a child destroyed by the severity of a labour, it would be needful to compare the state of the breasts at two specific times; first, on the accession of labour, when the child was living, and the breasts might be turgid; and, secondly, in the advanced state of labour, when the child was dead, and they might have become flaccid. But as it is not customary to inquire into the state of the breasts before some suspicion is entertained of the death of the child; and as those of no two women, in any circumstances, exactly resemble each other; and as the milk is often secreted irregularly at different periods of pregnancy,—all indications taken from the state of the breasts, or the secretion and quantity of milk, must be uncertain; and any judgment founded upon such indications, must be extremely liable to error. We grant, however, that, in some circumstances, they do become common or collateral proofs of the question we may wish to determine;—especially in the latter stages of pregnancy, though not in the course of a labour.

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

* Dr. Merriman's "Synopsis of Various Kinds of Difficult Parturition".

† Quæ corrupturæ sunt fœtus, iis mammæ extenuantur.—*Galen on the Aphorisms of Hippocrates.*—"When the fœtus dies, the breasts become diminished in size."

coldness. The latter may be produced by some contingent circumstance; such as the great heat of the room when she is in a profuse perspiration; or the sudden admission of cold air under the bedclothes in winter. Little stress is to be placed on this sign alone; but when accompanied with others, particularly a considerable diminution of size, it must increase our suspicions of the perilous state of the child, if not of its death.

Mechanical Weight of the Uterus.—If a woman in labour, or in the latter part of pregnancy, should feel the uterus fall, with a sense of increased or unresisted weight, when she turns from one side to the other, or changes her position, it is often surmised that the child is dead;—the bulk of the child being diminished; and all that resilition* observed to exist in every living body being lost. But this sense or effect may often be explained, in a more satisfactory manner, from other causes; especially when a woman is in labour. Should, for instance, the waters of the ovum be suddenly discharged, the uterus will contract till it comes in contact with the body of the child; but the integuments of the abdomen not contracting with equal celerity, and the uterus wanting that support which they afforded when it was fully distended, the latter must of course fall to whichever side the woman may turn. Should the waters be discharged slowly, or should the integuments of the abdomen contract speedily, or should the head of the child drop into the pelvis immediately after their discharge, there would not be this sense of unsupported weight;—whether the child were living or dead; because, in the one case, the uterus would be held firm by the general contraction; and, in the other, the child would be prevented from that kind of motion by its confined position.

When a child is diseased or dies in the latter part of pregnancy, the flaccidity and subsidence of the abdomen are considerable; but it is from a very great degree of these we are led to suspect either the death or wasting of the child;—some subsidence being one of the natural changes which precede labours. From the appearance of some infants born alive, it is often evident, by the wrinkled skin, that they are less than they were some weeks before their birth; and the manner in which these changes are made, frequently shows whether they died suddenly or declined gradually.†]

Want of Motion in the Child.—You may sometimes be told by your patient, that the fœtus must be dead; because she has not felt it for a day or two. Be it always remembered, however, that the child may not be felt for hours, or days, or even for weeks together; and that, nevertheless, it may be vigorously alive when born; certainly so far alive, as to be resuscitated by the tracheal pipe or warm-bath. Do not be deceived, therefore, into a notion that the fœtus is dead, merely because it has not been felt spurning or cuffing the uterus,

* From *resilio*, "to spring back".

† Denman's "Introduction to the Practice of Midwifery". Seventh Edition.

[The kind and degree of motion which may be caused by the child, varies in different women, and at different periods of pregnancy. By some, the child is scarcely ever perceived to move; with others, it is scarcely ever at rest; but it is often quiet a few days before, and in the time of, labour. By the motion of the child its living state is ascertained; but the want of motion does not prove that it is dead; nor would it, for that reason, be justifiable to perform any operation which might be injurious to it if living.

Some pregnant women, even among those who have before had several children, have scarcely ever been able to perceive the motion of the child through the whole time of pregnancy; and have even attributed their bigness to disease. The regular increase of size, then, is a good proof of pregnancy, and of the well-doing of the child. Some have asserted that they have felt the motion of the child; though the event has proved that they were not pregnant. Others have not doubted of the life of the child; though, after its birth, there were certain marks of its having been long dead. In long and very severe labours, natural affection may be overcome by present suffering and distress; and women might conceal their knowledge of the motion of the child, with the hope of a more speedy delivery;—if they concluded that the judgment of the attendant was guided by this circumstance. Every allowance must be made, and every consideration had for human nature, humbled by infirmities and misery; and in no circumstances whatever are kindness, resolution, and patience more required, than in long-continued and painful labours. The fears and affection of friends will also warp their judgment; but our greatest tenderness and the propriety of our conduct will be shown, not by a compliance with requests and solicitations, but by following the dictates of our own reason and judgment; for we are not to be governed or alarmed by unfounded apprehensions of danger, but by its actual existence.*]

Want of Cerebral Pulsation.—It might be supposed by some that the child is dead, in those cases in which you cannot feel the pulsation in the fontanel. This might be made a very pretty subject for obstetric disputation; but when you are become more experienced in practice, you will not, I think, feel inclined to give much attention to this sign. If a child be prone to hydrocephalic disease, or affections of the convulsive kind, the pulsations of the fontanels may sometimes, after birth, be felt more distinctly than the beat of the radial artery; but in health, even in vigorous children, the cerebral pulsation may not be clearly distinguished; and how can we then, in prudence, venture to infer the death of the fœtus, merely because the pulsation is undistinguishable at a time when the head is lying at the brim of the pelvis.

[*Fœtor in the Apartment of the Patient.*—The putrefaction of the child would be an indubitable mark of its death, and might create a very offensive smell in the apartment in which the patient was confined; but every putrid child does not yield an offensive smell, and

* Denman's "Introduction to the Practice of Midwifery." Seventh Edition.

such smell may be occasioned by several other circumstances. If a child should die in the uterus from external injury, or any internal cause, and become putrid before the membranes of the ovum were broken, it would have a peculiarity of smell; but not that fœtor which every animal substance emits, while it is in the act of putrefying under the influence of the open air. The fœtor to which we now allude, can only appertain to a child which was living in the beginning of labour, and died in the course of it, after the discharge of the waters; and in such cases, when putrefaction does begin, it is commonly very rapid in its progress. The general smell of putridity in the apartment of a person in labour, is to be admitted with very great caution as a sign of a dead child; for if the room be small, or crowded with company, or long kept hot and uncleanly, or if the common offices of life are performed in it,—as is usually the case among people of the lower class,—a similar effect would be produced as when the child is dead and become putrid.*]

Fetid Discharges.—Again:—A strong proof of death is taken from the issue of a fetid discharge from the uterus; and yet you ought not to consider this sign as decisive; for these discharges are, now and then, observed when the child is alive. Nor is it a certain proof that the child is dead, when, in presentations of the vertex, you find the meconium is making its escape;—the discharge being detected by the stain which it imparts to the fingers; for although this discharge, in many cases, arises from death and paralysis of the sphincter, yet, in two vertical presentations, I have observed a discharge of the meconium, though the fœtus was vigorously alive.

Fœtor and Ill-Appearance of the Discharges.—[The fœtor here meant is also supposed to arise from the putrefaction of the child; and the ill-appearance to proceed from a mixture of meconium, and sanious or other matter which might be supposed to flow from a putrefying child, with the common uterine discharges. But the appearance of these discharges naturally varies in different women;—according to their constitution, and to the qualities of the liquor amnii; in the appearance of which there is a very great difference. They become altered, likewise, by contingent circumstances; such as the casual retention of the discharge, the mixture of a small quantity of blood, or slight inflammation in the parts; which circumstances, in some cases, give to the discharges a strong scent, hardly to be distinguished from putrid fœtor. With every appearance of the uterine discharges, children have been born living and healthy; and when they have been long dead, these have in many instances been so little changed, as not to raise, even in the minds of very experienced men, any suspicion of harm having befallen the child. The proposal of any operation which would be injurious to the child if living, would not therefore be justifiable merely on account of the smell or appear-

* Denman's "Introduction to the Practice of Midwifery". Seventh Edition.

ance of the discharges, without other collateral proofs of its death; or a conviction, from other circumstances, of the operation being absolutely necessary.

Evacuation of the Meconium when the Head of the Child presents.—Should a child present with the breech or inferior extremities, the evacuation of the meconium (which is an absurd name given to the excrements first evacuated by the child after its birth) is one of the truest proofs of such presentation. But when the head presents, if the labour be very severe or tedious, the waters will be tinged of a greenish colour, or pure meconium may be forced away; and when such are the appearances, the child is often supposed to be dead; from a presumption that, if it were living, the sphincter of the anus would act with power sufficient to prevent any discharge. But it has been fully and frequently proved, by experience, that, when the head presents, a child may be born living, though the meconium had come away;—its evacuation proving no more than the weakness of the child, or the degree of compression it has undergone. The discharge of the meconium may also depend on the quantity contained in the bowels; or in some casual pressure upon the abdomen of the child. When, however, the meconium does come away in a natural presentation, we may generally conclude that the state of the child is not void of danger; and, for many years, I never saw a child (presenting with the head) born alive, when the meconium had come away more than seven hours before its birth. At length, I met with a case, in which the meconium was discharged for more than thirty hours; at the end of which time, though the woman was delivered with the forceps, the child was born healthy and strong; and since that time I have had many equally convincing proofs, that the coming away of the meconium is a very doubtful sign of the death or dangerous state of the infant, whatever may be the presentation.*]

[The following are generally enumerated as signs of the fœtus being dead.—1. Absence of motion. But I have known a woman not to be sensible of any motion in the fœtus, for a fortnight before delivery; and yet it was born alive. 2. Sensation of coldness in the abdomen. This sensation is described, by the woman, as similar to that which would be produced by "a lump of lead" in the uterus. 3. Sensation of weight in the abdomen. 4. Flaccidity of the mammæ. I have seen full breasts, however, and a regular milk-fever, in cases in which the child was dead. When you discover the latter fact, you must not tell the mother; as it is apt to frighten her.

Several rules have been proposed for determining the death of the child after labour has commeneed.—1. Continuance of labour for four days. This is a very uncertain rule; for I have known labour begin at the end of seven months, and yet go off again; the child being carried to the full term after all, and born alive. 2. Evacua-

* Denman's "Introduction to the Practice of Midwifery". Seventh Edition.

tion of the meconium. This, however, generally occurs in presentation of the breech; although the child may be alive. 3. Fœtor of the discharge. I do not depend on this; for in a case in which the child had been dead six weeks, there was no fœtor; as in the case of fresh salmon and beef sent to India, in canisters deprived of air. On the other hand, I have know three cases in which there was dreadful fœtor; and yet the child was alive. 4. Want of pulsation in the umbilical cord. But, in cases of vertex-presentation, this can only be felt when the cord comes down before the head. 5. Want of motion in the fœtus. We must remember, however, that a child is often sent into the world in a state of coma*; and is born during sleep. Even if you have all the signs I have enumerated, do not at once proceed to perforate the head; but give a patient trial to the uterine action; and if you then find that the head of the child is too large for the passages of the mother, you must open the head.†]

Œdematous, Emphysematous, or other Peculiar States of the Fœtus.—If the scalp be emphysematous, or the abdomen be tympanitic‡, this is a very strong presumption that the child is dead; and peritoneal tympanites, easily discovered in crural presentations, is not very uncommon in its occurrence.

[In many cases in surgery, information may be gained and the judgment assisted by what is called "the tactus eruditus"; or that faculty which enables us to perceive and discriminate by the touch, with greater accuracy than by any evident or describable marks. It has also been said that, in many doubtful cases, we may decide whether a child be living or dead, by the feel of the head. But as we know that, in surgery, the most discerning and expert in this faculty are often mistaken, when they desert common evidences, so opinions formed on such ground, would not authorize an operation to which they might be supposed to lead, in the question on which we are now speaking. For the integuments of the head of a child often become œdematous, to a considerable degree, from pressure in its passage through the pelvis; and sometimes emphysematous, from a continuance or increase of the same pressure; when the child may, in all other respects, be perfectly well. If the integuments be squeezed into a smooth, round form, this is said to be unfavourable; but when they are corrugated §, the tumefaction ‖, though equally great, is thought to be of less consequence;—the former being supposed to prove the absolute separation of them from the cranium; and the latter, that their attachment remains. But this difference is, in many cases, accidental. The original connexion of the bones of the head is such, as to allow of their being pressed close to, or over each other, with safety to the child; yet, when the latter has been

* From κεω, *to lie down*;—alluding to the lethargy and drowsiness which characterize it.

† Dr. Mackintosh's unpublished Lectures on Midwifery.

‡ From τυμπανον, *a drum*;—because the abdomen, distended with flatus, sounds on percussion like a drum.

§ From *corrugo*, "to wrinkle." ‖ From *tumefacio*, "to puff up."

long dead, and the natural connexion of the bones has been destroyed, they may sometimes be perceived to be quite loose and distinct. The loose state of the bones of the cranium is frequently such, as to leave no doubt of the death of the child; as well as the abrasion of the cuticle, or the falling off the hair; but it is not proofs of things self-evident that are wanted in practice, but such as will guide us in doubtful cases. In very difficult labours, I have more than once seen a portion of the integuments of the head of the child burst, and afterwards slough away (so that the bone has been laid bare), without destroying the child. Probably I may have before observed, that whenever children die in the uterus, the greater the degree of putrefaction in which they are expelled,—according to the time during which they have been dead,—the more favourable is the indication to the mother;—showing, I suppose, that the health and vigour of her constitution in general, and of the uterus in particular, are not impaired. But if a child should remain dead in the uterus for any length of time without becoming putrid, this circumstance might be considered as a proof that the powers of action in the mother were reduced to a state of dangerous weakness; as the circumstance of food remaining unchanged in the stomach, would be a proof of the debility of that part.

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

It is not, therefore, from the emphysema of the scalp, the discharge of the meconium, the fetid discharges from the uterus, the quiet of the fontanel, or the quiet of the child; but rather from the desquamation of the cuticle, the cessation of pulsation in the umbilical cord, and (above all) the total breaking up of the bony structure of the cranium, that the death of the fœtus may be most certainly inferred.

SECTION 6.—CAUSES OF THE DEATH OF THE CHILD.

[The proportion of children still-born to the number of births, has not been accurately determined. Nor is it easy to decide the question; for it may probably vary in different countries and situations,

* Denman's "Introduction to the Practice of Midwifery." Seventh Edition.

and in different years; as plainly appears in different kinds of fruit. But it seems to be generally greater than, from a transient view, would be apprehended; and perhaps it is far greater in human beings, than in the lower animals;—perhaps not less than one in sixteen, or between that number and twenty. The death of a child in the uterus, may be occasioned by various causes independent of the mother; such as by local inflammation, or other disease of some part of its own body, essentially necessary to life; by some original imperfection in its structure, which may prevent its acquiring more than a certain size, or existing beyond a certain time; by the smallness or morbid state of the placenta, hindering the proper communication between the child and the uterus; by a partial or total separasion of the placenta, or by the rupture of some of the large vessels which run upon its surface; by the vessels of the funis umbilicalis becoming impervious; by the circulation through the umbilical vessels being obstructed by the casual tying of a knot; by untoward pressure of the body of the child upon the funis; or by this becoming dropsical or otherwise diseased; and probably various other causes.

The child may also be destroyed by affections or diseases of the mother; as by the sudden and violent impression of fear, joy, or other tumultuous passion; by the general irregularity of a parent's life; by fever; by improper or unwholesome diet; by any cause capable of depriving the child of a proper quantity of nutriment, or depraving the quality of that with which it may be supplied; or by accidents which produce some positive injury upon the body of the child, through the integuments and parts with which it is invested and naturally defended. Some of these are beyond the power of art to prevent or remedy; though others might, by proper care and management, be obviated or relieved. But, at present, we want only to discover those causes of the death of a child, which may occur in the time of labour.

To the inconveniences and danger which may arise in the course of a labour, occasioned by disproportion between the size of the head of a child and the dimensions of the pelvis, we must submit; as no judgment or skill can do more than teach us to wait patiently for the effect to be derived from the efforts of the mother, and the accommodating construction of the head of the child. Though the degree of compression which the head may undergo, in a very tedious or difficult labour, might be judged inconsistent with the safety of children, they will often, under such conditions, be born healthy and vigorous; and the parent will often recover more speedily and perfectly, after such labours, than after those which were natural and short. The same observation will also hold good of the resistance made by the soft parts to the passage of the child through the pelvis; unless their rigidity should proceed from local inflammation. But should the natural efforts be interrupted or subdued by fever, debility, or any other adventitious cause, or should there be local disease, the state of the patient would require the assistance of medicine or of

art;—according to the circumstances which might supervene. Yet it is a common observation, that by far the greater number of those labours which have been considered as difficult, and which really were so towards the conclusion, were not in fact occasioned by the state of the patient; but by interposition; and from the desire of accelerating labours which, in their nature, absolutely required a certain time for their completion. This interposition has chiefly consisted of two points of practice, both extremely reprehensible;—the artificial dilatation of the os uteri, and the premature rupture of the membranes. By such practice the order of the labour becomes disarranged; and there often follow occasions to exercise art, for the relief of those evils which were originally caused by the *improper use* of art, to the great hazard of the parent or child. So long, therefore, as labours proceed naturally,—that is, with pains efficient and returning regularly,—they may be objects of our observation, reason, and judgment; but cannot properly be considered as the objects of art. Yet, when the causes of difficulty are proved to be beyond the efforts of nature to accomplish, the assistance of art becomes justifiable, because it is necessary; and we may be reconciled to the fate of the child, if the life of the mother cannot possibly be preserved by any means consistent with its safety. But we are to be convinced of this necessity by the most substantial proofs, before we presume to decide upon an action so important, both in a moral and scientific view.*]

CHAPTER X.

INDUCTION OF PREMATURE LABOUR.

If a woman have been repeatedly delivered by the use of the lever, the forceps, or the perforator,—the children being still-born,—she may sometimes ask you whether there is any thing to be done in the way of preventing a repetition of this mournful operation; so as to facilitate her labour, or to preserve the life of some few of her children, or even of a single child. To this interrogatory you may answer in the affirmative; for there is something very simple, and very effective, which may be attempted; and not without frequent success. This something consists in the induction of delivery, before the woman has reached the nine months;—at the end of the fifth, sixth, seventh, or eighth month, for example; or even earlier in gestation.

If our object, in the induction, be simply to facilitate parturition, —by urging the labour when the child is small in its size, flexible, and of easy compression,—the sooner we perform the operation the better. But if our object be, as it generally is, to obtain a living child, then we ought not to induce premature delivery till seven

* Denman's "Introduction to the Practice of Midwifery". Seventh Edition.

months and a fortnight of the pregnancy are completed. Fœtuses born at that age, are frequently reared; but fœtuses born before that age of pregnancy, more frequently die than survive. Their stomach and bowels are too weak to bear the milk; and they are frequently carried off by gastric, cephalic, or other affections.

[*Mode of Induction.*—Two methods have been proposed for the induction of premature labour;—first, by insinuating a finger within the os uteri, and gently dilating it; and then detaching a part of the membranes from a portion of the cervix uteri, in its immediate vicinity. It may also be done by conducting within the os uteri a pair of ball-forceps; by slightly opening which, we gently and slowly dilate the aperture, so as freely to admit the finger. This is better than the finger alone; and does not give so much unprofitable irritation. It ought to give no pain, referrible to the os uteri; but is productive of a sensation, not amounting to pain, in the back. If we have not thought it prudent at once to dilate the os uteri,—so as to admit the finger freely to touch the membranes,—we may repeat the dilatations gently, at the end of twelve hours; and then detach the membranes cautiously from the cervix uteri, by the finger. But, for this purpose, it will be necessary to have the hand introduced into the vagina. If this be not followed by indications of labour within three or four days, we must have recourse to the second proposal; namely, evacuating the liquor amnii, by piercing the membranes with a long narrow-pointed probe, conducted by the finger; or a canula with a concealed stylet; the point of which, after the introduction of the canula into the os uteri, is to be pushed on barely so far as to pierce the membranes. Could the first plan always be depended on, it would be preferable to the second; as evacuation of the water is sometimes succeeded by spasmodic or partial contraction of the uterine fibres; and it also appears, that the circulation is more apt to suffer. It ought, therefore, always to be tried first.*]

Difficulties attending Induction.—The difficulties with which you have to contend, in endeavouring to save children by the induction of premature delivery, are principally the following:—When labour occurs before the full term of nine months, not unfrequently the children lie preternaturally. In the opinion of some, the number of preternatural presentations exceeds that of the natural. These preternatural presentations are often the cause of still-birth; for if the presentation be of the arm, the feet, the breech, or of a mixed character, the contraction of the pelvis delays the birth of the head and shoulders; and the fœtus perishes, from pressure on the cord at a time when respiration is prevented;—not to dwell upon the risk of fractures of the extremities, or ruptures and dislocation of the neck. Nor is the preternatural presentation the sole, though a principal, difficulty. A woman may be wrong in her reckoning. She may suppose that she is seven months advanced in her pregnancy; when, in truth, she is not advanced beyond the sixth. Or she may

* Dr. Burns's "Principles of Midwifery".

think her pregnancy is of eight months only; when, in reality, it is of nine; and the fœtus, in consequence, may be too large to make its way, unopened, through the pelvis. When, too, the labour has been frequently induced prematurely, the uterus sometimes forms a habit of spontaneously expelling the fœtus; and thus,—labour of itself supervening, before the close of seven months and a fortnight, —the fœtus may be so young and feeble, that it has not strength for the rearing.

It seems, therefore, that the induction of premature delivery, as a remedy for contractions at the brim, is not without its disadvantages; for remedies, like ourselves, have their defects as well as excellencies. "Optimus ille qui minimis egetur."* But still, with all its faults about it, the practice is of great value; and there are now living in society, individuals whose heads have, in this manner, been preserved from the perforator.

[In order to avoid the necessity of resorting to the Cæsarian section, or to the division of the symphysis pubis, the induction of premature labour is recommended. The proposal was broached in 1756. It was first practised by Dr. Macauley, of London; and Mr. Barlow operated eighteen times on five women. In performing it, you introduce a finger or an instrument into the uterus; and either burst the membranes or not, as you think proper; and next day you introduce your finger, and (according to Dr. Hamilton) move it about; so as to separate the membranes from the uterus, in a circle round the mouth. A woman, with a very deformed pelvis, was sent to Edinburgh to have the Cæsarian section performed; but I thought I could deliver her by embryotomy. I introduced a finger and an instrument repeatedly; but labour did not come on till a month afterwards. I then opened the head, and brought the child through the pelvis with great difficulty; and the woman died. I found that her lungs were diseased; that one kidney was only a bag of matter; and that there were a great number of scirrhous glands in the pelvis;—so that if the Cæsarian operation had been performed, she would probably have died.

It is a mere prejudice to think that children born at the eighth month, have a worse chance than those born at the seventh. I have been very unfortunate, gentlemen, in my attempts to bring on premature labour; for I pique myself on telling you my faults†.

In cases of deficient room in the pelvis, some people have recommended spare diet, with the view of diminishing the bulk of the child. In one case which I saw, the child weighed only five pounds. After this I saw another case, in which a lady was bled for rheumatic pains, and was almost starved beside. She, also, produced a child which weighed five pounds; and, therefore, I think there is something in abstinence, with purgatives and occasional venesection.‡]

* "He is an excellent man who is deficient only in trifles."

† The cause of the doctor's failure may perhaps be found in the fact, stated by the "British and Foreign Medical Review", that the membranes sometimes require to be separated to a considerable extent round the os uteri.

‡ Dr. Mackintosh's unpublished Lectures on Midwifery.

CHAPTER XI.

HYSTEROTOMY*.

In British practice sometimes, and on the Continent more frequently,—delivery being impracticable by the natural passages,—the abdomen and uterus are both laid open by extensive incisions; and the ovum is abstracted through the aperture. The operation is denominated the incisory† or Cæsarian;—on account (I conceive) of the extensive use of the knife which it requires.

SECTION 1.—THE CÆSARIAN OPERATION.

[It has been supposed, by some writers, that this operation derived its name from a circumstance common to it, and every other in surgery in which a knife is used (a cæso matris utero) ‡; by others, that it had its name from the extraordinary courage of the person on whom, or by whom, it was performed; but it was more generally explained by the imagined qualities and rank of the persons whose lives are said to have been preserved by it. These, and their descendants, according to Pliny, were called *Cæsars*; as those born with their feet foremost were called *Agrippæ*; or when they were twins, and only one born living, *Vopisci*; and when they were left-handed, *Scævolæ*. It seems not to have been thought respectful, that men who (in the course of their lives) proved extraordinary, should have presumed even to come into the world in the common way §. But it is well known, that the name "Cæsar," though differently spelt, was not conferred on that great man, or the family who bore it, from the manner of his birth; but was derived from quite another source ‖. Nor do any of the very ancient writers on medicine take notice of this operation; and we cannot suspect they were so negligent as to have omitted the description of it, or so ignorant as to be unacquainted with it, when in all probability, had it been put in practice, they would have been the very persons consulted and employed to perform it.

Pliny, who lived in the time of Vespasian, is the first author, as far as I know, who mentions this operation; but he speaks of it with reference to those who lived before his time; and his account does not give much satisfaction. Rousset, who was a strong advocate for the operation, wrote professedly on the subject in the year 1581. Bauhin, in the appendix to Rousset, dated 1588, gives the following

* From ὑστερα, *the womb*; and τεμνω, *to cut*.

† From *incido*, "to cut".

‡ From the womb of the mother being *cut* (cæso).

§ Auspicatius, enectâ parente, gignuntur; sicut Scipio Africanus prior natus, primusque *Cæsarem*, a *cæso* matris utero, dictus.—*Pliny's "Natural History"*; *Book* 7; *Chapter* 9.—"They derive a more distinguished birth from the death of the parent; like Scipio Africanus, who was first called 'Cæsar', because cut out (cæso) from the womb of his mother."

‖ The mother of Cæsar, according to Suetonius, was living at the time of her son's expedition into Britain; so that she must have survived the operation many years, had it been performed upon her.

case:—Elizabeth Alespachen had this operation performed upon her by her husband, who was a gelder of cattle at Siegenhausen, in Germany, in the beginning of the sixteenth century. She had several children born afterwards in the natural way.

Ambrose Paré and Guillemeau wrote against the operation. M. Simon wrote two papers on the subject, in the First Volume of the "Memoirs of the Royal Academy." Heister, and many others, have written on the subject. Weideman of Dussendorp, in his Thesis, has given an account of all the cases of this operation recorded before his time, and the result of them. The records of this operation have been imperfectly preserved, even in modern times. They are certainly few in number; yet, from the context of the cases recorded, it appears that some have been misrepresented; that some are fictitious, and were alleged to answer other purposes; as was the supposed one of Lady Jane Seymour;—designed to stamp a character of greater cruelty than even *he* deserved, on Henry the Eighth*; and that others are related with a change of circumstances, so as to appear different, though they were in fact the same. From a detestation of the apparent cruelty of this operation; from a doubt of its necessity, or of the advantages to be derived from it; from the destructive event which was to be expected from these, or from some other cause,—it was never performed, or even proposed, or (scarcely) spoken of, in this country, till within these few years. But at present we have well-authenticated accounts of more than ten cases in which the operation has been performed, under the direction of and by men of unexceptionable abilities; and these may be esteemed sufficient to enable us to form a judgment of the general benefits to be derived from the operation; as well as of the manner in which it ought to be performed, and of its constant or probable consequences.

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

* See Rapin's "History of England"; Volume 8; Page 17; and the Note annexed to it.

writers have not met with general approbation, but their influence has been too great; for, in several of the cases recorded, we find some circumstance which proves that the operation was not necessary, or that the grounds on which it ought to be performed were not well understood. The ideal *glory* of the operation has perhaps had some influence in France; where it has certainly been often proposed, and sometimes (without a doubt) performed unnecessarily; as well as in some other parts of the Continent. Of the reality of this fact, the following case, an account of which was given me by the late Dr. James Ford, is a proof. While he was attending the hospitals at Paris, a woman was laid upon the table for the purpose of having this operation performed; and while the surgeons were preparing for it, the child was expelled by the natural pains. No other principle, certainly, but that of necessity, can be admitted as a justification of this operation;—that is, whenever it is proposed, there should be no other way or method by which the life, either of the mother or the child, could possibly be preserved; and the impossibility should be confirmed by the opinion, not of one only, but of as many competent judges as can be procured. If such satisfaction could be given, I should then consider this operation justified by every principle of religion, and by the laws of civil society; upon as good and decisive authority as any other operation which we never hesitate to perform; because it submits to the general principle of practice;—by giving us a chance of preserving a life, which must otherwise be inevitably lost.

Three general cases have been stated, in which it has been supposed that the Cesarian operation might be necessary.*

1. When the parent is dead, and the child living.
2. When the child is dead, and the parent living.
3. When both parent and child are living.

With respect to the *first* situation,—when the parent is dead, and the child living,—there cannot be any debate; because,—without giving pain, or incurring any inconvenience,—an attempt is made by this operation to preserve the life of a child; which, if the operation be not performed, must soon and inevitably perish. With respect to the *second* situation,—as, in almost every case in which the operation has been performed in this country, the parent has died, but the lives of many of the children have been preserved,—the operation holds forth, as its principal advantage,—a very important one,—the hope of preserving the life of the child; the chance of preserving the parent being much lessened, or at least not improved, by an operation so full of danger. It will therefore, I think, be generally acknowledged, that the operation ought never (or scarcely ever) to be performed upon a living mother, when there is proof, or good reason for believing, that the child is dead. The *third* is the sole statement attended with any difficulty; and,—being the only case which, strictly speaking, comprehends (in its true sense) the Cesarian

* See Bonet, in his "Anatomical Sepulchre."

operation,—it might lead to a comparative estimation of the lives of the child and of the parent. The common sense of mankind, however, is agreed on the general principles adopted and pursued throughout this work*;—of its ever being our duty, in the first place, to preserve the lives of both the parent and child; in the second place, to preserve the life of the parent; and in the third place to preserve that of the child. These principles have, on various occasions, been inculcated and applied; and will point out the general line of conduct we ought to follow, according to the exigence of every case which may occur in practice.

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

1. When she is living.
2. When she is dead.

Some have been of opinion, that this operation ought never to be performed on the living subject. Impressed, perhaps, with the dread of the operation, they did not distinguish between necessity and eligibility; and therefore wished to abolish it altogether; which would be an unnecessary and improper general rule. If it were to be performed only when the patient is dead,—more particularly if we were to wait for her death, as the only proper time of performing it,—it would generally be fruitless; for I do not find any instance of a child extracted alive, by this operation, after the death of the mother; unless the child escaped by the same stroke as that which proved fatal to the mother; of which the accounts seem to be almost fabulous, or merely accidental. Yet as,—in cases of women dying instantly in convulsions, hæmorrhages, rupture of the uterus, or other rapid diseases or accidents, at different periods of pregnancy, or of parturition,—it is possible for a living child to be extracted after the death of the mother, by the speedy performance of this operation; and as no harm can possibly result from the operation, supposing ourselves disappointed,—no reasonable objections can be made to our performing it in such circumstances. In some countries, the laws forbid the interment of any woman who may have died during pregnancy, before the child shall have been taken away. A prohibition to bury the living with the dead, is the spirit of such laws.*]

Not Difficult.—To perform the Cæsarian incisions,—as well as, indeed, in most of the higher operations of surgery,—some intrepidity is necessary, and some little share of intellect is required; but, as all the parts of the operation are brought fairly under the eye, their execution is by no means difficult. Before the incisions are made, the bladder ought, by all means, to be evacuated; and it is desirable, too, that the bowels,—sometimes loaded in the end of pregnancy,—should be thoroughly cleared of their contents. As women possess, perhaps, a larger share of passive courage than men, we may, I believe, generally trust to their fortitude; and I deem it, therefore,

* Denman's "Introduction to the Practice of Midwifery." Seventh Edition.

unnecessary to give alarm by binding them; though a steady assistant, of firm nerves, ought to stand on either side;—in readiness to secure the patient, should her resolution fail.

Steps of the Operation.—Different operators may give a preference to different positions of the body. For myself, I should wish the patient to be quietly transferred to the edge of the bed; and to rest there in the recumbent position; with the head and shoulders a little elevated, and the legs lying forth beyond the bedstead, so as to hang upon the floor. The body thus being placed in the most commodious position, the surgeon, with a large sharp-edged scalpel, may make a longitudinal incision of six inches, through the abdominal coverings, in the inferior half of them (below the navel);—I mean, where there is choice; and to the left of the linea alba. This incision should be made on the inner edge of the rectus;—the parts divided, in the progress of the incision towards the cavity of the peritoneum, being the integuments, the adipose* membrane, the sheath of the rectus in front, the flesh of the muscle, the sheath of the rectus behind, and the membrane which gives a lining to the cavity of the abdomen. These incisions completed, the uterus (of a dusky rosy tint) is brought under view; and through its substance a further incision of six inches is made, in correspondence with the former;—the fibres of the uterus, the peritoneum, and the membrane which invests the womb internally and secretes the catamenia†, being the parts which are cut through. The ovum being exposed, by this division of the uterus, the accoucheur lays open the membranes by rupture; and, reaching and grasping the feet of the fœtus, he abstracts it by turning;—proceeding immediately to withdraw the other fœtuses, should there chance to be a plurality; and concluding this part of the operation with the immediate removal of the secundines. When the muscular fibres of the uterus are divided by the knife, they immediately retract. When the ovum is abstracted, the whole of the uterus collapses, and retreats into the pelvis;—the intestines, under the expiratory movements, bursting forth at the opening. The operator now completes the process, by replacing the viscera, removing the clots, closing the abdominal wound by gastroraphy‡, and afterwards covering the parts with some light and simple dressing. Suture of the uterus has not generally been hitherto employed. Agreeably to the suggestion of Lizars,—a dexterous and intrepid surgeon, who by his graphic illustrations of anatomy has secured longeval reputation,—the temperature of the apartment should be about ninety degrees of Fahrenheit's thermometer;—not many degrees below the temperature of the internal parts of the body.

Extensive Abdominal Incisions not necessarily Fatal.—The operations of Lizars have shown, that extensive divisions of the abdominal coverings are not necessarily fatal. In the hope of unlocking the

* From *adeps, adepis*, "fat."
† From κατα, *according to*; and μην, *a month*.
‡ From γαστηρ, *the stomach*; and ραφη, *a suture*.

abdomen for surgical operation, I have myself endeavoured to prove, that extensive divisions of the peritoneum are not, in general, followed by fatal results. A record of the facts and experiments on which this opinion is grounded, you will find in my "Physiological Researches".* Although, therefore, I would have you avoid an unnecessary division of integument in performing the Cæsarian incisions, I advise you to make them of the full length of six inches; as a shorter aperture would probably give rise to difficulty in the abstraction of the fœtus, without securing to the patient a countervailing advantage.

Direction of the Incisions.—By some practitioners, we have been advised to place the Cæsarian incisions transversely; so that they may stretch between the linea alba and the sides of the abdomen. To omit, however, less weighty objections to this method of operating, I may remark, that the transverse incisions must lead the scalpel into the side of the uterus, where the large vessels are seated; whence, after the completion of the operation, a fatal internal hæmorrhage is to be apprehended; nor must we forget that, by the transverse operation, the epigastric artery would be divided; so that, on both accounts, the longitudinal incision (generally adopted) seems, on the whole, to be the better of the two. Under these distortions of the pelvis which create a need for the Cæsarian incisions, the uterus, usually thrown from its natural bearings, frequently lies so much to the right or to the left side of the linea alba, that the operator is compelled to place his incisions accordingly. It has been observed, however, that where there is a choice, we should rather make our incisions to the left of the linea alba than to the right; because, by so doing, we avoid the risk of wounding occasionally the pervious ligamentum rotundum, and of thereby perhaps producing a troublesome venous hæmorrhage. The linea alba expanding, in common with the rest of the abdominal coverings, in consequence of the enlargement of the uterus, may become dilated to double its original width; the breadth, in the living woman, being sometimes very easily ascertained on her making an attempt to rise from the recumbent to the sedentary position; for the muscles, during the effort, becoming as hard as a piece of cartilage, their inner margins, and the interposed space, may be examined without difficulty. In operating upon dogs and rabbits, I have frequently divided the linea alba with impunity. After the operation of paracentesis†, the aperture through the linea alba usually heals with facility. Surgeons, however, are (not unreasonably) averse from tendinous wounds; which are prone to mortification; and we are advised, therefore, not to place our incisions in the centre of the abdomen, but over the rectus muscle, near its inner edge;—so as to include the muscular flesh in the wound; and thus bring into co-operation, during the subsequent healing, those active living parts of which the muscle is composed. Remember, then, the breadth of the linea alba; remember, too, the

* See Note at page 151.

† From *παρακεντεω, to pierce through.*

situation of the epigastric* artery, and the large capacity of those arteries which lie in the sides of the uterus; and, in your anxiety to keep clear of the linea, take care that you do not get so far from the margin of the rectus, as to incur the risk of injuring these parts. A pregnancy of nine months, I believe, doubles the breadth of the rectus. In determining the situation of the epigastric, remember this.

Some might think, perhaps, that in removing the fœtus by the Cæsarian incisions, we ought to make the openings *above* the navel, instead of *below*. To this opinion, however, I can by no means accede; for, if we make the incisions above the navel, the intestines will protude more copiously; the region of the placenta will, most probably, be divided; and, on the abstraction of the ovum, the womb, collapsing into the pelvis, will sink below our reach;—disappearing beneath the intestines, which fall over it. Place the incisions, therefore, below the navel; for, by this collocation, you may avoid these impediments.

Application of Sutures.—When closing the abdomen of animals, I have generally passed the suture completely through the abdominal coverings, so as to include the peritoneum; nor have I been led to suspect, that any ill consequences have necessarily resulted from this practice. In operating on the human subject, however, we are advised not to include the peritoneum in the stitches; and though I am not sure that much danger would result from the suture of this membrane, I deem it safer, in the present state of our knowledge, to observe the precaution recommended.

Remove a Portion of the Fallopian Tube.—One observation more, and I conclude this part of our subject. If you intercept the contact between the semen and the rudiments, you ensure sterility. My reasons for this opinion you will find in the "Transactions of the Medico-Chirurgical Society," for May, 1819. On the Continent, the same woman has been twice subjected to the Cæsarian operation. Mr. Barlow's patient, in this country, recovered; and might have become pregnant again. To preclude the possibility, therefore, of a second need for the incisions, before closing the abdomen, the operator, I conceive, ought to remove a portion (say one line) of the Fallopian tube, right and left, so as to intercept its calibre;—the larger blood-vessels being avoided. Mere division of the tube might be sufficient to produce sterility; but the further removal of a portion of the tube appears to be the surer practice. I recommend this precaution, therefore, as an improvement of the operation.

To the fœtus, the Cæsarian incisions are, it should seem, unattended with danger; though, in more than one-half of the British operations, the children have been abstracted still-born;—death, however, being rather attributable to the delay of the operation, than to any effects produced by the operation itself. But although, in these cases, the danger to the fœtus is small (if any), it is admitted, on all hands, that the peril to the mother is extreme; and, without

* From επι, *upon*; and γαστηρ, *the stomach*.

staying to declaim on a subject so well fitted for babbling and eloquence, it may be worth our while, perhaps, to consider what are the causes from which the danger arises; and what are the means whereby they may be superseded or alleviated. That British surgeons understand, as they ought, the use of their hands and fingers, will (I presume) be admitted by all; that they are, further, acquainted with those laws of the injured parts which, understood and brought into operation, constitute the best instruments in the armamentarium*, can scarcely be denied; it is remarkable, however, notwithstanding these qualifications of our countrymen, that the success of the Continent has greatly exceeded that of our own islands; and as we may not, I think, in candour impute this to superior chirurgical knowledge, we must look to other causes to which this foreign felicity may be ascribed. From the masterly work of a man of great powers (Dr. Hull, of Manchester) it appears, that although but few women in this country have recovered from the operation, yet in those Continental operations which have been put upon record,—amounting in number to between two and three hundred,—more than one-half the women have survived†. That glorious liberty of the press,

* Armoury.

† It is a curious and unaccountable fact, that the operation was more successful formerly than of late years;—even during the period 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", for 1809 (Volume 5); when, out of two-hundred-and-thirty-one cases, one-hundred-and-thirty-nine recovered. During 1825, it was performed three times with success in Germany, by Schenk, Graafe and Mende; and, during the same year, three unfavourable cases were recorded in Siebold's "Journal", and three in Mend's "Obstetric Journal". A case in which the operation was twice performed successfully on one patient, is recorded 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 time,—by Osiander, in the "Commentations of the Royal Society of Sciences", at Gottingen, in 1813. Lounius, a French accoucheur, is said to have performed it seven times on the same person; and all the children lived.—*Dr. Ryan's "Manual of Midwifery".*

Dr. Merriman's List of Cases in which the Cæsarian Operation has been performed in the British Islands.

1. Mary Dunally, a midwife, performed the operation with a razor, on Alice O'Neal, near Charlemont, in Ireland. Child dead; mother recovered; 1738.—(*"Edinburgh Essays"*; Volume v.)

2. Mr. Robert Smith, operated upon —— Paterson, in the Canongate, Edinburgh. Child and mother both lost their lives. The operation is said to have been performed in 1737; but this seems a mistake for 1757.—(*Smellie*, Volume iii; Collection xxxix; No. ii.)

3. Dr. Young operated upon a woman, about a mile from Edinburgh. "She was distressed with a constant vomiting; and I found the pelvis very narrow." "In performing the operation, I had no occasion to take up any vessel. Having got into the womb, I could not possibly get the child away, till I caused one to press up the head from the vagina;—a part of the child was so closely wedged in the pelvis. [The bulk of the head must, of course, have passed through the

which we may hope will be consummated by the admission of reporters into our bed-chambers, to note down and publish the secrets of the couch and pillow, may perhaps, in part, account for this apparent want of success, in this land of license and Esau-like fraternization. In England, should any operation fail, it is not very likely to remain concealed; but during the preceding centuries, on the

superior aperture of the pelvis; or there could not have been this difficulty in withdrawing the child. Was the operation at all necessary in such circumstances?] However, I brought away the child alive; but it fell into convulsive fits, and died in a few days. The mother died."

4. Dr. Young again operated on "a little decrepid woman, in the Royal Infirmary". The woman died in a few days; but the child was alive, and "was shewn at the class;—a healthy promising girl".—(*Manuscript Lectures, formerly Dr. Dale's, taken in* 1773.)

5. Mr. Alexander Wood is stated, in Dr. Hamilton's "Outlines of Midwifery," to have performed this operation; but no other account is given, except that the child and mother were both lost.

6. Mr. Chalmer performed the operation on Elizabeth Clerk, in 1774. The case is detailed in Hamilton's "Outlines". Child alive; mother died.

7. Dr. Hamilton, Junior, performed the operation in 1795. The case is detailed in his "Outlines". Child putrid; mother died.

8. Mr. W. Whyte, of Glasgow, in 1775. Both mother and child perished.—(*Dr. Hull's "Defence of the Cæsarian Operation"*; Page 66.)

9. Mr. Kay, of Forfar. Child born alive; mother lived eleven days.—(*Hull's "Defence"*; Page 66.)

10. Dr. White, of Manchester. Child and mother both died.—(*Hull's "Defence"*; Page 67.)

11. Mr. Thompson performed the operation on Martha Rhodes, at the London Hospital, in 1769; in the presence of many physicians and surgeons. Child extracted alive; fell into convulsions on the next day; and died the day after. It had an uncommon excrescence on the forehead, communicating with the brain. Mother died.—(*"Medical Observations and Inquiries"*; Volume iv.)

12. Mr. John Hunter, in 1774, operated on Mrs. Foster. The child was alive; the mother died.—(*"Medical Observations and Inquiries"*; Volume v.)

13. Mr. Atkinson, in 1777, operated upon Elizabeth Hutchinson, at Leicester. Child alive; mother died.—(*Vaughan's "Cases of Hydrophobia", &c.* 1778.)

14. Mr. Clarke opened the abdomen of a woman; and from it he extracted a dead child; the mother died. The child was, at the time, extra-uterine.—(*"Memoirs of the Medical Society of London"*; Volume iii; Page 197.)

15. Dr. Hull operated upon Isabel Redman, in 1794. Child alive; mother died.—(*Hull's "Defence"*; Page 172.)

16. The same gentleman performed the same operation in 1798, on Ann Lee; both mother and child perished.—(*"Defence"*; Page 162.)

17. Mr. Barlow operated upon Jane Foster, in 1793. Child died; mother recovered.—(*"Medical Records and Researches"*; Page 154.—*Barlow's "Essays on Surgery and Midwifery"*; 1822.)

18. Mr. Wood performed the operation on Elizabeth Thompson, in 1799. Child alive; mother died.—(*"Memoirs of the Medical Society of London"*; Volume v.—*Hull's "Observation on Mr. Simmon's Detection"*; Page 109.)

19. Mr. John Bell performed the operation, in 1800, at Edinburgh. Child lived; mother died.—This case is fully related by Mr. Charles Bell.—(*"Medico-Chirurgical Transactions"*; Volume iv; Page 347.)

20. Mr. Dunlop, of Rochdale, operated on Susan Holt. Mother died; child lived a fortnight.—(*Hull's Translation of Baudelocque*; Page 134.)

21. Mr. Wood gives the case of Hannah Rheubotham, in the Sixth Volume of the "Medical and Physical Journal"; Page 346. Both mother and child perished.

Continent, the darkness and smallness of the printing-house afforded facilities for silence, of which the unsuccessful operator was very likely to avail himself, even when his intentions were by no means dishonest; and thus, without reproach to our very able neighbours, it may be presumed that, from the circumstances of society, the failures and the successes of this operation may not have been recorded with equal fidelity;—not to add that some of these operations, so called Cæsarian, have perhaps, after all, been in reality of another nature. Nor is this all. Should our planet escape catastrophes similar to its former ones, posterity will probably learn with surprise, some thousand years hence, what have been the opinions relating to these points, maintained by their predecessors. They may learn with surprise, not unmingled with indiscreet levity, that a large and religious body of their civilized forefathers had been of an opinion, not to be presumptuously touched, that if one of the children of our great Parent were permitted to perish in utero, without the administration of water and words,—in consequence of an original and unexpiated moral taint, derived from our common horticultural* ancestor,—eternal perdition would very probably be its portion. Happy, however, as we are in another and a better system of opinions, we are not at all surprised to hear that, by many, such a notion has been deemed both wholesome and tenable; and some tender mothers, who, with safety to themselves, might perhaps have been delivered by the natural passages, in this hope of securing to their children the baptismal advantages, have, with a constitution on the whole healthy enough, been induced to submit, in preference, to an extraction of the fœtus, early in the labour, by means of the Cæsarian incisions.

Rule of British Obstetricy.—It is a fixed rule of British midwifery, however, not to remove the fœtus by the Cæsarian incisions, if it can be abstracted by the natural passages; and hence our operations have usually been performed on women of broken constitutions;—the subjects of malacosteon; which of itself generally, if not always, is a fatal disease. An able and resolute surgeon, Mr. Barlow, of Blackburn, had occasion to operate on a woman of vigorous habit; the birth of whose child was obstructed in consequence of previous fracture of the pelvis; and in this case, with which we have been favoured in his valuable "Essays," the woman resumed her domestic

22. Dr. Kellie relates a case in the "Edingburgh Medical and Surgical Journal"; Volume viii; Page 11. Mother died; child born alive; died next day.

23. Mr. Kinder Wood,—in the "Medico-Chirurgical Transactions", Volume vii, Page 264,—relates a case. Both died.

24. Mr. Barlow and Mr. Cori operated upon Ann Hacking, of Blackburn. Child alive; mother died; July, 1817.—(*Barlow's "Essays".*)

25. Dr. Barlow and Dr. Dugdale operated upon Mrs. Ridgedale; April, 1821. Child alive; mother died.

26. Dr. Henderson performed the operation at Perth, in presence of six of his professional brethren. Child alive; mother died.

Thus, in these cases, thirteen lives were preserved, and thirty-nine lost.—*Dr. Merriman.*

* From *hortus*, "a garden;" and "*cultura*, "tillage." Dr. Blundell alludes to Adam in the Garden of Eden.

occupation in the course of a fortnight afterwards. Hence, perhaps, —without illiberal derogation from Continental merit,—the greater success of the operation beyond our seas, may rather be attributed to the silence of the press, and to the misnomer of the operation. It may, also, be owing to the better condition of the patient on whom the operation has been performed, than to any superior surgical skill exerted in its performance.

Nature of the Attending Dangers.—The dangers which attend the Cæsarian incisions,—so frequently destructive to those who are compelled to submit to them,—are, I conceive, of various kinds; and may well deserve a little consideration. First, it may be observed that, the operation being alarming, the surgeon feels averse to urge its adoption; and the patient herself (terrified, perhaps) can scarcely give her unforced consent, till the collapse of her strength, and the protraction of the labour, convince her that there is no other hope. On both these accounts,—the first especially,—it frequently happens that contusion and exhaustion precede the operation;—the fœtus, too, being already dead, in consequence of the pressure to which it is subjected under the action of the uterus. In a word, such irreparable mischief is sometimes done before the operation can be adopted, that if (by a fiat, as it were) the fœtus could be extricated without incision, from the receptacle where it is incarcerated, it would then be too late to preserve either the mother or her offspring. This source of danger is the rather deserving of our consideration, because, by early operation, it may in good measure be avoided; and, I think, we may lay it down as an axiom in operations of this kind, that if performed at all, they ought to be executed without needless delay, as soon as the cordial assent of the patient can be obtained.

If in the full flush and petulance of health, you were to receive a severe blow upon the abdomen; or if, from some other cause, the stomach or intestines were to become ruptured,—with falling countenance and failing limbs, you would immediately take your stand, in silence, upon the brink of the grave; and there begin to consider of what clay you are made! And thus it is that, among the dangers of the Cæsarian operation, we must not omit to enumerate the narcotic effects resulting from injuries inflicted;—two wounds, each of six inches, which it is necessary to make;—at least, in the ordinary modes of operating. We have been advised, by Mr. Charles Bell*, to make a small opening into the uterine cavity; and afterwards to dilate the orifice by the action of the fingers; in the same manner as the os uteri is sometimes laid open, when it becomes necessary to remove the ovum from the womb. This dilatation, as Mr. Bell justly observes, is likely to prove of easy accomplishment; because the substance of the uterus is naturally, perhaps, of a somewhat obsequious and yielding kind; and it is not altogether impossible that this method of procedure may be found desirable; not only in those cases in which the placenta chances to adhere to that part of the womb

* Now Sir Charles Bell; Professor of Surgery in the University of Edinburgh.

which corresponds with the abdominal incision, but in every instance in which the Cæsarian delivery is requisite. This proposal, however, requires reconsideration. Contusions and lacerations might, not without reason, be apprehended. By dilating in this manner, we should diminish the extent of the uterine incision; and *à priori*, it seems probable that this would be an advantage; but in medicine, as in Pyrrhonism*, nothing is sure.

It is not common for large bleedings to occur in consequence of the Cæsarian operation; yet, when the placenta has been deposited on that part of the uterus which is divided by the knife,—as the uterine vessels are always very capacious in the region of the afterbirth,—much internal bleeding may be expected. It is to meet this danger, that Mr. Bell has proposed dilation, in place of uterine incision; and I may observe here, by the way, that if, with proper ligatures, we could remove the womb altogether,—in the manner elsewhere mentioned,†—this risk of internal bleeding would at once be cleared away.

Much of the danger of the Cæsarian incisions must, I fear, be ascribed to a cause, over which, in the present state of our knowledge, we have but little control;—I mean the cachexy of malacosteon. Mr. Marlow's patient, who had a fractured pelvis, but a healthy habit, recovered. The Cæsarian deliveries of the Continent,—performed on healthier constitutions than those of our own patients,—have been attended, it may be, with corresponding success: but the British practitioner, pertinacious of his rule,—using the incisory operation only in those cases where delivery is impracticable by the natural passages,—generally finds himself compelled to operate in cases already desperate from malacosteon; for, unless there be fracture, it rarely happens that the pelvis, from any other cause than malacosteon, is contracted in that degree which alone justifies the operation. After medicine and surgery have accomplished so much, however, I would fain persuade myself that they will not ultimately fail us here; and there is, therefore, reason to hope that, in the further progress of our knowledge, this cause of danger, in the operation, may admit of alleviation.

Peritonitis the cause of Death.—When gentlemen are asked what is the cause of death after the Cæsarian delivery, they not unfrequently tell us, that it is diffused peritonitis; and when I first turned my attention to the profession, I used not unfrequently to hear that an inflammation, commencing in a spot of the peritoneum, might be expected to spread rapidly like wild-fire over its whole surface. When, however, we have not the good sense and prudence to close our eyes and ears to what is passing round us, experience,—troublesome and presumptuous experience,—has sometimes the insolence to contradict, without qualification, our most favourite opinions; and I suspect that something of this kind will be found to occur, in the

* Pyrrho was the Grecian philosopher, who founded the sect of the Sceptics.

† See Page 367.

cases under consideration. That the risk of diffused peritonitis, from local injuries of the peritoneum, has been greatly exaggerated, I have endeavoured to show, in a small paper, printed in the "Physiological Researches"*; and from the adverse opinions of my contemporaries on this point, I confidently appeal to posterity. In some future age, when our hearts and their petty passions are quiet in the dust, this opinion,—not merely the plaything of a medical society, but (whether right or wrong) of great importance to our race in all future ages,—will probably be decided by accumulated experience;—may I not add,—"in the affirmative"? To this dijudication, I think it better to commit it; and I beg leave to subjoin, without rudeness, the suggestion of a very elegant writer, the Chesterfield of his day;—"Cententinsi del giudizio del tempo il quale per essere padre della verità è giudice senza passione suol dare delle scritture giusta sentenza".†

Knowing but little, with certainty, respecting the Cæsarian incisions, I do not venture to decide whether this peritonitis is, or is not, a frequent cause of death; but I may add, that all my analogous experience is decidedly opposed to this doctrine; nor do I think that it ought to be received into your medical creed, without further corroboration. In philosophy, however, doubt is no crime; and in order to place yourselves on the safe side, after the abdominal operations, sedulously watch for the expected peritonitis; and should it occur, let it be treated upon ordinary principles.

Recollecting that when the abdomen is laid open, peritoneal inflammation may be produced by the coldness of the atmosphere, Mr. Lizars, with laudable forethought, took the precaution of raising the temperature of the apartment in which he performed his operations, to an elevation ranging between eighty and ninety degrees of Fahrenheit's thermometer; and this practice, to the best of my judgment, seems to be well-deserving of imitation. That the oxygen‡ of the atmosphere may operate as a peritonitic stimulus, was (I think) maintained by Monro; but this opinion, though plausible, has not been satisfactorily established.

Dr. Haighton, inflating (through the tunica vaginalis) the peritoneal sac of the dog,—so as to produce an artificial tympanites,—found, in more than one experiment, that the air was gradually absorbed; and that not one symptom of peritonitis became manifest. Should it be proved, hereafter, that the access of air contributes, in any important degree, to augment the risk of the Cæsarian delivery, it would be by no means difficult to disembarrass it of this danger; for, with a proper apparatus, we might avail ourselves of a proposition made by a gentleman (whose name is unknown to me), and operate beneath the surface of water; the heat of which might be

* See Note at page 151.

† "They are content with the decision of the time which, by a regard to truth, and impassionate judgment, will be able to give a just opinion of writings."

‡ From *οξυς, acid*; and *γενναω, to generate*;—because this gas is an extensive, though not an exclusive, acidifying principle.

brought to correspond with that of the internal part of the body. Thus much, then, respecting the dangers of this operation.

In almost all the cases in which the Cæsarian operation has been performed in this country, the patients have died. It may be of use to inquire, whether their death was occasioned by any disease with which they were afflicted before the time of labour; or was the consequence of the state to which they were reduced from the occurrences of labour, before the operation was performed; or was the inevitable consequence of the operation itself. In cases of death occasioned by wounds, the following order in which the danger is produced may be observed; first, from convulsions, or immediate loss of blood; secondly, from inflammation; thirdly, from gangrene; fourthly, from excessive or long-continued suppuration, under which the patient becomes hectic. Though almost all the patients on whom this operation has been performed died, their death happened at different periods; but not one died either while the operation was performing, or immediately after it. No convulsions were brought on by the incisions; nor does it appear that any of them sank through the loss of blood, accompanying or succeeding the operation. Some died within twelve, others at the end of twenty-four hours; and a few died on the third day after the operation. If we were to judge of the cause of the patient's death by the time of her dying, it might be said that the death of those who failed within twenty-four hours, was probably owing, not to the operation alone, but to the violence of this, combined with that of the previous disease; but when they survived twenty-four or forty-eight hours, then their death might be attributed to the succeeding inflammation, in a body predisposed to disease. If we had the liberty of selecting a patient on whom to try the merits of this operation, we certainly should not choose one who was either very much distorted, or who had mollities ossium, or who was evidently under the influence of some dangerous disease, or who had been several days in labour; because the event must very much depend upon her state at the time when the operation was performed.

It is not my intention, by this kind of investigation, to lessen the general aversion to this operation when it can be avoided; but I believe we cannot fall into error by conforming to such conclusions as these. Every woman for whom the Cæsarian operation can be proposed to be performed, will probably die; and should any one survive, her recovery might rather be considered as an escape, than as a recovery to be expected; though there is always a probable chance of saving the life of a child. But as such an escape may happen in any case in which the operation might be performed, we may and ought to esteem every case which can come before us, as the individual case in which a happy event is to be expected. These conclusions will lead us to the principle of necessity as the sole justification of this operation; and will urge us, when we do perform it, —as far as it may be in our power,—to select the most eligible time; and, from every motive, to exert all our judgment and skill for the

service of the patient; as if we were certain she would survive. This operation can seldom be required; and will, of course, never be performed on the opinion or judgment of any one person, unless in some case of great and urgent necessity. A concurrence of opinions will afford the best security against its being performed unnecessarily; and if it were to be presumed,—by a subsequent measurement of the pelvis, and a new consideration of all the circumstances,—that it had ever been performed without such necessity, that would only prove that the operation had been abused; and would not serve as a valid argument against its use, when such necessity really existed.

The entire Removal of the Uterus.—In speculative moments, I have sometimes felt inclined to persuade myself, that the dangers of the Cæsarian operation might be considerably diminished by the total removal of the uterus. Rabbits are tender animals; and, bearing many fœtuses, have wombs, after delivery, of great proportion and bulk;—nearly large enough, indeed, to fill the hollow of the hand. If the Cæsarian operation be performed on the rabbit in the ordinary way, it will generally be found (unless I am much mistaken) that the animal perishes in consequence. But in four rabbits, recently delivered, I made an opening above the symphysis pubis; and, raising the wombs from the abdomen, I elevated them above the aperture;—the animal lying in the recumbent position, stretched out at full length. This accomplished, I took a ligature, with a needle on its centre; and, carrying the point from behind forwards, I passed it completely through the vagina; afterwards cutting the needle away, so as to leave two strong ligatures hanging forth from the aperture. Having applied my ligatures, I tied one on the right side, and the other on the left, over each fallopian tube; and drew the threads very firmly;—so as completely to cut off all communication with the vagina. This part of the operation carefully performed, I took a knife, and completely removed the wombs;—cutting, for this purpose, very close upon the ligatures; afterwards replacing the parts. This done,—after closing the abdominal wound by suture,—I drew forward the ligatures through the wound; till I brought the raw surface, left by the removal of the wombs, in contact with the abdominal incisions internally. By means of the ligature, the wound of the vagina and adjacent parts,—which must otherwise have been of great extent,—being drawn together into a very narrow compass, became not broader than a sixpence; and I trusted that this might promptly contract adhesion with the inner surface of the abdomen. The operation succeeded beyond my hopes. Of the four rabbits, three recovered;—the fourth dying in consequence of the ligatures slipping from their place. Experiments of this kind, made upon different animals, are much wanted; for the importance of the subject renders multiplication and variety desirable here. Let us think maturely upon facts like these. In performing the Cæsarian delivery on the human body, perhaps this method of operating may hereafter prove an eminent and valuable improvement. Beware,

however, of temerity! See what may be done on the dead body Gather facts! Form inferences! Write little! Meditate much Perhaps you may do something for obstetric surgery here. Let i be remembered that, in securing the vagina and removing the uterus we are substituting a wound well secured and of smaller extent, fo one that is larger and not secured by a ligature at all. Some month after delivery, when shrunk in bulk, the inverted uterus has bee repeatedly extirpated with success;—once by myself.* Webber, o Yarmouth, successfully extirpated an inverted puerperal uterus within a few days after delivery. All this is encouraging. Beware of rashness! Beware of pusillanimity! Think!

SECTION 2.—MEANS OF SUPERSEDING THE CÆSARIAN OPERATION.

The Cæsarian incisions, it seems, are attended with much danger and hence it has been asked, whether we have not the means c superseding them. May not an operation, so formidable in its nature be rendered altogether unnecessary by measures of a differen kind?

Section of the Fallopian Tubes.—If the pelvis be contracted in s high a degree, that parturition, by the natural passages, is impossible I need scarcely tell you that the shortest way to avoid the necessity of the operation, would be by abstinence altogether from intercours with the other sex. The most solid resolution, however, may some times thaw; and when a woman is married, she may be placed i those circumstances, in which it is not very easy to adhere to thi advice;—her life, perhaps, falling a sacrifice to her neglect. M friend, Dr. Hull, of Manchester, once transmitted me the case of woman whose pelvis was contracted, in a high degree. She knew her situation; remained in a state of abstinence for many years; bu afterwards became pregnant, and died. Now, is there any othe mode in which, when the obstruction of the pelvis is insuperable, th formation of a fœtus may be prevented? In my opinion, there is. I a woman were in that condition, in which delivery could not tak place by the natural passage,—provided she distrusted the circum stance in which she was placed,—I would advise an incision (of a inch in length) in the linea alba, above the symphysis pubis. I would advise, further, that the Fallopian tube (on either side) should b drawn up to this aperture; and, lastly, that a portion of the tub should be removed;—an operation easily performed; when th woman would, for ever afterwards, be sterile. All this may be don after due consideration;—circumstances not forbidding. "But th abdominal incision;—that is bad." True; but the Cæsarian incision —that is worse! Is not that true also?

Destruction of the Ovum—If a woman, in the earlier months o pregnancy, be known to have a pelvis contracted in a high degree is there nothing which you may then do to prevent an ultimate nee

* See the "Malignant Ulceration of the Uterus".

of the Cæsarian operation? Abortive* medicines might, in this case, be thought of; or, these failing or rejected,—if you could feel the os uteri,—you might introduce a female sound, or any other instrument of that kind; and, passing this sound into the uterine cavity, you might completely break up the structure of the ovum;—so as to prevent the progress of generation. In doing this, there would always be a risk of hæmorrhage; but where you are endeavouring to avoid the necessity of the Cæsarian incisions, this risk would be justifiable. The substitution of the smaller evil for the greater, is frequently the principle of the healing art. But what if the os uteri be inaccessible? Is there, in such a case, any other expedient to which we may have recourse? In a case like this, were my opinion consulted, I should be inclined to reply,—"As a substitute for the Cæsarian operation, let an incision be made, as before, above the symphysis pubis; then let some instrument (such as a trocar† or canula‡) be carried into the cavity of the uterus; let this instrument be sufficiently stiff to enter the cavity, and retain its form there under pressure: and then let it be resolutely moved about in the uterus, so as to break up completely the texture of the ovum. The whole instrument need not be much thicker than a bell-wire. The process is allied to that of acupuncture§. The point of the trocar, on entering the uterus, should be withdrawn with the canula; a finger should be carefully placed on the uterus, so as to guide the instrument, and guard against injury of the intestines or the bladder." Scribblers had better content themselves with sneering at the operation;—surgeons had better perform it!—Artem quisque suam ‖! To produce future sterility, the Fallopian tubes might be rendered impervious.

Craniotomy.—"But suppose the gestation has reached the end of nine months;—is there then nothing which can be done, to supersede the Cæsarian operation?" If the patient can be delivered by having recourse to perforation, it should by all means be adopted. Observe, it is a rule,—an axiom in British midwifery, that we are never to deliver by the Cæsarian operation, provided we can, in any way, deliver by the natural passages. Difficult and dangerous as the delivery is, in some cases, when effected by the natural passages, I feel persuaded that women might sometimes be more safely and more easily delivered by the Cæsarian incisions, than by the passages of the pelvis; but if, acting on this persuasion, we were once to establish the principle, that the Cæsarian delivery may be used as a substitute for delivery by the perforator, there would, I fear, be too many cases in which it would be needlessly adopted; and men would now and then,—not to say *frequently*,—perform this operation in circumstances in which it ought never to have

* From *aborior*, "to be sterile".

† From *trois quart*, the French for "three quarters";—the point of the instrument having three sides.

‡ The diminutive of *canna*, "a reed".

§ From *acus*, "a needle;" and *punctura*, "a prick".

‖ Let every man betake himself to his own department.

been dreamed of. Where embryotomic delivery is practicable, therefore, let this be preferred. But then you may reasonably ask here,—"How are we, in any case, to decide clinically* (at the bedside, I mean) whether the delivery be practicable or not?" To this query I wish it were in my power to return a satisfactory reply. Much must depend on the dexterity, and other qualities, of the operator; for one man may be able to succeed in the delivery, when another may not. Much, again, must depend upon the instruments which we employ. To the "Operative Midwifery" of Dr. Davis†, I must refer you for an exposition of these different contrivances; together with a description of his own inventions and improvements. Much must depend, too, upon the size of the aperture. It seems, from the researches of Hull and Burns, that the smallest aperture through which a full grown fœtus can be abstracted by embryotomic operations, in circumstances the most advantageous, must be, at least, three inches in length, and an inch and three quarters in breadth. To justify embryotomy, therefore, there must be through the pelvis a clear passage of at least these diameters. From the consideration of all these particulars must emanate the determination, whether you will, or will not, embryotomize. Before you come to a decision, procure the best advice within reach. With these suggestions, I must commit you to the waters. I wish the compass were less perplexing in its indications! Happily, these difficulties are rare.

[The following case, recorded by Dr. Osborn, in his "Essays on Midwifery," is so full of interest,—as indicating the possibility of delivery, even in cases of extreme distortion of the pelvis, without resorting to the Cæsarian section,—that the Editors are induced to insert it in this place.

Elizabeth Sherwood, the subject of the following case, was from early infancy,—as I learned by her mother's information,—of an infirm, weakly constitution, and of a rickety habit; which, continuing for many years, so much hindered her growth, that her height never exceeded forty-two inches. She was at the same time so exceedingly deformed, both in her spine and lower extremities, as never to be able to stand erect for one minute, without the assistance of a crutch under each arm. At the age of twenty-seven years, however, she became with child; and was admitted a patient into the Store-Street Hospital. She came into the house early on Sunday morning, November 19, 1776; and complained of having been in pain the two preceding days and nights, so as to have had very little sleep. I examined her (per vaginam) that evening, with great attention; and as her pelvis was singularly distorted, and the capacity very much contracted, it will be right to describe the result of that examination, with every possible degree of accuracy.

Immediately upon the introduction of the finger, I perceived a tumour; equal in size, and not very unlike the feel, to a child's

* From κλινη, *a bed.*

† "Elements of Operative Midwifery." By D. D. Davis, M.D.; Professor of Midwifery in University College, London.

head. It was instantly discovered, however, that this tumour was formed by the base of the os sacrum, and the last lumbar vertebra; which, projecting into the cavity of the pelvis at the brim, barely left room for one finger to pass between it and the symphysis pubis; so that the space from bone to bone, at that part, could not exceed three-quarters of an inch. On the left side of the projection, quite to the ilium, which was about two inches and a half in length, the space was certainly not wider; and indeed, by some of the gentlemen who examined her afterwards, it was thought to be rather narrower. On the right side, the aperture was rather more than two inches in length, from the protuberance to the ilium; and as it admitted the points of three fingers (lying over each other) in the widest part, it might at the utmost be about one inch and three quarters, from the hind to the fore part; but it became gradually narrower towards the ilium, and also towards the projection.

The os uteri, although but little dilated, was soft and flabby; as it usually is on the approach, or in the beginning of labour. The membranes were not yet broken; but, with some difficulty, I distinguished through them the child's head, situated very high above the projection. The tumour of the uterus extended to the scrobiculus cordis; and was of the size usual at the complete term of utero-gestation. The abdomen was hard and tender. As she seemed much fatigued for want of rest, fifteen drops of tinctura opii were given to her; and by this means some sleep was procured between the pains. I was informed that the membranes broke some time after I left her; and that there seemed to be the usual quantity of liquor amnii. The next morning,—as she was hot and thirsty, and her pulse very quick,—I directed ten ounces of blood to be taken from her arm; and,—the bandage accidentally slipping off, soon after her arm was tied up,—she might perhaps have lost as much more, before it was discovered. No alteration whatever had taken place, either in the state of the os uteri, or the position of the child's head.

In so extraordinary and singular a case, I naturally wished (on my own account) for the advice and assistance of my professional friends; while, at the same time, I knew it would give them much satisfaction to have an opportunity of examining so distorted a pelvis, and of seeing the event of so singular a case. Accordingly I met in consultation, that evening, Doctors Bromfield, Denman, and Walker, and Mr. Watson. Dr. Hunter's presence was requested, but he was engaged. Every gentleman present immediately satisfied himself (by examination per vaginam) of the dimensions of the pelvis; concerning which there was the smallest possible difference of opinion; —some thinking it rather *narrower*, but none *wider* than the dimensions stated above. We weighed, with great deliberation,— as became us,—every circumstance by which our future conduct in this case ought to be regulated. Particularly, we used our best endeavours to determine the state of the child in utero; and whether, if the Cæsarian operation should be performed,—which we had in contemplation for some time,—there would be a certainty of preserv-

ing one life at least. We were rather disposed to believe that the child was dead. It was therefore agreed that an attempt, at least, ought to be made to deliver the poor creature, by opening the child's head, and extracting it with the crotchet.

It was my duty to perform the operation; which I began about eleven o'clock that night; after placing her (in the usual manner) close to the edge of the bed, on her left side; as the situation most commodious both for the patient and myself. Even the first part of the operation, which in general is sufficiently easy, was attended with considerable difficulty, and some danger. The os uteri was but little dilated; and was awkwardly situated in the centre, and most contracted part of the brim of the pelvis. The child's head lay loose above the brim, and scarce within reach of the finger; nor was there any suture directly opposite to the os uteri. Having desired an assistant to compress the abdomen, with force sufficient to keep the head in contact with the brim of the pelvis,—so as to prevent its receding from the scissors, upon the necessary pressure of the point to make the perforation,—I introduced them (with the utmost caution) through the os uteri; and, after repeated trials, at length succeeded in fixing the point into the sagittal suture, near the posterior fontanel. I very soon, and with great facility, penetrated into the cavity of the head: destroyed the texture of the cerebrum; extracted a considerable quantity of the latter with a common spoon; and, breaking down the parietal bones, made an opening sufficient for the free discharge of what remained.

In this state we left her; and, although she was fatigued with this part of the operation, no opiate was given; as I wished to have the full effect of the labour-pains;—hoping that, after the brain was discharged, the bones would collapse; and that a portion of them, at least, might be forced into the pelvis. In this expectation, however, I was disappointed; for,—notwithstanding that she was prevented all night from sleeping, by the frequency and violence of the pains,—in the morning I was not sensible of the smallest alteration in the position of the child's head. During the whole day, the pains were neither so strong, nor so frequent, as they had been. Her pulse was extremely quick, but tolerably strong. The discharge from the vagina was very considerable in quantity, and most abominably fetid. Doctors Bromfield, Denman, and Hunter saw her in the course of the day; and she was examined, besides, by more than thirty students of midwifery; who were, at that time, attending Dr. Denman's and my lectures. This examination, at my request, she willingly permitted;—from a representation of the singularity of her case, and the utility which might result from its being more generally known.

Towards the evening the pains again considerably increased; and, as I wished to benefit from the full effect of them, no opiate was given. She had no sleep, therefore; and,—the pains continuing through the whole night,—when I first saw her the following morning, her strength was greatly reduced. Her pulse beat one-hundred-

and-forty strokes in a minute; notwithstanding that every precaution had been used to guard against fever;—particularly by forbidding all strong liquors, and by keeping the ward unusually cool. Her spirits however were good, and her resolution was unabated; for,—although she was extremely anxious to be delivered, and expressed her willingness to undergo any operation (however painful) that might be necessary to effect that purpose,—she was equally ready to submit to my determination if any longer delay was required. Upon examination, a small portion of the head was found squeezed into the pelvis. Indeed, there were some little detached bits of the parietal bones, lying loose in the vagina.

In delaying the extraction of the child six-and-thirty hours after opening the head, our intention was, in the first instance, to allow the uterus an opportunity, by its continued contractions, to force the head as low, and as much within reach of the crotchet, as the nature of the case admitted; and, afterwards, to induce as great a degree of putrefaction as possible in the child's body; as by that means it would become soft and compressible, and afford the least possible resistance in its extraction. It appeared to me these two purposes were now completely accomplished; and that no further advantage was to be expected from further delay. On the contrary, I was fearful lest the permitting of so large a mass of putrid matter as a child at the full time (together with the placenta, &c.) to remain in the uterus longer than was absolutely necessary, might expose her to the future danger of a putrid fever; if she should escape all material injury from the inevitable violence, and consequent danger of the operation.

I determined to make an immediate attempt to extract the child. I call it "an *attempt*"; for I was far from being satisfied, in my own mind, of the practicability of the extraction. I trust I shall appear justified in my apprehensions, and in the expression I have used, if we advert to the very small space of only one inch and three quarters at the utmost, and in the widest part, and that only on one side of the projecting sacrum; while the space between the latter and the symphysis pubis, and on the other side of the sacrum, barely amounted to three quarters of an inch. I placed the patient (as usual) on her left side, near the edge of the bed,—as the most commodious situation. Mr. Shute, of Exeter,—who then resided in the hospital as house pupil,—and another student, were present as assistants. About ten o'clock on Wednesday morning, I began the operation. Dr. Bromfield was so obliging as to call on me soon afterwards; but his engagements permitted him to stay only a few minutes.

The os uteri being situated (as before described) in the most contracted part of the brim of the pelvis, where the space was incapable of permitting the introduction of the curved point of the crotchet, without great difficulty and danger, my first endeavours were bent to draw the os uteri, with my finger, into the widest part of the brim of the pelvis; and to dilate it as much as possible. Both the removal of the os uteri, and such dilatation of it as the bones admitted,

were effected without much trouble. I then introduced the crotchet, through the perforation, into the head; and,—by repeated efforts, made in the slowest and most cautious manner,—destroyed almost the whole of the parietal and frontal bones; or the whole upper and presenting part of the head. As the bones became loose and detached, they were extracted with a pair of small forceps;—to prevent, as much as possible, the laceration of the vagina in their passage through it.

Still, however, the great bulk of the head, formed by the base of the skull, remained above the brim of the pelvis; and, from the manner in which it lay, it was impossible for it to descend, without its volume being diminished, or its position changed. The former was the most obvious method; for it was a continuation of the same process I had been carrying on; and, I trusted, would be equally easy in its execution. I was, however, most egregiously mistaken and disappointed; being repeatedly foiled in every endeavour to break the solid bones which form the basis of the cranium;—the instrument, at first, invariably slipping, as often and as soon as it was fixed; or, at least, before I could exert sufficient force to break the bone. At last, however,—by changing the position of the instrument, and appplying the convex side to the pubis,—I fixed the point, I believe, into the great foramen; and, by that means, became master of the most powerful purchase the nature of the case admitted. Of this I availed myself to the utmost extent;—slowly, gradually, but steadily, increasing my force; till it arrived to that degree of violence, which nothing could justify but the extreme necessity of the case; and the absolute inability, in repeated trials, of succeeding by gentler means. But even this force was to no purpose; for I could not perceive that I had made any impression on that solid bone; or that it had been in the least advanced by all my exertions.

Being fearful of renewing the same force in the fame way, I abandoned altogether the first idea (that of breaking the base of the cranium), and determined to try the second (that of endeavouring to change the position). I once more resorted to an examination, with a view to ascertain, as accurately as the mangled state of the head would admit, how the latter presented; and what proportion, in that state, it would seem to bear to the aperture through which it was to pass. From the information thus procured, I must acknowledge, the second method appeared to me but a "forlorn hope". However, there was no other resource. I therefore again introduced the crotchet, in the same manner; and, fixing it in the great foramen, got possession of my former purchase. Then, introducing the two fingers of my left hand, I endeavoured with them to raise one side of the fore part of the head, and turn it a little edgeways. Immediately and easily succeeding in this attempt, the two great objects were at once accomplished: for the position was changed, and the volume diminished. Continuing my exertions with the crotchet, I soon perceived the head to advance; and on examining again, found

that a considerable portion of it had been brought into the pelvis. Every difficulty was now removed; and, by perseverance in the same means for a short time, the remaining part of the head was brought down, and out of the os externum.

After waiting a few minutes, a napkin was put round the neck of the child, and given to an assistant. I then introduced the crotchet; and, first opening the thorax, fixed it firmly to the sternum. By our united force, strongly exerted for about a quarter of an hour, first one shoulder was brought down, and then the other; and lastly, after opening the abdomen, the whole body (with the sternum and spine pressed closely together) was extracted. It was in a most putrid and almost dissolved state; but appeared to be a moderately-sized child, at the full time. The bones of the head were preserved. The placenta came away without much trouble. The operation continued for about three hours; and, although the poor creature had been in strong labour for three days, with her bodily strength much exhausted by violent and unavailing pains, yet she supported the whole business with surprising fortitude; and suffered much less than might reasonably have been expected, either from the length of the labour, or the extreme violence in the delivery. She went to sleep very soon after the operation was finished; passed a good night; voided her urine freely; complained of very little pain; had only the usual fever; and recovered so fast, that she sat up the seventh day;—acknowledging, with great gratitude, that she was then as well, in all respects, as at any former period of her life.

As far as I have been able to procure information,—either from books, or the oldest and most experienced practitioners in this city*, —this woman's pelvis was the smallest through which a child, at the full time, and of the ordinary size,—however lessened by art,—has ever been extracted; and as it was in contemplation, in this very case, to perform the Cæsarian operation, if we could have been satisfied of the life of the child,—upon the presumption of the impossibility of bringing it (in the circumstances of age and size above described) through the natural passages,—I hope the event of this case may prove the means of frequently preventing that fatal operation in future.

Before I conclude, truth and candour require me to acknowledge, that, notwithstanding I have stated this woman's pelvis to be the smallest where such delivery has ever been successfully performed, yet I can lay claim to no merit whatever on the occasion. The operation was undertaken contrary to my opinion; succeeded very contrary to my expectation; and yet, in the performance, neither required extraordinary skill, nor extraordinary attention. I can therefore only be entitled to the negative praise of having done no material injury to my patient, by the extreme but unavoidable violence of the operation.]

* London.

SECTION 3.—SECTION OF THE SYMPHYSIS PUBIS.

With a view of enlarging the capacity of the pelvis, in cases of labour more or less laborious, it has been proposed to make a division of the symphysis pubis;—an operation which is easily performed. In executing this operation, the surgeon or accoucheur cuts down upon the joint; and carries the scalpel between the extremities of the ossa innominata; so as completely to detach them from each other;—taking care that no injury is inflicted upon the urethra or the bladder.

[It was before observed, that an opinion of the gradual and spontaneous separation of the symphysis of the ossa pubis, previously to the commencement of labour, had generally prevailed *; though some had denied both the fact itself, and the advantages that were supposed to accrue from the separation, if it were actually made. With a strong persuasion or conviction, however, of those advantages at the time of parturition, some rude and evidently dangerous attempts were formerly made,—with very awkward but powerful instruments,—to promote or increase the separation beyond its common degree; but the practice, probably never frequent, had for very many years fallen into total disuse, and was almost forgotten. Latterly this idea has been resumed; and among others, Camper, a celebrated anatomist and professor at Groningen,—in order to try the effect of the separation, and discover its consequences,—had, in living animals, divided the symphysis pubis;—without much apparent injury, either when it was divided, or at any future time. But, in the year 1777, M. Sigault, a surgeon at Paris, first performed this operation on the human subject, in the time of labour;—the patient recovering, and the life of the child being preserved; though it is not clear, from the context, that the operation was, in that case, absolutely necessary. Some credit might have been due to M. Sigault, for the spirit of enterprise which suggested the operation, and for his resolution in performing it; but the applause given to him by many of the faculty at Paris (though, if I mistake not, the Royal Academy refused to give any testimony of their approbation), and by the nation at large, was beyond all measure extravagant. A medal was struck, in order to perpetuate the fact; and there could scarcely have been greater exultation and triumph, had he invented a method by which the whole human race should, in future, have been freed from the pains and dangers of parturition altogether. In these proceedings, the influence of vanity was at least as strongly marked, as the dictates of humanity; and far more than the encouragement of science; so that the steps taken to aggrandize the merits of the operation,—then supported only by a single fact, and the reputation of the surgeon who performed it,—were so hasty and enthusiastic, as to raise a suspicion of error or deceit in the estimate of the operation, or in the

* See Chapter 2; Section 4, (on Relaxation of the Pelvic Articulations during Parturition); page 19.

account given of it. But the conduct of the French extended its influence on the Continent; where the operation has been several times performed, with various success.

The following propositions are proved:—

1. Some enlargement of the capacity of the pelvis is actually obtained by dividing the symphysis of the ossa pubis.

2. The evils which have followed this operation, have been very much occasioned by its being performed unskilfully; or by injudicious endeavours to increase the enlargement of the capacity of the pelvis, beyond the degree which naturally follows the division of the symphysis.

3. Many women who have undergone this operation have recovered; though, of those who recovered, many suffered very serious complaints for a long time, or for the remainder of their lives.

4. Some children have been born living when the operation has been performed.

We may therefore presume to say, that if a case could be so precisely marked, that there should only be a deficiency of just so much space as would be supplied by the simple division of the symphysis, the operation might in that particular case be performed.

We may also say, that this operation is not so certainly fatal to those women on whom it may be performed, as the Cæsarian operation; nor so certainly destructive of children as that of lessening the head.

We may be allowed to suppose a case, then,—and such a one is more than possible, for it did actually happen,—in which a person of very high rank, the life of whose child might be of the greatest public importance, could not be delivered without the destruction of the child; or her child be preserved but by the Cæsarian operation, at the expense or great hazard of her life; and that she, through natural timidity, might refuse to submit to the Cæsarian operation; yet the great interests and policy of the nation might forbid the destruction of the child. Of course both the mother and child would be inevitably lost; and such was really the case. Should such a case occur,—which, as I said before, is more than possible,—then the section of the symphysis of the ossa pubis might be proposed and performed; as it would in some measure meet both their interests;—being less horrid to the woman than the Cæsarian operation; and, instead of adding to the danger, giving some chance of preserving the life of the child.

From the statement of this case, or any thing before advanced, however, I hope will not be concluded that I mean to insinuate a wish, or to advance an argument, in favour of this operation, in the cases for which it was originally proposed; or in any other which, in my apprehension, can be imagined;—except the one I have mentioned.*]

Separation of the Ossa Innominata necessary.—The simple division of the symphysis pubis, however, enlarges the pelvis but little; and therefore, in order to secure the full benefit of the operation, it is

* Denman's "Introduction to the Practice of Midwifery." Seventh Edition.

proposed, further, that the surgeon should separate the ossa innominata from each other; to the extent of one, two, or (perhaps I may say) three or four inches. By observation made on the Continent, it seems to be pretty clearly ascertained that, in the mere division of the symphysis pubis, not very intense pain, and no incurable injuries of the part, are to be expected; but if, in addition to the joint being divided, the bones be separated from each other to the extent of two or three inches, then,—in consequence of the injury done to the sacro-iliac synchondrosis, the lesion of the sciatic nerves, and the straining of the viscera connected with the pelvis,—the operation becomes one of considerable pain; and is, perhaps, scarcely less dangerous than the Cæsarian incisions themselves;—even in the present condition of that mode of delivery.

Objections to the Operation.—The section of the symphysis pubis was proposed, originally, as a substitute for the use of the perforator, and the Cæsarian operations. There seems, however, to be no reasonable doubt that, as a substitute for the Cæsarian incisions, this operation is exceedingly inadequate; for, the pelvis being distorted in a high degree, if you were not merely to divide the symphysis pubis, but to separate the bones to the extent of two or three inches from each other, you would still have a great deal of difficulty in getting away the child. Very probably you would be compelled to lay open the head; and, at the same time, you would inflict great injury on the pelvis, and the soft parts generally;—more especially the bladder; so that, I conceive, the operation would be as dangerous and painful to the mother, and far more dangerous to the child, than the Cæsarian delivery itself. Add to this the difficulty of performing the operation at all, under the higher degrees of distortion of the pelvis.

But although the operation is not a substitute for the Cæsarian, some may think that, in many cases, the section of the symphysis pubis might supersede the necessity of the perforator; and this I believe to be true. Generally, where there is a narrowing of the pelvis requiring the use of the tractor, forceps, or perforator, the contraction lies between the promontory of the sacrum and the symphysis pubis. There is a want of room between the front and back; which a division of the symphysis pubis is calculated in a measure to remove*. In common and ordinary contraction of the pelvis, it may then be said,—"Why is not the section of the symphysis pubis substituted for the operation of embryotomy?"—Why? For this valid reason;—because, in British midwifery, it is an axiom to sacrifice the child to the safety of the mother; and, in these cases, the child may be brought away, without injury to the parent, by laying

* If you divide the symphysis pubis by an incision through it, you will find that you do not increase the diameter of the pelvis in the direction in which it is contracted; which is generally from sacrum to pubes. The room which this operation gives, is in the lateral direction; so that you gain no increase of the capacity of the pelvis where it is chiefly required.—*Dr. Gooch's "Compendium of Midwifery".*

open the head. Remember, too, what has been stated already;—that, in narrowings of the brim, the fœtus may often be saved with little risk to the mother, by the induction of delivery in the seventh or eighth month. On both these accounts, therefore,—because we may deliver by the perforator, and because we may altogether supersede the need of this instrument by the indication of premature delivery,—the division of the symphysis pubis is unjustifiable, as a general practice, when the pelvis is slightly contracted;—not to add to these objections that, if we were to allow of the division of the symphysis pubis in those cases where there is merely a narrowing of the pelvis between the front and the back, such is the present imperfection of obstetric diagnostics in general, that there would be many cases in which it could be performed, where it was not at all necessary.

There is one case in which, I conceive, the section of the symphysis pubis might be justifiable;—that, I mean, in which the perpetuation of a dynasty or ——*. But it is unnecessary to enter further upon this topic!

Thus much, then, respecting laborious delivery *in general*. We shall now proceed to the consideration of the different *varieties* of laborious parturition; together with those modifications of the general practice which these varieties require.

CHAPTER XII.

LABORIOUS PARTURITION IN PARTICULAR.

The laborious labours which give rise to the more formidable difficulties during parturition, may be divided into three species or varieties;—those in which the difficulty arises from the rigidity of the softer parts; those in which the difficulty arises from a deficiency of room between the bones; and those in which the difficulty is produced by an unfavourable position of the fœtus,—more especially of the cranium;—not to add, that we sometimes meet with cases, in which the difficulty may be ascribed to a combination of these causes.

SECTION I.—UNFAVOURABLE POSITION OF THE HEAD.

First, then, with respect to the laborious labours resulting from an unfavourable position of the cranium. Where a labour proceeds naturally, the presentation is of the vertex;—the face, in the beginning of the delivery, lying towards the one, and the occiput towards the other side. But, as parturition advances, the head descends;

* Dr. Blundell appears to refer to a case,—if such a case can ever occur,—in which the life of the child might be so important, as to justify the increased pain and risk which the mother would incur by the operation.

the face takes its place in the hollow of the sacrum; the occiput under the arch of the pubis; the sagittal suture lies along the perinæum; and thus the head emerges. It is not always, however, that the fœtal head, in passing, assumes these favourable positions; for sometimes, when the presentation is vertical, the face lies forward throughout the labour; and sometimes, instead of a vertex-presentation, we have a presentation of the forehead, or of the face; —difficulties being produced in this way.

Varieties in these Cases.—Thus it appears that there are three varieties of laborious labours produced by unfavourable positions of the fœtal head;—that in which, the vertex presenting, the face lies forward on the symphysis pubis all through the labour; that in which the face is lying over the centre of the pelvis; and, lastly, that position of the head,—not without its difficulties, though less important than the former,—in which the presentation, instead of being vertical, is frontal.

Means of removing the Difficulties.—When it is found, by examination, that the child's head is lying unfavourably for transmission,—an accident which is by no means very uncommon in its occurrence,—the accoucheur begins to consider what steps become proper, in order to facilitate the delivery. There seem to be four different ways in which the difficulty may be alleviated;—by turning; by rectification of the position of the head; by the use of instruments; and by the natural efforts. I wish you to understand clearly, at the outset, that when the child is lying unfavourably, it does not necessarily follow that you must immediately have recourse to artificial means of delivery; for, under presentations of the face or forehead, or in vertical presentations with the face lying forward on the symphysis pubis,—if the pelvis be large and the head small,—the child will not unfrequently be expelled by the mere efforts of the uterus. It sometimes happens, however, that the natural efforts fail us;—more especially if the pelvis be contracted or the head be large; and, in such cases, we may be compelled to have recourse to some of those instruments, which I described on a former occasion*. The tractor or forceps should be first tried; and, these failing, the perforator.

Turning, as a Rule, improper.—It has been observed by some, that where the child lies unfavourably, it may very readily be brought away by the operation of turning. In some cases,—as, for instance, where the pelvis is large, the softer parts are lax, and the hand of the accoucheur dexterous (so that the feet may be seized without difficulty),—the operation of turning might, perhaps, be desirable. I must entreat you, however, to look upon this method of delivery (turning) as an exception to the general rule; for although, now and then, the child (when the head lies unfavourably) may, perhaps, be withdrawn by the feet with advantage, yet, as a general practice, turning is improper; because it requires the introduction of the hand into the uterus; because that operation should never be performed

* See Pages 303 to 317; and 326 to 328.

unless there exist an absolute need for it; and because abstraction of the child may be very generally accomplished by the natural efforts, or the use of instruments. The more I see of midwifery, the more I feel the necessity of evading the operation of turning; wherever it is practicable to avoid it. Speak,—you who have witnessed the ruptures of the uterus! Is this caution necessary or not?

Rectify the Position of the Head.—In some cases, again, where the head is lying unfavourably, its position may be rectified. The pelvis is large; the parts are lax; the hand may be easily introduced; and, by the action of the hand, the position of the head may be altered. Suppose, for example, the child present by the face. You may insinuate the hand into the pelvis, without violence; and bring down the vertex. Suppose, again, I make an examination; and, discovering a frontal presentation, I pass my finger over the occiput. By the mere action of the finger, or by the play of the lever, I may, in this manner, rectify the presentation of the cranium. Nevertheless, though this rectification is, in itself, highly desirable, yet, as a general practice in these cases, it is scarcely proper; for it cannot be easily accomplished without carrying the hand along the vagina, and some little way into the uterus; and, in my opinion, the risk of rupture constitutes a valid objection to this method of operation. To an adjustment of the head by the lever, I have less objection; and this may sometimes be accomplished.

Rely on the Natural Efforts, &c.—In these cases of unfavourable position, therefore, instead of rectifying or turning,—unless circumstances are highly favourable,—the more wholesome practice is, either to commit the woman to the natural efforts, or to have recourse to the lever, forceps, or perforator;—according to the nature of the emergency.

But here, perhaps, you may ask,—"How are we to decide, in any given case, whether we ought to resort to the employment of instruments, or to confide in the natural powers of the system?" Let me remind you of the rule, which has been already so often prescribed;—If the woman have not been in strong labour for four-and-twenty hours, and if no dangerous symptoms are apparent, then you are not to interfere; but if dangerous symptoms, referrible to the prolongation of the delivery, manifest themselves; or, if the woman have been in strong labour for four-and-twenty hours,—the head making little or no progress,—then embryospastic instruments become justifiable. Further:—If embryospastic instruments have been fairly tried without success, and if dangerous symptoms are manifest; or if the woman have been in labour for six-and-thirty or eight-and-forty hours,—the head not descending,—then, notwithstanding the dreadful nature of the operation, you are justified in embryotomizing.

Rectification of the Face or Forehead.—Face-presentations may, sometimes, be rectified by the fingers, or the tractor. Forehead-presentations may spontaneously become facial, or vertical; or rectification may be accomplished by the fingers, or the tractor. The

face, when lying on the symphysis pubis, may be thrown into the side of the pelvis in three different ways; by grasping the cranium, when above the brim; by the action of the short forceps, when it is below the brim; or, when the head is in the cavity, by making pressure, during a pain, with two fingers, placed on the side of the cranium near the face;—the face being carried, by little and little, first into the side of the pelvis, and then into the hollow of the sacrum behind.

SECTION 2.—DEFICIENCY OF ROOM IN THE SUPERIOR AND INFERIOR CAVITY OR APERTURES OF THE PELVIS.

In my preliminary observations, I took occasion to observe that,—by fractures, mollities ossium, or rickets,—more or less of distortion and contraction of the pelvis may be produced. With a view to practice, we may divide these distortions into two kinds;—those of a slighter degree, and which are more frequent in their occurrence; and those in which the coarctation is very considerable.

Angular and Elliptical Contractions.—Contractions of the pelvis, in the *higher degrees*, are divisible into two varieties;—the *elliptical*, and the *angular*. For a description of these two varieties, I must refer you to my former observations on the deviations from the standard-pelvis*; for these greater distortions are so rare, in ordinary practice, that I deem it unneeessary to treat respecting them again. When you meet with the *slighter* contractions of the pelvis,—not uncommon in their occurrence,—these contractions may lie in any part of it;—brim, cavity, or outlet; but in that degree which gives rise to laborious labours, they are most frequently met with at the brim, between the front and back of the pelvis;—interposed sometimes between the promontory of the sacrum and the symphysis pubis, and sometimes between the promontory of the sacrum and acetabulum. I have specimens of both.

Means of Ascertaining the Contraction.—Those contractions of the pelvis in a slighter degree, may be differently ascertained by different practioners and operators. My own method, I formerly explained†. If a woman have had a number of children with difficulty;—all still-born, for example, or all requiring the use of instruments; if, on making an examination, you feel the promontory of the sacrum with unusual facility; if your patient have been in labour for a length of time (the waters being discharged, the parts relaxed, and the head not descending); if the cranium, on examination, be found to be intumescent, with the margin of the one parietal bone lying over the margin of the other;—you may then be pretty well satisfied, that the pelvis is too small. By the difficulty of previous labours, then; by the unusual facility with which the promontory may be felt; by the failure of the descent of the cranium after strong efforts; and by the swelling of the scalp, and the overlapping of the parietal bones,—coarctations may generally be detected, without the help of those pelvimeters of which we have formerly spoken‡; though these instruments are not to be despised.

* See page 28. † See page 37. ‡ See page 38.

Division of these Labours.—The laborious labours which thus result from deficiency of room among the bones of the pelvis, are usually divided, in my own practice, into *three* varieties;—the first consisting of those cases in which the pelvis is so highly contracted and distorted, that the head does not descend into the pelvis at all; the second comprising those more frequent cases, in which the head comes down among the bones of the pelvis, and is there incarcerated, so as neither to advance nor recede; and the third comprehending those cases which are of all the most common, and where there is just that degree of contraction which prevents the descent of the head into the pelvis;—the cranium dipping down but a little way within the superior aperture.

Labours with the Highest Degree of Contraction.—You may be in practice for a long time, without meeting with a single instance of the first variety of laborious labour; namely, that in which you have the highest degrees of contraction;—so that the head cannot enter the pelvis at all. Now and then, however, such cases must occur to you; and one or two have fallen under my own notice. In cases of extreme difficulty, the pelvis may be so much contracted, that even the os uteri cannot be reached by the finger. Should it fall to your lot to operate in laborious labours of this kind, in order that you may decide rightly, I would advise you, by all means, to procure the best of advice in the neighbourhood. Should it appear, on consultation, that delivery by the natural passages is impracticable, and that the Cæsarian delivery is required, it is obvious (in accordance with principles already explained) that the sooner the operation is performed, the better; for where it is performed early, there is a fairer chance of saving the child; and for the woman herself, there are better hopes of recovery.

If, again, in these cases of higher distortion, embryotomy be thought of, and the child is to be abstracted by the use of the perforator,—averse as I am to an operation so dreadful,—I must still maintain that the sooner we perforate the better. Nay, if it be perfectly obvious that embryotomy must at last be adopted, the operation becomes justifiable in the very commencement of the labour. By embryotomizing early, you secure the advantage of operating while you are yourselves fresh, and not exhausted from long attendance; and while the woman herself is in full spirits and vigour; besides which, you have it in your power to leave the head in the pelvis for hours after it has been laid open by the perforator; so that it softens and putrefies, and readily separates into different pieces;—a condition which materially facilitates the delivery.

But here it may be asked,—"In these cases of extreme difficulty, how is it that we are to decide whether the Cæsarian operation, or the operation of embryotomy, should have the preference; for the two practices are very different?" I have already replied to this interrogatory; and to that reply I must refer you.*

[To effect the complete and safe delivery of the fœtus, in cases of extreme difficulty, and especially where the crotchet proves inefficient

* See pages 368 to 370.

Unable to display this page

my duty to avail myself of the use of the osteotomist; and to undertake the delivery by the natural passages.

The cases which form the objects of treatment with this instrument, are of two kinds;—first, those in which it may be used with advantage to facilitate delivery with the crotchet, and simply to supersede the necessity of much pulling with that instrument; and, secondly, cases of so much confinement and distortion of the pelvis, as must render delivery by the natural passages, without the assistance of some kind of osteotomist, impracticable.

If, indeed, I am not greatly overvaluing the power of this instrument, it will not only enable skilful operators to effect deliveries in cases of moderate distortions with much more facility to themselves, and proportionally less danger to their patients, than heretofore; but it will also have the effect of reducing, almost to zero, the necessity of having recourse to that last extremity of our art, and the forlorn hope of the unhappy patient, the Cæsarian operation. In this country, it is well known that, with one exception (for I see no good reason for disputing Mr. Barlow's case), the Cæsarian section has uniformly failed in the more important part of its object;—that of preserving the most valuable life of the mother; while in France and Germany, where it has been most frequently performed, its fatality, however variously reported by its friends and foes, has been universally acknowledged to have greatly exceeded in frequency its happy results. Any suggestion, therefore, for superseding the necessity of so formidable an operation, or even for greatly reducing the frequency of that necessity, seems entitled to the attention of the profession; and that, indeed, is all that I have at present a right to claim in favour of the osteotomist*.

Labours with the Locked-Head.—There is yet a second variety of laborious parturition, which you must now and then meet with in your practice;—I mean that in which the head, pushed down among the bones of the pelvis, becomes impacted there;—so as to constitute that kind of case which is familiarly denominated "the *locked* head." In these cases, where the head is incarcerated, great danger arises in consequence of the strong and permanent pressure which it makes on the softer parts; and contusions, inflammations, suppurations, and sloughings of the mother,—not to mention the death of the child,—may all of them be the result. Here I may notice especially that, owing to this pressure on the pelvis in front, the bladder may be injured;—great accumulations and disruption ensuing. I possess a specimen of this accident. Under these accumulations of urine, too,—even where no rupture occurs,—acute inflammation, or chronic disease, may be the result: and the patient may perish in consequence, or be irrevocably injured. Left to themselves, therefore, I look upon these incarcerations as properly ranging among the most dangerous deliveries with which we have to contend; and yet, though dangerous, they may, when thoroughly understood, be managed with perfect facility.

* Dr. Davis's "Elements of Operative Midwifery".

If you find the head among the bones of the pelvis, and firmly impacted there, you will be led to consider what are the steps to be taken, in order to render the delivery secure. In cases of this kind, women are sometimes delivered by the natural efforts; and sometimes by the operation of the tractor, forceps, or perforator; so that it comes to be a point of consideration, whether we ought to have recourse to the use of instruments, or whether we ought to rely on the natural efforts. In deciding this question, I should myself be guided principally by that general rule, or canon, which I have already so often prescribed; and if the woman had not been in labour for four-and-twenty hours, and if no dangerous symptoms were manifesting themselves, I should then commit her to the natural efforts; for meddlesome midwifery is bad. But if, on the other hand, I found that dangerous symptoms were appearing; or, independently of these symptoms, if the patient had been four-and-twenty hours in strong labour,—the head making no progress,—I should then make trial of my tractor and forceps. If, lastly, these instruments failed; or if dangerous symptoms appeared; or if, independently of these symptoms, the patient had been in labour six-and-thirty or eight-and-forty hours,—I should then deem myself justified in having recourse to the perforator.

There are some practitioners who are guided by a very different principle;—a principle too valuable to be neglected. I mean, the degree of compression which the head is making on the softer parts. If the head is among the bones; and if, upon examination, it appears that it is very firmly locked there,—so that the finger cannot be insinuated between the cranium and the symphysis pubis,—they recommend a prompt delivery; but if, on the other hand, it is obvious, on examination, that the fingers can be passed, though not without difficulty, between the bones and the cranium, they wait for two, four, or six hours;—a longer or shorter term, according to the degree of pressure. I could wish this rule to operate influentially upon your practice; though you may still adhere, in the main, to the general maxim I have prescribed. If you find that the head is but loosely incarcerated, you may wait with more confidence; but if it so happen that the head is more firmly impacted between the front and back of the pelvis, you must watch more vigilantly for the symptoms indicative of contusion; and you must promptly have recourse to delivery, as soon as the first marks of injury appear. There is, I suspect, little ground for apprehension, while the pulse remains below one hundred. A pulse more frequent than this, though not necessarily dangerous, ought, in all cases, to awaken and alarm. Beware of overlooking the indications of injury from compression! Beware of delaying the delivery too long!

Labours with a Slight Contraction.—There is yet a third variety of laborious labour, arising from want of room. It is the most common in occurrence; and requires some little dexterity in its management. In this case you have a slight narrowing of the brim; and the head is prevented from thoroughly entering the cavity;—being

pushed only a little way into the superior aperture. In deliveries of this kind, it not unfrequently happens, that the child is expelled by the natural efforts, notwithstanding the coarctation; and therefore these efforts ought to be fairly tried; for it does not follow, because you have a narrow pelvis, that you are officiously to interfere with instruments, without further consideration. But it not unfrequently happens, when the natural efforts are fully and fairly tried, that these efforts are inadequate to the expulsion of the fœtus; and, in such cases, the tractor or forceps become necessary; or,—these failing,—the perforator.

By some practitioners, turning is recommended in these cases;—a practice which I must reprobate in a decided manner. It is true that, where there is a narrowing at the brim of the pelvis, a skilful operator might, now and then, introduce his hand, and bring away the fœtus by this undesirable operation; but, as a general practice, it seems to me highly improper;—first because, in performing it, you must carry your hand into the uterus (an operation always to be deprecrated); and secondly because, when you have turned the fœtus, and brought down its limbs and trunk, the abstraction of the head and shoulders must still be attended with difficulty; for the narrowing of the brim remains; and, by endeavouring to extract the cranium in this manner, you may detach the head from the body. The operation of turning, therefore, I cannot approve. In narrowings at the brim, it is better, as a general practice, either to suffer the woman to be delivered by the natural efforts; or to have recourse to the instruments already enumerated;—to the tractor, forceps, or perforator.

Again, it may be said,—"Granting that these two modes of delivery are to be preferred, how are we to decide whether we ought to commit the delivery to the natural efforts, or have recourse to embryospastic instruments?" To this, as to many other emergencies, the general rule will apply. If the woman have not been in labour for twenty-four hours, and if no dangerous symptoms are appearing, it is better not to interfere; but if, on the other hand, the woman have been in labour for twenty-four hours, or if dangerous symptoms are manifesting themselves,—the pulse rising, the bladder closing, inflammation of the abdomen appearing,—then we may, properly, have recourse to the lever or the forceps. If these instruments fail, or if dangerous symptoms appear, or if,—independently of any dangerous symptoms,—the woman have been six-and-thirty, or (at any rate) eight-and-forty hours in labour, we are again justified in having recourse, though unwillingly, to the perforator.

What I stated on a former occasion is well worth remarking here;—namely, that in those instances where you have laborious labour, from a narrowing of the brim, the head will sometimes mould itself, and thus come away. In the morning you apply your forceps, but cannot extract the cranium. No dangerous symptoms manifesting themselves, you wait till evening, and then try the forceps again; and now,—the head being moulded by compression and the pains, so as

to adapt it to the passage,—on this second application of the forceps, a living fœtus is abstracted.

Thus much, then, with respect to those cases of laborious parturition which arise from the second cause: namely, a want of room among the bones of the pelvis. We shall next treat of the labours with rigidity.

SECTION 3.—LABORIOUS PARTURITION FROM RIGIDITY.

Laborious labours are sometimes produced by a cause very different from a mere deficiency of room among the bones of the pelvis, or an unfavourable position of the head;—I mean, rigidity of the softer parts. Of all the laborious labours which have fallen under my care, these labours of rigidity are, I think, by far the most unmanageable; and may therefore be looked upon as very undesirable undertakings, for those who are commencing their obstetric career.

Causes.—[Writers upon midwifery have but very imperfectly considered the rigidity of the softer parts, as a cause of tedious or difficult labour. It is decidedly the most frequent cause; and it may occur in those labours which we regard as strictly natural, as well as those which are confessedly preternatural. When it occurs in the latter, it adds much to their difficulties; while it renders the former tedious and terribly painful. Rigidity may arise, first, in the mouth or neck of the uterus;—from the circular fibres of these parts maintaining their power inordinately long; but without inflammation. Secondly, this condition may be attended with inflammation. Thirdly, it may arise from previous injury done to these parts; either by mechanical violence, or inflammation and its consequences. Fourthly, it may happen from a relative cause; such as the disproportionate powers between the longitudinal and circular fibres. Lastly, it may proceed from a too powerful exertion of the tonic contraction of the uterus; especially of the fundus and body.*]

Symptoms and Effects of Rigidity.—Even when women bear their first child early in life, the labour of rigidity may now and then happen; but such rigidities are more especially likely to occur in those cases where women marry at a later period (say about the age of forty); and where, too, they have enjoyed a vigorous health; previously undisturbed by those floodings, or leucorrhœas†, by which the softer parts are so effectually relaxed. When rigidity exists, provided we are habituated to investigations of this kind, it may be very easily detected by examination; for, instead of yielding as in ordinary cases, the vagina feels firm, dry, and contracted; insomuch that you have no small difficulty in passing the finger to the mouth of the uterus; which, on examination, is found to be firm and in good measure closed. In these cases of rigidity,—even under the best management,—contusions, inflammations, sloughings, suppurations, and lacerations (of the perinæum, more especially), are liable

* Dr. Dewees's "Compendium of Midwifery."

† From λευκος, *white;* and ρεω, *to flow.*

to occur. Sometimes there are convulsions, and sometimes retentions of urine. Almost invariably the child is born dead; and not very uncommonly the woman herself is ultimately lost; so that, in the commencement of your obstetric practice more especially, I would advise you, by all means, not needlessly to expose yourselves to difficulties so unmanageable.

Two Kinds of Rigidity.—[There are two kinds of rigidity of the os uteri; one in which the state of rigidity resembles inflammation, in the orifice being tender to the touch, and its hardness almost reminding us of a board which has been bored through the middle with an auger. The other, presenting a very different feel, is more apt to give way under the finger; is of a pulpy substance; and, in some measure, resembles the intestine of an animal filled with water, and drawn into a circle. The second kind, though not so rigid to the fingers as the first, is longer in giving way.*]

Mode of Obtaining Relaxation.—In the labours of rigidity, it should be our first indication to produce, if possible, a laxity of the soft parts; but, unhappily, we are in possession of no very effectual means by which an indication of this kind may be accomplished. When women have large uterine bleedings, these generally produce much relaxation of the passages. Hence, in these labours of rigidity, we are advised by some to take a hint from this observation; and to make a free use of the lancet. By some it has been recommended that, a month before delivery, ten or twelve ounces of blood should be taken away; that, a fortnight before delivery, we should take ten or twelve ounces more; and, more especially, when the delivery itself commences, if the woman is robust, we are advised to bleed more copiously; abstracting twenty-five ounces;—more or less, according to the circumstances of the case. Sometimes thirty, sometimes even forty ounces have been drawn;—a bold practice; but the more safely admissible in these cases, because the patients are frequently firm and robust. To obtain the full effect from the relaxing powers of depletion, you ought, by all means, to perform your bleedings in the commencement of the labour; and this promptitude clearly becomes justifiable when it is obvious, from the degree of rigidity, that to this venesection we must ultimately have recourse.

Fomentations.—The softening power of fomentations, in these cases, is unhappily but small. Relaxation of the os uteri and upper part of the vagina cannot, in any degree, be produced in this manner; but relaxation of the external parts (the labia pudendi and perinæum, for example) may, perhaps, be somewhat accelerated; and these relaxants, therefore, ought by no means to be neglected. To take a seat over steaming water can, I conceive, be productive of but small benefit; though it may somewhat amuse the mind;—in some cases, perhaps, inspiring confidence; at the same time that it inflicts no injury on the patient. To use these emollient† relaxants with full

* "The London Practice of Midwifery," by Dr. Jewel.

† From *emollio*, "to soften."

effect, however, you ought to be supplied with a large quantity of warm water and flannels; and, for five or six hours together, the vulva* should be fomented; so as to mollify it, as much as possible before the head descends upon the external parts†. The most obvious season for applying these fomentations, is the close of the labour; when the child, approaching the outlet, lies near the perinæum and the labia pudendi. It is well, however, to begin the fomentations before the head has descended; in order that the parts, softened by your operations, may be brought into a state of readiness, before the cranium begins to emerge.

The Warm-Bath.—In laborious labours from rigidity, the warm-bath has been recommended;—a remedy more commodious in the practice of the hospital, than of the private chamber; but, really,—as those parts are not constricted by muscular spasm, and as they are not likely to become relaxed in consequence of faintness,—I do not think much advantage can be derived from the use of the warm-bath; though, should circumstances conduce, it may be tried. Tobacco-injections are scarcely adapted to the nature of the difficulty; and they are not without their dangers. They are certainly very powerful in relaxing muscular fibres; but not equally powerful in producing that relaxation which laborious labours, arising from rigidity, require. For myself, in endeavouring to effect the relaxation of the soft parts, fomentations and bleeding are the remedies to which I principally confide.

Reliance on the Natural Efforts.—In these laborious labours, you must not forget that, not unfrequently, women are ultimately delivered by the *natural efforts*; and, perhaps, most *safely* so in that way; although they may have been one or two days in labour;—the pains, during the whole of this term, having been more or less severe. In these cases, it is the office of the accoucheur to watch his patient diligently; in order that, if any bad symptoms should manifest them-

* Probably from *valva*, "a door";—because it is an aperture leading to the womb.

† The following is a list (taken from Dr. Duncan) of the Emollients and Demulcents contained in the Pharmacopœias of London, Edinburgh, and Dublin:—I. Vegetable.—1. Malva Sylvestris (Common Mallow). 2. Althæa Officinalis (Marsh-Mallow). 3. Linum Usitatissimum (Linseed). 4. Papaver Somniferum (Poppy-Heads). 5. Acacia Vera (Gum-Arabic). 6. Astragalus Tragacantha (Gum-Tragacanth). 7. Glycyrrhiza Glabra (Liquorice). 8. Pyrus Cydonia (Quince-Seeds). 9. Prunus Domestica (Prunes). 10. Daucus Carota (the Carrot). 11. Anthemis Nobilis (Chamomile-Flowers). 12. Inula Helenium (Elecampane). 13. Tussilago Farfara (Colt's-Foot). 14. Lactuca Sativa (Garden-Lettuce). 15. Anchusa Tinctoria (Alkanet-Root). 16. Solanum Dulcamara (Woody Nightshade). 17. Marrubium Vulgare (Horehound). 18. Ficus Carica (the Fig). 19. Smilax Sarsaparilla (Sarsaparilla). 20. Avena Sativa (Oats). 21. Hordeum Distichon (Barley). 22. Triticum Hybernum (Wheat). 23. Saccharum Officinarum (Sugar). 24. Lichen Islandicus (Iceland Moss). 25. Olea Europæa (Olive-Oil). 26. Amygdalus Communis (Almond-Oil). 27. Cocos Butyracea (Palm-Oil).——II. Animal.—1. Ichthyocolla (Isinglass). 2. Cornu Cervi (Harts-horn-Shavings). 3. Mel (Honey). 4. Adeps Suillus (Hog's-Lard). 5. Adeps Ovillus (Suet). 6. Cetaceum (Spermaceti). 7. Cera (Wax).

selves, and should become alarming, he may immediately have recourse to his obstetric instruments, before any serious injury shall have been inflicted. One point I particularly recommend to your recollection; and that is, the numeration of the pulse. If it be above one-hundred-and-ten, all is safe, as far as the mother is concerned. If it rise to one-hundred-and-twenty, or one-hundred-and-thirty, or one-hundred-and-forty in a minute, I am not prepared to say that the mother must therefore do ill; but there certainly is much ground for apprehension.

Prepare and Protect the Perinæum.—In cases of laborious labour resulting from rigidity of the softer parts, you must be very cautious of the perinæum; for, when the cranium emerges, this part is much exposed to contusion and laceration, and very extensive sloughing or rupture may be produced. To prepare the perinæum, you may bleed and foment,—as before recommended; and, to prevent laceration, you may proceed as follows:—The woman lying on her left side, near the edge of the bed, with the right hand you bear upon the cranium; and, supporting the perinæum with the left, wait in expectation of the uterine action. If the parts are lax, and the head advances, and (on being examined by the touch) the perinæum seems to be in no danger of disruption or contusion,—though the hands may still be kept in readiness,—it is unnecessary to interfere; but if, the head bearing too rapidly forward, a rending of the perinæum is to be apprehended, you may then, with the right hand, resist the advance of the head; while you effectively restrain the perinæum, by the counter-pressure of the left. During the emersion of the head, voluntary bearing is frequently recommended; but in these cases it is obviously improper. It is unwise to resist the passage of the head longer than the security of the perinæum requires; for I am not sure that, in preserving the perinæum, we are not at the same time endangering a rupture of the uterus. On these occasions you are, as frequently happens, interposed between two dangers; and it requires some little nicety to determine when you ought to *admit*, and when *resist* the passage.

Instrumental Aid.—If the natural efforts fail in laborious labours, obstetric instruments must obviously become our next resource; but in these labours of rigidity, I should by all means dissuade you from the use of embryospastics;—the tractor for example, or the forceps. That a gentle trial of them may now and then be justifiable, I do not venture to deny. Such trials I have myself ventured; but, on the whole, I distrust the practice. Owing to the rigidity of the softer parts,—use the tractor or forceps as gently as you may,—there is almost always a tendency to sloughing and bruising of the passages;—the more to be regretted as the fœtus, after all, is generally still-born. Under all circumstances, if you must have recourse to instruments at all, you had better, at once, have recourse to the perforator. In deciding whether instruments are or are not required, you may be guided by that general rule, to which I have so often adverted. If there are no dangerous symptoms, and if the woman

have not been in labour for twenty-four hours, after the discharge of the waters, instruments are not justifiable; but if dangerous symptoms are apparent, or if the woman have been in strong labour for twenty-four hours, or a longer term, the perforator may be necessary, and therefore justifiable.

Cautions.—Do not administer ergot, or other stimuli, in these cases, they are injurious. In labours laborious from rigidity, stimulants are not required. You do not want *pains*, but *relaxation*. Do not suffer your patient to be in labour too long;—a great and fatal error. The issue, after all, is a dead child; and contusions, inflammations, and sloughings of the maternal parts are apt to ensue. Do not forget the caution which I have given you, respecting the use of embryospastics. Contusion, laceration, inflammation, suppuration, collapse, —may all be the results of forgetfulness here. Let your tracheal pipe be in readiness. After-floodings are probable. Beware!

SECTION 4.—LABORIOUS LABOURS FROM VARIOUS CAUSES.

Such, then, are the leading causes from which, in ordinary cases, laborious labours arise;—from rigidity, from disproportion, or from the incommodious position of the cranium;—these causes operating either separately, or in combination with each other. It is not to these agents only, however, that the difficulties and prolongations of these labours are to be ascribed. There are other causes of laborious labours, real or reputed; and to a brief consideration of these causes we shall now proceed.

Rigidity of the Membranes.—Sometimes the membranes of the ovum are extraordinarily unyielding; as firm, for example, as a bullock's bladder; so that,—although the os uteri is wide open, and the bag of water is bearing forth into the vagina,—the membranes remain unbroken; and, in some rare cases, the labour is prolonged for one or two days, in consequence. A case of this kind never fell to my own lot; and I suspect its occurrence to be rare. Dr. Orme, known and respected as an obstetric teacher, seemed (according to his own showing) to have encountered the difficulty under consideration. The os uteri had been long dilated, and the membranes had been forced into the vagina; but the delivery being delayed, his assistance was requested. "On entering the chamber," said he, "I heard the membranes give way with a report; and immediately the fœtus and the water escaped together. Examination, after the birth of the placenta, proved the toughness of the membranes; and demonstrated, pretty clearly, the nature of the difficulty." In a case of this kind, it must be easy to rupture the membranes. If more gentle measures fail, you may lay open the membranes in the same manner as you would craniotomize; but before you have recourse to an instrument of this kind,—never to be introduced into the vagina without necessity, —I would advise you, by all means, to break through the membranes, if practicable, by the mere pressure of the finger. When the pains come on, the bag descends and becomes tense; and, the womb bearing down in *one* direction, you may carry one or two fingers into

the vagina, and bear against the membranes in the *other* direction; and, under this action and counter-action, the rupture seldom will fail to be accomplished. Should this expedient fail, you may take a penknife,—not to introduce it into the vagina,—but to notch your nail; and, communicating (in this manner) a serrated* edge to the finger,—you bring it to bear on the unyielding membranes; and, under gentle laceration, they readily give way.

Be pleased, however, to recollect here, that the bladder becomes overcharged with urine; and may be pushed down behind the symphysis pubis below, and before the child's head; or it may, perhaps, sometimes be forced into the same position by the action of the membranes, where they are firmer than ordinary. Be careful, therefore, not to lay open the *bladder*, in mistake for the *membranes*. "Aliquando bonus dormitat Homerus."† In an unguarded moment, you may mistake the protruding bladder for the membranes; and, in such a case, if you have recourse to the perforator, you may lay open the bladder instead of the involucra. Hence one among other reasons why, in this operation, the perforator ought not to be heedlessly employed. Disruption of the membranes can never, perhaps, be required in these cases of unyielding involucra, unless the os uteri be fully expanded previously, and the bag be forced down into the upper half of the vaginal cavity.

Variations of the Length of the Cord.—The umbilical cord is sometimes unusually long (three or four feet, for example); and sometimes it is equally remarkable for its brevity. Dr. Haighton met with a case, in which the length of the cord, on measurement, was not found to exceed seven inches. Brevity of the cord is said to give rise to laborious labours; but this I much doubt. It was the opinion of the ancients, that the fœtus, instead of being expelled by the action of the uterus, made its way into the world by its own efforts. Holding this opinion, they were led to infer that, where the umbilical cord was short, the fœtus would be retained;—being tethered, as it were, to the sides of the uterine cavity. From the ancients then, I apprehend, has been derived this opinion of impeded labour, produced by brevity of the cord; but the foundation of this opinion appears to be erroneous. In modern times it has been proved, demonstratively, that it is not by its own efforts that the fœtus makes its escape. The dead fœtus, *cæteris paribus*‡, is born as easily as the living. The child is expelled by the contraction of the womb; and these contractions of the uterus I have myself had frequent occasion to feel, when the hand has been introduced into that organ, for the purpose of removing the fœtus by turning. Hence, when the child descends, the uterus descends also; as it is the movement of the one that gives motion to the other; therefore the distance between the uterus and the umbilicus, as the labour advances, must always remain pretty equal; nor will the shortness of

* From *serra*, "a saw". † "The good Homer sometimes sleeps."
‡ "Other circumstances being the same".

the cord, I conceive, make itself felt in the labour, till the body of the fœtus shall have escaped from the vagina. Be it remembered, also, that if the cord resisted the progress of the fœtus, the placenta must become detached under the strong action of the uterus; and a large flooding must ensue in consequence.

Anchylosis of the Sacro-Coccygeal Joint.—It is not often, I think, that the sacro-coccygeal joint is anchylosed*; yet, now and then, this accident occurs; and I have a very beautiful specimen of this anchylosis;—the sacrum and coccyx being consolidated into one bone. When the coccyx is anchylosed at right angles with the sacrum, encroaching on the outlet of the pelvis, it may materially obstruct the passage of the head; and, in some rare cases, laborious labour,—so as to demand the use of instruments,—may be produced in consequence. That such is the nature of the obstruction, you are led to surmise, by finding,—when the head is at the outlet, and cannot be transmitted,—that it bears very forcibly on the coccyx and pubes; and, the nature of the case once suspected, you pass your finger internally upon the surface of the coccyx; and, externally laying the thumb in apposition with the finger, you feel the bone through the softer parts, and easily perceive its immobility. A case of this kind I should be inclined to treat on the general principles already so often reiterated. First, I should give a fair trial to the natural efforts for four-and-twenty hours,—if no dangerous symptoms appeared; and if twenty-four hours passed away without delivery, or if dangerous symptoms occurred, I should then have recourse to the tractor or the forceps. If these embryospastic instruments, on being fairly tried, failed; and if dangerous symptoms should become manifest; or if, without the occurrence of these symptoms, the labour should be prolonged beyond six-and-thirty, or eight-and-forty hours after the discharge of the waters,—I should then have recourse to *embryotomic* instruments.

Rigidity from Age.—When women bear their first child late in life, labour (as I have already observed) becomes more or less laborious in consequence. In women, however, who are advanced to the middle period of life,—the fortieth year, for example,—it will not be necessary, in ordinary circumstances, to have recourse to instruments. Should no symptoms of danger become manifest, give a fair trial to the natural efforts for four-and-twenty, or six-and-thirty hours after the discharge of the liquor amnii; and the fœtus will, I think, not unfrequently be expelled.

Bulk of the Fœtus.—Like the adult, the fœtus, at full age, may be unusually large, and this extraordinary bulk may become a cause of laborious labour. Instead of weighing about seven pounds only, the fœtus, at birth, may weigh twelve, fourteen, or sixteen, pounds; or more than that. I have myself seen a woman of middle stature, who produced remarkably large children;—one of which, without clothes, was found (as I was assured) to weigh seventeen pounds at

* From *αγχυλομαι, to bend.*

birth. When the children are extraordinarily large, the head is generally large also; and unless the pelvis be of more than common capacity, difficulty of parturition ensues; but this difficulty, be it observed, is to be managed on the same principles as those difficulties which result from coarctation of the pelvis. Essentially, indeed, the two cases are the same. In both, disproportion is the cause of the obstruction; but, in the one case, this disproportion arises from the contraction of the passages; and, in the other, from the over-bulk of the cranium.

Hydrocephalic Head.—You will meet with cases, though rarely, in which the head is *hydrocephalic*;—half-a-pint, or more, of water accumulating within the cranium. In these difficulties, it has been proposed to turn the child;—an operation of which, as you may infer from cautions already given, I can by no means cordially approve. In the very last case of hydrocephalic labour which fell under my notice, the practitioner, with the best intentions, carried his hand into the uterus; but a fatal rupture of the genitals was the consequence. To the exclusion of this formidable operation, therefore, I would advise you to adopt what, to me, appears to be a safer practice;—confiding the birth to embryospastic or embryotomic instruments; or to the unassisted efforts of nature.

The head, when hydrocephalic, readily yields under pressure; and, sometimes by disruption, and sometimes by an accommodation of its form and bulk, it will be found, without the aid of instruments, to make its way into the world. Should no dangerous symptoms be observed, therefore, give a fair trial to the natural efforts;—applying the lever, or the forceps, should these efforts fail you; but should the softness of the head unfit it for the action of these instruments, then, if delivery be necessary, betake yourselves to perforation. A large opening would not be required; for a small puncture would discharge the waters. With this disease, life is scarcely desirable. Lycurgus would have condemned the fœtus; but we are Britons and not Spartans*; and it is of our profession not to *destroy* life, but to *save* it.

Descent of the Head and Cord together.—In labours, whether laborious or not, it sometimes happens that the head and cord descend into the pelvis together;—the simultaneous descent of these parts being, on the whole, not uncommon. When the cord is in the pelvis, together with the head of the fœtus, not unfrequently the child perishes;—stifled in consequence of the compression of the funis, and the interception of the placentar changes, at a time when respiration cannot be performed. This is more likely to be the case if the labour be retarded by the rigidity of the parts, the position of the fœtus, the bulk of the cranium, the coarctation of the passages, or any of the other causes already enumerated. It is desirable, if possible, to secure the child against these dangers; and it was first

* Lycurgus, the Spartan law-giver, allowed the destruction of deformed children.

suggested to me by one of my own pupils, that a piece of spong about the size of four fingers, very soft and fine, should be insinuate into the uterus, and left there; in such a manner as to carry bac the descending loop of cord, and preclude its return into the vagin Should much cord descend, it could hardly be replaced in this wa but a smaller descent *may* be so remedied. I have myself tried th practice with success. If it can be accomplished without violence, is (I think) to be recommended; but the inexperienced, and th awkward, had better refrain. In some rare cases,—to be looke upon as anomalies,—should the pains remit, you may carry the cor and the hand into the cavity of the uterus;—provided the parts mak no resistance; and, looping the cord upon some part of the fœtu you may thus prevent its reiterated descent. As a general practic however, this is not to be advised; for the introduction of the han is always attended with more or less risk of laceration. Should thes measures fail us, we must then, I believe, be contented to place th cord in the most capacious part of the pelvis; directing the patient t make the most of her pains, by co-operative voluntary urging; cau tiously accelerating the birth of the head by the tractor or the forceps —provided we are dexterous in the management of these instrument

Descent of the Arm and Cord together.—It sometimes happens tha the arm descends with the cord;—the birth becoming obstructed more especially if the head be large or the pelvis contracted. Th arm may sometimes be replaced by the hand or the sponge, as befor explained; but should these attempts fail, the delivery may be com pleted by instruments, either embryospastic or embryotomic; or th birth may be confided to the unaided efforts of the uterus. I determining in which of the three modes the birth should be com pleted, we must, I conceive, be guided by the principles alread prescribed.

Conclusion.—Thus much, then, respecting the management of thi important class of labours;—"*laborious* labours," as they are called —occasionally met with in country-practice; and still more frequentl in that part of practice which lies in the midst of our large manu facturing towns;—those nurseries of feeble bodies and fretful minds The dangers and difficulties of these cases may require dreadful ex pedients;—the destruction of the ovum; the sacrifice of the fœtus the employment of some of the most formidable instruments, an the execution of some of the most perilous operations, with which th healing art is provided. Two lives are always in jeopardy. Ever thing conduces to inspire an interest for their safety. How thei must England, how must Europe, admire the dignity of a medica body, which sinks a part of the profession to which, in the realities o life, such trusts are confided, into a mere vocation, undeserving it attention! Such loftiness is truly regal! "*Si j'étois lieutenant d police*," said Louis*, "*je defendrois ces cabriolets!*"† Perish ou

* Louis the Fifteenth, King of France.

† "If I were a lieutenant of police, I would put down these cabriolets."

wives!—Perish our daughters!—Let every pretender have the right to lay open the head of our living infants! But let not men of enlarged academical education be defiled, by a condescending and gracious inquiry into the qualifications of those who devote a part of their minds to such abject pursuits! *Absit Di meliora*! *Prætor non curat de minimis**. This is dignity indeed! But then what is arrogance? what is insolence? *Homo sum; humani nihil a me alienum puto*†. Ah, how easy was it for the orchestra,—the equites,—the great body of the Roman people to *applaud* the sentiment; but throughout the whole of the multitudinous assembly was there one who found it easy to *act under the influence* of the sentiment of the benevolent Chremes‡? I presume there was not. Our opinion of the past must be formed from the present. Granite is unchangeable; and so is human clay!

It must not be forgotten that, though laborious labours sometimes arise from one cause only, yet they are occasionally referrible to the co-operation of several. Thus, rigidity of the parts may concur with unfavourable position of the fœtus; or both may be met with where there is a coarctation of the apertures of the pelvis.

CHAPTER XIII.

RETENTION OF THE PLACENTA.

In the earlier, as well as in the latter months, in laborious and in flooding cases, and in natural labours, the placenta does not always escape with the usual facility. Difficulties sometimes impede its abstraction; and it may be retained for days or weeks;—not to say one or two months.

SECTION 1.—EFFECTS OF A RETAINED PLACENTA.

Sometimes no Alarming Symptoms.—When the placenta, in this manner, remains in the uterus after the expulsion of the fœtus,—occasionally for days together,—not a single alarming symptom occurs; so that, if you were not acquainted with the history of the case, you would scarcely suspect that the placenta was still lodged in the uterine cavity. It is a great mistake to imagine, because the placenta is lying in the uterine cavity, that the woman must *necessarily* do ill; and from this erroneous impression I would wish your minds to be liberated. So long, however, as the placenta is retained in the uterine cavity, so long the patient is liable to various symptoms, more or less alarming; of which the principal are *pains*, *hæmorrhage*, *uterine discharges*, and *constitutional irritation*.

* "May the gods forbid!"—"The Prætor (chief magistrate) does not take cognisance of trifles."

† "I am a man; and therefore I consider nothing unworthy of my attention, if it relate to my fellow-man."

‡ A character in one of Terence's Plays.

Pains resembling "After-Pains."—When the placenta is retained in the uterus, it will sometimes give rise to cutting, grinding, and sawing pains; felt in the back or the front of the abdomen, near the symphysis pubis;—not to mention the hips and thighs. The pains are very like the first pains of labour; or like those latter pains which are felt after the birth of the fœtus, and which are usually denominated "the *after-pains*." These pains it is by no means difficult to alleviate by the use of opium; but they are rather to be *sought* than *deprecated*; for it is by these pains, or rather by the contractions which produce them, that the placenta is ultimately expelled.

Liability to Hemorrhage.—When the placenta is retained in the uterus,—whether in the earlier or the latter months, but more frequently in the latter,—the patient is always liable to floodings, more or less copious; and, indeed, this is the most dangerous symptom to which she is obnoxious. From my own personal observation, I am prepared to state, that the placenta may lie quiet and innocuous in the uterus, for one or two weeks together;—large eruptions of blood ultimately occurring notwithstanding; and therefore, you may, set down among the dangers to which women are always exposed,—whether in the earlier or the latter months, but in the latter months more especially,—these copious eruptions of blood from the uterine cavity. After what has been said so largely on the subject of floodings, you will not be at a loss as to the management of discharges of this kind. For a fuller exposition of the method of treatment, I must refer you to the principles before laid down. Suffice it to remark here, that the only effectual remedy for putting a stop to the discharge, is the removal of the placenta; and, therefore, if a woman is liable, not merely to small shows of blood, but to large eruptions, the sooner the placenta is, in an easy manner, extricated from the uterus,—whether by manual operations or otherwise,—the better.

Fatal Discharges.—When the placenta is retained in the uterus, you will sometimes find that the patient remains, in good measure, or perhaps entirely, free from any offensive or fetid discharge; but so long as the placenta is lying in the uterine cavity, so long is she liable to all the effects of its putrescence there. Sometimes the discharges become offensive in a high degree;—the chamber, though spacious, becoming infected with the offensive odour; which may, by a delicate sense, be now and then perceived in the adjoining apartments.

Why it is that, in some cases, the placenta putrefies rapidly, while in others it remains unchanged, I am not able, in a satisfactory manner, to explain; though the subject is well worth investigation. I strongly suspect, however, that the placenta will be found to putrefy much more readily, if it is completely detached from the uterus, than in those cases in which it continues to adhere to the uterine surface; for detachment from the uterus seems to imply a consequent extinction of vitality.

Lotions may be found of service here; provided, by means of a

long-tubed syringe, they are thoroughly injected into the uterine cavity. For the performance of this injection, the accoucheur will be found the best operator; and it is desirable that the fluid be injected repeatedly in the course of the day; unless bleeding, or other symptoms forbid. Warm water, decoction of bark, or other injections,—diluent* or antiseptic†,—may be recommended in these cases. The fluid being absorbed, you bear the syringe in the right hand, carrying the fingers of the left, in the way of a director, to the mouth of the uterus; and then, the tube being passed along the finger into the uterine cavity, the latter may be very completely washed out by the action of the syringe. After all, however, the only effectual mode of arresting these discharges which are so offensive, is the abstraction of the placenta;—either by manual operation, or the deobstruent remedies of which I shall hereafter treat; and to this plan we must ultimately have recourse, should symptoms become pressing, and should other means fail us.

Constitutional Irritation.—When the placenta is retained in the uterus, we sometimes have the satisfaction to find that no active symptoms of constitutional irritation occur; but that the woman lies perfectly quiet;—her appetite good, her bowels regular, and her general health undisturbed. So long, however, as the placenta remains, so long constitutional symptoms, of the most alarming kind, are liable, sooner or later, to supervene. Purgings, vomitings, sweatings, a pulse of one-hundred-and-forty, a cheek of typhoid tint, and a brown tongue. I once imagined that these constitutional symptoms might rather be ascribed to violence, used to get away the placenta,—occasioning contusions and lacerations of the genitals,—than to the mere action of the placenta itself; and the rather because, having paid a good deal of attention to this subject, I had noted more than one case, in which the placenta had remained for a long time in the uterus, without a single conspicuous symptom of irritation becoming manifest. From observations since made, however, I have been induced to believe that, independently of all manual practice, these irritations may be produced. I was requested to see a girl, in St. Thomas's Hospital, who had aborted about the fourth month. I found that the placenta could not be got away without force and danger; and I deemed it wise, therefore, not to make the attempt. On the fifth day, putrid discharges appeared; and, at that time, there was a good deal of constitutional irritation;—the cheeks flushed; the countenance anxious; the pulse one-hundred-and-forty; vomiting; purging; and copious perspirations. Urged by the symptoms, I removed the placenta; which appeared to be pushed some little way into the vagina. All the symptoms gave way very rapidly afterwards; and the girl ultimately recovered. Is the *putrid* placenta alone liable to occasion these irritations? I doubt whether it be; for it is a matter of fact, well worthy of notice,—not

* From *diluo*, "to wash away."

† From *αντι, against*; and *σηπω, to putrefy.*

only in midwifery, but in surgical science also,—that substances may become very putrid, and yet may lie in the vagina for a length of time, without occasioning much constitutional irritation. Thus much, then, respecting the various symptoms, more or less alarming, which may result from a failure in the abstraction of the placenta —pains, floodings, putrid discharges, and violent constitutional irritation. Let us now consider what these cases require.

SECTION 2.—TREATMENT OF A RETAINED PLACENTA.

It is agreed on all hands, I believe, among practical men, that as the woman is always obnoxious to these symptoms so long as the placenta is retained, it is always desirable that the placenta should be got away. Now the means to be employed for this purpose, are divisible into two kinds;—deobstruents, as they are called; and those means which require active manual operation.

Pressure on the Abdomen.—When the placenta is retained in the uterus, independently of any very active manual operation, we may sometimes obtain its expulsion, merely by laying the hand on the womb externally, feeling it through the abdominal coverings, grasping it, and thus stimulating its fibres to contract;—the placenta being expelled, or (to use a coarse but significant expression) squeezed forth, by the action of the hand. This is a very simple mode of ridding the uterus of its contents;—proper, more especially, where it is retained in the later months; nor is much active manual exertion required for the purpose.

Purgatives.—When the placenta is retained in the uterus,—whether in the earlier or latter months,—we may sometimes ensure its expulsion by the use of some remedy which may stimulate the bowels; as purgatives, for example. Mr. Fagg, a practitioner of experience, informs me, that he has found the injection of senna-and-salts into the rectum to be of no small use. Six or eight ounces of the infusion of senna, with an ounce of salts,—formed into an injection, and thrown into the rectum,—have, apparently, had the effect of exciting the pains, and thereby accelerating the expulsion of the fœtus. On his authority, I recommend the remedy to your attention. The action of the womb may be brought on by the application of cold. Not that I should recommend you to advise your patient to plunge her hips into cold water; but you may venture to administer the cold as if you were applying it in flooding cases;—sprinkling the napkin, and suddenly and smartly dashing up water on the abdomen and thighs; and perhaps the stimulus of this sudden impulse may cause the womb to contract. I think it proper to mention cold, as one of the deobstruents which may be resorted to in these cases; but, after all, it is one that is not to be relied on. Coughing, sneezing, blowing on the back of the hand, and voluntary bearing, may bring on the action of the womb; and these, therefore, may be recommended where deobstruents are required; but of all deobstruents of this kind, the most efficient is retching;—the placenta, sometimes,

speedily escaping when the patient begins to vomit. In the commencement of practice, you may occasionally be at a loss to know how to get the placenta away;—not because there really is difficulty; but because you are timid (and very properly so, while yet inexperienced). In these difficulties you very unwisely leave the patient, instead of writing to procure further assistance; and while you are away, perhaps, an old woman comes into the room, puts a candle into the throat, excites retching, and liberates the placenta at once. Nor is retching to be despised as a deobstruent. Not that I would advise you to nauseate the patient with a candle; but you may insert a feather into the back of the throat;—an emetic which is, perhaps, no less efficacious, and is certainly more elegant.*

Ergot of Rye.—In cases where the placenta is retained, if the ergot of rye is at hand, I would recommend you to make a trial of it. Not that I have such experience of it in these difficulties, as enables me to state positively that it has much effect; but I have reason to believe that, in many cases, it has been used with advantage. The ergot, or *secale cornutum*, you may now purchase, in any quantity, at Butler's, in Covent Garden; and, I believe, at most of the respectable druggists. A drachm of this ergot, coarsely powdered, may be mixed with three ounces of boiling water, to be poured upon it; and this being decocted to an ounce and a half, you may give the patient a table-spoonful as a dose; repeating it every twenty minutes, unless you perceive that the action of the womb has been previously brought on.

Manual Assistance.—Besides these deobstruent remedies, which require but little manual operation, the hand or fingers of the accoucheur may be used, with advantage, for the removal of the placenta. In the earlier months, perhaps, we may remove the remains of the ovum, by passing two fingers into the vagina; or, if it lie too high to admit of abstraction in this manner, then,—if the hand be small, the vagina large, and the parts relaxed,—we may introduce the whole hand into the vagina, without the risk of tearing; and, the two fingers being carried into the cavity of the uterus, and a hold of the ovum being secured in this manner by the action of the fingers, you may often at once bring it away. In the later months, the placenta may sometimes be abstracted without the introduction of the hand into the uterus; as it often lies down in the vagina; and when it lies there, you may lay hold of it;—taking care not to tear any part. The whole may then be abstracted at once;—the mass being diligently inspected afterwards, so as to ascertain that no part has been left behind in the uterus. It very frequently happens, however, in difficult cases, that the bulk of the after-birth is lying in the

* We give, from Dr. Duncan, a list of Officinal Emetics:—I. Vegetable.—1. Sinapis Nigra (Black Mustard-Seed). 2. Cephaelis Ipecacuanha (Ipecacuanha). 3. Anthemis Nobilis (Chamomile-Flowers). 4. Nicotiana Tabacum (Tobacco). 5. Asarum Europæum (Asarabacca). 6. Scilla Maritima (Squill).—II. Inorganic.—1. Ammoniæ Carbonas (Volatile Salts). 2. Antimonium Tartarizatum (Tartar-Emetic). 3. Zinci Sulphas (White-Vitriol). 4. Cupri Sulphas (Blue-Stone).

womb; and you must then, though unwillingly, carry the hand into the cavity of the uterus; where you may first detach the placenta by passing the fingers between the womb and the viscus; and, having detached it, you may lay hold of its substance, and cautiously bring it away. Nor is it difficult to perform this operation, where the accoucheur has been long in practice, and has the perfect use of his fingers.

Rules for Regulating Manual Assistance.—When the placenta is retained, it sometimes becomes a point of great nicety to decide when you are to operate manually, and when you are not. Sometimes my obstetric friends come to me, in great perplexity; asking what they are to do;—whether they are to leave the patient to her natural powers, to trust to deobstruent remedies, or to interfere manually? I think it may be observed, with truth, that it is always highly desirable the placenta should be got away, if it can be withdrawn without violence; because, as I before explained to you, though it may lie quietly in the uterus for a time, yet, so long as it lies there, the patient is liable to floodings and other dangerous symptoms. This being the case, I have endeavoured to establish certain principles for my own guidance here; and they are, in few words, the following:—If the placenta be retained, and I can, by manual operations, abstract it without violence (without the risk of bruising or tearing, I mean), and if there be no reasonable hope of liberating it by the use of deobstruent remedies,—there being an obvious necessity for manual operation,—I abstract it in that manner. On the other hand, if the placenta be retained, and I find the hand cannot be carried up so high as to secure the command of the placenta without the risk of bruising or lacerating, I then leave it in the uterine cavity;—not because it is not an evil to leave it there; but because it is a smaller evil to leave it in the uterus, than to abstract it with violence; and we had better abide by the smaller evil, than expose ourselves to the greater one;—that of lacerating, bruising, and killing. If, acting on this principle, I leave the placenta behind in the uterus,—which I have sometimes done for days or weeks, and with success too,—I watch the patient diligently during the whole term of retention; and if any alarming symptoms supervene, I again examine; and, although I could not before have removed the placenta, I now find, perhaps, that I can abstract it with facility. Should the abstraction of the placenta, however, still remain difficult, and should the danger be great, I urge my endeavours to remove it more diligently than before; especially in flooding cases, which are the most dangerous; and, happily, those in which the parts are the most relaxed.

The rules of practice here, are these:—First,—Immediately after the birth of the child, when the placenta is retained,—provided it can be removed without consequent danger,—let it, by all means, be taken from the uterus. Secondly,—When the placenta is retained for days together, and no symptoms of danger appear, examine occasionally;—removing the placenta at the time of examination, pro-

vided it can be withdrawn by a mere touch, as it were; and committing the expulsion of it to the natural efforts, provided it cannot be abstracted with facility. Lastly,—When dangerous symptoms appear, and the placenta is lying in the uterus,—the symptoms being clearly referrible to the retention of the placenta,—if the symptoms are not urgent, you had better leave the placenta, if it cannot be abstracted without violence; and even where the symptoms are pressing, you are still scarcely justifiable in abstracting manually, if the operation be attended with the risk of laceration; for when a patient must be exposed to dangers, in general, perhaps, she had better be exposed to the dangers which arise naturally from her situation, than to those which may result from obstetric violence. Much, however, must depend on the individual character of the accoucheur. A skilful practitioner may venture to operate, where one who is wanting in dexterity ought to refrain. It is often better to fall into the hands of Nature, than into those of Nature's much-favoured, but often misguided, son!

[The third stage of labour is the expulsion of the placenta. Celsus recommended that the hand should be introduced into the uterus, to twist the placenta round, and clear it out. William Hunter was so shocked at the number of women who died after manual interference of this kind, that he preferred leaving the placenta alone in all cases. But a middle course is best. If the placenta be lying in the vagina, bring it away at once; but if it be still in the uterus, leave it alone for half-an-hour, or an hour. If pain, however, should previously have existed in the uterus,—so as to give rise to the suspicion of disease and adhesion,—take the placenta away. In doing this, twist the cord round the fingers; and be careful not to pull suddenly. When the placenta reaches the vagina, put in two fingers of the other hand, and twist the placenta round; and, as you draw it out, give it a rotatory motion; which wraps it up in its membranes. Should it be retained in the uterus, press on the latter with the hand, through the parietes of the abdomen. If it will not come out, introduce four fingers; and a gentle touch with them will generally be sufficient; but if not, put in the whole hand, and gently manipulate with it;—keeping the cord on the stretch with the other. Separate the placenta as far as you can; and, if you come to any indurated part, pinch it away;—taking great care not to injure the uterus; for, rather than this, I would leave a part of the placenta behind. Induration of the latter often causes miscarriage; but pregnancy sometimes goes on to the full term, notwithstanding.*]

[The placenta may be retained unusually; and this may be deemed another cause of difficult labour. The best treatment, in such cases, would be friction on the abdomen, grasping the uterus, applying the roller tightly, dashing cold water on the naked abdomen, and exhibiting the ergot of rye, to induce contraction of the uterus. If these means fail, and hæmorrhage or fainting occur, the

* Extracted from Mackintosh's unpublished "Lectures on Midwifery".

hand must be introduced (in a conical form) into the cavity of the uterus. The cord being held in the left hand, pressure is then to be made, with the knuckles, on the inner surface and placenta; and the latter organ is to be separated at the edges, by a gentle pressure. As soon as the placenta is separated, by pressing on the uterus and on the abdomen with the other hand, contraction will be excited, and the hand and placenta will be pushed out of the uterine cavity. No man should leave his patient, after the birth of the infant, until the expulsion of the placenta. The woman is never free from the danger of hæmorrhage, while the placenta is retained.*]

SECTION 3.—CAUSES OF RETENTION OF THE PLACENTA.

Having said thus much, generally, respecting the symptoms and management of the retained placenta, we shall now proceed to the consideration of the different varieties of this accident.

From the Breaking of the Funis.—After the birth of the child, the umbilical cord, in some cases, breaks away, close upon the after-birth; so that you lose your hold of the placenta. In other cases, where the placenta is large, in attempting to abstract it, you may leave a third or a half behind;—this portion being torn off from the rest. Now, in those cases in which a placenta, of which you have lost your hold, is lying in the uterus, wholly or partially, some difficulty may attend its abstraction; and if you have never reflected on it before you meet the accident, you may be at a loss as to the mode of procedure. When, in this manner, you lose your bearing on the placenta,—a portion of it being left behind in the uterine cavity,—it may sometimes be expelled from the uterus, nevertheless, by the unaided efforts of the womb. Waiting for one or two hours,—more especially if you give some of the *ergot* in the way formerly advised,—you may reasonably hope that, under the uterine efforts, the placenta will be completely expelled from the uterus; or, at any rate, that it will be pushed into the upper part of the vagina; so that the fingers may reach it. Suppose, however, that the pains are feeble or failing. In these cases, the expulsion of the placenta may be effectively assisted, by merely laying the hand on the abdomen, above the symphysis pubis, feeling for the uterus, and pressing it;—the placenta being urged out of the uterine cavity by compression; in the same manner as you might, by well-directed pressure, expel any other substance from a bag. Tenderly,—resolutely,—dexterously,—prudently proceeding in this way, you may press the entire mass into the vagina; or, at any rate, so large a portion of the placenta may frequently be detruded, that, lying under the action of the fingers, the whole of it may be easily got away. Should these means fail you, however, there is yet a third mode,—the least desirable, but the most effectual,—by which the placenta may be removed; and to this you may have recourse, as a last resort;—I mean the introduction of the hand into the uterine cavity;—an operation, against the unnecessary performance of which, you have already been so frequently

* Dr Ryan's "Manual of Midwifery."

cautioned. In performing this operation, you will not, probably, meet with much difficulty; because, as (half-an-hour or an hour before) the head and body of the child have been transmitted along the vagina, your hand,—if duly lubricated,—unless it be unusually bulky, will pass up with facility. The hand being in the uterine cavity, you may grasp the placenta, and draw it downwards;—proceeding with the usual obstetric mixture of resolution and tenderness; and careful that you leave no portion of the after-birth behind. Here, then, are the three practices to be adopted for the removal of the placenta in difficulties of this kind;—the introduction of the hand; the external compression of the uterus; and the commission of the expulsion to the unaided efforts of the womb. If you find that the parts are very lax, and that the hand may be carried into the uterus with perfect safety, I would excuse your having *early* recourse even to manual operation; but if,—in making this essay, or on making an examination, and considering all circumstances previously,—you expect there will be the least difficulty to the introduction of the hand, or the smallest probability of laceration, then, by all means, first confide the birth of the placenta to the other two modes of treatment; and satisfy yourselves of their inefficiency, before you have recourse to this undesirable operation.

[The funis is commonly inserted about one-third of the space from, or at the very edge of the placenta; sometimes in the centre; and now and then the vessels branch off before it reaches the placenta. The ease or difficulty with which the placenta may be brought away, somewhat depends upon the insertion of the funis. The chance of tearing the funis away rests chiefly upon the force used to extract the placenta by it; yet if it be inserted fully into the placenta, and be in a sound state, the force which it can bear is infinitely greater than can be exerted without the hazard of inverting or doing some other injury to the uterus. But if the funis be in a putrid state, or if the vessels branch off too soon, it may be torn away with a very small degree of force; as, in the latter case, it can only sustain what a single branch of the vessels can bear. Hence, in a cautious extraction of the placenta, we are sometimes sensible of a sudden yielding or jerk in the funis; which, if the same force be continued, will be repeated; till, at length, the funis comes unexpectedly away; and the placenta is left in the uterus, or in the vagina. Great circumspection and slow proceeding will usually prevent this accident; but if it should happen in our own practice, or if we should be called to assist others, we must determine whether the case will allow of further waiting, or whether there is a necessity for bringing the placenta away immediately, by introducing the hand into the uterus. Should there be occasion, on account of hæmorrhage or any other untoward circumstance, for the latter method,—which, if consistent with the safety of the patient, ought always to be avoided,—we may consider the inconveniences as produced by the want of the funis; which, when it remains, serves as a guide to conduct the hand; and helps moreover to keep the uterus steady, and to bring down the placenta

when separated. The former of these will not be of much consequence to a person accustomed to the operation; and the latter will be lessened, if an assistant make a judicious pressure upon the abdomen with both his hands. Some disadvantage will necessarily arise from this accident; and therefore we should be careful to avoid it, when in our power; but though a little embarrassment may be occasioned, even when the placenta is in the vagina, the importance of the disadvantages produced by the separation of the funis has, I believe, generally been overrated.*]

From Swelling and Irritation of the Genitals.—When examinations have been frequent, or deliveries have been laborious, or instruments have been employed,—and sometimes independently of the action of these causes,—the soft parts occasionally become unusually inflamed and excoriated; and the genitals, swelled and irritable, are totally impatient of the touch. In those cases, then, in which there is excoriation, swelling, and irritability, embarrassment may arise in the abstraction of the placenta;—in general, however, to be subdued with facility. The parts being in this condition,—provided the patient possess a moderate share of strength,—you ought, I think, to take away twelve or sixteen ounces of blood; giving, afterwards, a somewhat copious dose of opium. Fifty or sixty drops, for example, —*drops*, I mean, not *minims*,—may be given at once, in cases of this kind. This done, procuring a full supply of warm water, you may very thoroughly foment the parts; and after a thorough fomentation, large doses of opium, and the extraction of blood from the arm, you will most probably find the irritability so much allayed, that the necessary manual operations may be performed; so that,—seizing the cord with the one hand, and the substance of the placenta with the other,—with resolution and gentleness, you solicit and lead forth the latter from the uterine cavity.

From Irregular Uterine Contractions.—There is yet a third and an important cause, to which the retention of the placenta may sometimes be ascribed; and this cause is an irregular contraction of the womb; to the consideration of which we will next proceed. After the expulsion of the fœtus, when the birth of the placenta takes place in the usual manner, the summit or fundus of the uterus is first contracted; then the body; then the neck; and, lastly, the mouth; for there is, in general, a tendency to contractions of the upper part of the uterus, before the under portions become constricted. The womb contracting in this manner, in ordinary cases, the placenta and uterus mutually separate; for when the womb (being muscular) contracts, the placenta (wanting that muscularity) cannot contract in a corresponding manner; and,—the surface of the uterus moving, in consequence, on the placentar surface,—a mutual dissolution of adhesion ensues. The placenta, then, being detached in this manner, and the uterine contractions proceeding, the detached mass is pushed lower and lower towards the vagina; and if the uterus be very vigorous and active, it may even be urged beyond the external parts,

* Denman's "Introduction to the Practice of Midwifery".

or a considerable way into the vagina;—becoming, in most cases, partially pushed into the vagina; so that it may be easily seized and taken away.

Hour-Glass Contraction.—When the irregular contractions now under consideration occur, we find the uterus, in some cases, contracted around the placenta, as if anxious to retain it; so that you can neither abstract the after-birth, nor insinuate your hand into the cavity of the womb; and, in other cases,—more common in their occurrence,—the placenta is retained by circular contraction of the uterus, frequently seated at the mouth of the womb, and more rarely in the centre; insomuch that the cavity of the womb becomes divided into two chambers;—one superior, and one below. This constitutes what, from an analogy of form, has been denominated "the *hour-glass* contraction". It is not, however, so frequent in its occurrence as many imagine; for, unless an accoucheur be tolerably skilful, he may think there is this peculiar contraction of the uterus, when in reality the contraction is oral;—the upper part of the vagina (long and dilated) being, in examination, mistaken for the lower part of the cavity of the womb.

[I was called up one morning, to go to a case of "hour-glass contraction"; but I found that the student's hand was in the *vagina*, while he thought it was in the *uterus*; and the same thing has happened in ten cases, within my own knowledge. The cases in which it is said to occur, are those in which the uterus *contracts* on the placenta, instead of *expelling* it; and the closed os uteri is mistaken for the hour-glass contraction. I do not think the latter has any existence.*]

These irregular contractions are not of difficult detection. When we were speaking of the delivery of the placenta in ordinary cases†, it was observed, that you ought to carry your fingers along the umbilical cord, until you reach the mouth of the uterus. After which, when you find any portion of the placenta lying forth at the mouth of the womb, this part should be secured; and, in this manner, with the cord in one hand, and the body of the placenta in the other, you may withdraw the entire mass from the uterus;—the uterine contractions effectually assisting. If it so happen, in these difficulties, that the uterus is firmly embracing the whole of the placenta, this contraction may, perhaps, be detected pretty easily, by examining externally above the symphysis pubis. Feeling for the uterus above the symphysis pubis; grasping it (as you ought always to do), and finding it very round and hard, while yet no part of the placenta stretches down into the vagina, you will have a pretty clear proof, that it is in this way the placenta is retained. While, in cases where a circular contraction (whether oral or central) is the retaining cause, the contracted aperture may be felt on passing up the fingers.

When retention of the placenta occurs in consequence of these

* Dr. Mackintosh's unpublished "Lectures on Midwifery".

† See Pages 118 to 122.

irregular contractions, by a little manual skill and labour, you may sometimes abstract the placenta easily enough. Carry one or two fingers of the left hand up to the os uteri, and insert those fingers into the aperture; then, the fingers being deposited there, act with them in the manner of a dilator;—tenderly, resolutely, and perseveringly expanding the uterine mouth, as it may bear it; and thus room may be obtained to bring the placenta away.

In some few cases, on carrying the hand to the entrance of the uterus, you may find lying in it a portion of the placenta. In these cases, if the constriction of the uterus be firm, it may not be safe to draw down by this portion; lest laceration and detachment should ensue. But if it should so happen, that the mouth and neck of the uterus are lax, then, without further trouble, the placenta may be abstracted;—the viscus being gently worked through the opening. After abstraction, examine the secundines; and ascertain that the whole mass has been abstracted entire.

But it is not always that you meet with these cases of easy management; for sometimes the mouth and body of the uterus are contracted with more that ordinary firmness; or, if you dilate, the part contracts again more firmly than before. If you again dilate it, again it contracts; and if, attempting to overbear resistance, you use a greater force, you lacerate. Death! When, in this way, the contractions are very strong, and the womb is very irritable, before you attempt to abstract the placenta, you ought to have recourse to relaxents. Bleeding to faintness might sometimes effectually resolve the uterine contraction; and some few cases might perhaps justify it. It must be admitted, however, that this is a rough measure; and not altogether, perhaps, without its danger; for the bleeding might be followed by flooding from the uterus; and the patient, if of feeble constitution, might sink. The tobacco-injection, I have little doubt, would relax the uterus, even in the most difficult cases, so as to admit the introduction of the hand; but the tobacco-injection is attended with considerable danger; and I have already laid it down as a principle, that the retention of the placenta is not attended with that degree of danger, which would justify you in resorting to the more perilous measures. It has, too, been advised in these cases, that we should try the effect of cold, emetics, and other insignificant and unimportant remedies; and sometimes a nauseating or emetic dose (sulphate of zinc or ipecacuanha, for example) may have the effect of expelling the placenta; or the sudden application of cold over the uterus, or the lower part of the abdomen, may relax the spasms. For myself, however, in all cases which I have hitherto met, I have found that the uterus has relaxed sufficiently under very simple mode of treatment. I have abstracted from the arm sixteen or twenty ounces of blood;—a loss which most patients can bear very well. Immediately afterwards, I have administered a copious dose of opium;—sixty or seventy drops of the tincture; or a corresponding quantity of the solid, or of Battley's excellent anodyne. This done, I have waited half-an-hour, till the irritability of the parts has been

quieted; and then I have proceeded to dilate the os uteri, and abstract the placenta, as before explained. Always bear in mind the two grand principles of management here:—First, that the placenta is never to be abstracted with violence; and, secondly, that if it can be got away without violence, its removal is desirable; as the woman is never altogether secure during its retention.

I possess a beautiful specimen of a placenta retained by a general contraction of the uterus. In some women, there seems to be a strong *predisposition* to this irregular contraction of the womb after delivery; and this being the case, it comes to be a question of some importance, whether we may have recourse to any effectual preventive. Of the preventives proposed, one of the most promising is that which used, I think, to be recommended by Dr. Hamilton, of Edinburgh. It consists in committing the birth of the body to the natural efforts;—the womb being suffered to expel it slowly, after the birth of the head. If, the head being expelled, we hastily draw the body from the vagina, before the womb is contracted, the uterus, suddenly emptied, becomes more obnoxious to irregular contractions afterwards; but where the body, arms, and legs, are pushed away by the regular and healthy actions of the uterus, a more regular and healthy contraction may be afterwards expected.

[I attended many labours before I studied midwifery; and all my cases did well, till I attended lectures; but I then got frightened at hearing of irregular contractions of the uterus. What is called, "the *hour-glass* contraction of the uterus", is supposed to be caused by the irregular action of circular fibres in the uterus; though no anatomist has ever seen them. The remedy which is recommended for it, is the administration of a hundred drops of laudanum; but that would indispose the upper part of the uterus to expel the placenta. A better plan, if such an anomalous contraction were really to exist, would be to introduce the hand into the uterus; and Burns says this must generally be done at last.*]

Adhesion from Scirrhus.—It rarely happens that the placenta is retained in the uterus from inflammatory adhesions of that kind which has been denominated *scirrhous*; for though you may frequently hear of cases so called, yet I am persuaded,—from my own observations, as well as from the experience of my valued predecessor, Dr. Haighton,—that genuine scirrhous adhesion is by no means very common in its occurrence. Sometimes, however, the womb inflames; and, in consequence of this inflammation, the placenta may become attached to its surface; and if this have been going on in the earlier or middle part of gestation, the adhesions may be extensive and strong. These adhesions may be accompanied with induration of the placenta;—in consequence, I suppose, of an interstitious deposition of lymph in the pores of the placentar structure; and I apprehend it is this induration, and not a genuine scirrhosity, which has given rise to the epithet by which the disease is designated; for

* Dr. Mackintosh's unpublished "Lectures on Midwifery."

although the parts are hardened and altered in their structure, I am not aware that there is that peculiar change of organization, which the morbid anatomist understands by "scirrhous."

When the placenta adheres to the uterus in consequence of scirrhus, it is not, in general, very difficult to ascertain it; for,—although the womb may be thoroughly contracted, and although the accoucheur may pull resolutely by the cord and body of the placenta,—it is not found to descend far into the vagina; and,—the hand being introduced into the uterus to investigate the nature of the difficulty,—the induration and the firm adhesion may be felt. When the placenta thus coheres to the uterine surface, there are different practices which may be adopted for its removal. First, we may endeavour to break through the connexion, by managing the placenta in the ordinary manner; except that we draw with a little more resolution that ordinary;—care being taken to avail ourselves of those moments when the womb is in action, and the pains are felt. Again;—If, as may be expected, the after-birth cannot be abstracted in this manner,—the cord breaking, and the body of the placenta tearing away,—we may then endeavour to overcome the difficulty by another method; namely, by passing the fingers between the placenta and the uterus;—so as, by peeling, to detach the one from the other. Should the adhesion be firm, however, we may also fail in this mode of detachment; and it then becomes necessary to have recourse to a third expedient. The hand being in the uterus, the operator must cautiously tear away, piece by piece, that part of the placenta which has not become scirrhous; leaving each morsel, after detachment, in the uterine cavity, and proceeding to the separation of another; until all that part of the after-birth which is not scirrhous and adherent, has been separated from the rest. When the healthy portion of the placenta has thus been separated from that part which is diseased, we may bring away from the uterus all the different portions at once; and it is better to abstract in this manner simultaneously, than to remove each portion separately; for the latter method of operating demands the repeated introduction of the hand. The detached pieces of the placenta being thus withdrawn, the accoucheur,—introducing the hand afresh,—carefully examines that part of the placenta which still remains adherent to the uterus; and brings it away, if that can be accomplished without violence; but should its safe removal be impracticable, he then contents himself with the separation of any loose portions of placenta which may have been left in connexion with the scirrhous mass; and leaves the scirrhous part itself in the womb. It is, I conceive, very desirable that the scirrhous portion of the placenta, if left, should be thoroughly cleared of those loose portions which are not scirrhous and adherent; for they may be expected to lose the vital principle afterwards, and to putrefy and give rise to offensive discharges in consequence. I have a preparation which exhibits a portion of the placenta connected, by scirrhous adhesion, to the uterus, In this case, there was much putrid discharge; and

the practitioner had failed in clearing the loose portions from the scirrhous part. But what is to be done, if the scirrhous part of the placenta, not to be detached, is left behind in the uterine cavity? In such cases, I believe, the woman must be committed principally to her own resources;—the practitioner palliating symptoms as they may arise.

The scirrhous portion of the placenta is said to have separated spontaneously, in some cases, after the practitioner had failed. More generally, however, if the patient recover, this diseased part wastes; sometimes, perhaps, wearing away under putrefaction; and, in other cases, wasting under a sort of absorption;—similar to that which, after delivery, removes the secreting excrescences which are formed upon the uterus of the ruminating animals. In all you do for these cases, beware of violence!

[The natural attachment of the placenta to the uterus, is of such a texture and kind, as very readily to admit of separation. But if that part of the uterus to which the placenta adheres should be in a scirrhous or morbid state, the placenta will partake of the disease. On the examination of the placenta of different women, there are not unfrequently found morbid appearances;—some being disposed to a putrid, others to a scirrhous or cartilaginous state; while in others there is a degree of ossification in the vessels, and sometimes perfect concretions. The adipose substance often found upon the placenta, in large quantities, is not of any importance. The difficulty of the separation will depend partly upon the placenta itself, and partly upon the state of the uterus. When, on the introduction of the hand into the uterus, there is found an uncommonly firm adhesion of the placenta, a perfect separation will be extremely difficult, and perhaps sometimes impossible, without the hazard of doing direct injury to the uterus. There is no security in these cases, but by taking time in the operation;—confiding chiefly in slow proceeding, both for accomplishing our purpose, and avoiding mischief. It has been said, that it is more justifiable to leave a portion of the placenta behind, than to continue very strenuous efforts to bring the whole away; for such efforts may give unbearable pain, and become the cause of immediate or subsequent injury. It must be acknowledged, that it is always a very desirable thing to bring away the placenta wholly and perfectly;—not only for the satisfaction of friends, but for the real good and interest of the patient. Even the membranes should be managed with caution; for though a portion or the whole of these might be left without danger, they occasion a fetor in the discharges, and often so much pain as to create a suspicion of disease. But without meaning to give authority to negligence or misconduct, to rashness or violence, we may suppose a situation in which we must submit to some evil, and in which all that is in our power is to choose the least. There can then be no doubt but that it is a less evil to leave a portion of the placenta behind, than to do any positive injury to the uterus, in striving to bring it away. For it has been found, when a portion of the placenta was left behind, that an exist-

ing hæmorrhage has ceased and not returned; and that this portion far sooner decayed, or was more readily digested or expelled, than the whole. I once saw an instance of a whole placenta retained till the fifteenth day after the birth of the child, and then expelled with little signs of putrefaction, except upon the membranes;—the whole surface which had adhered exhibiting marks of a fresh separation. The recovery of this patient was very fortunate; for I have seen several other cases of a similar kind terminate fatally. It is a conclusion generally arrived at, though not always warranted, that if a woman die with a portion of the placenta retained, her death ought to be attributed to it; yet it should be considered, that there may have been previous disease in the uterus; and that the event may have been really occasioned by violent though unsuccessful attempts to bring it away, and not by the retention. Sometimes the danger of these cases is known only to the practitioner; who is obliged to act according to exigencies, for which he may not be particularly prepared; but if he have before acquired a just knowledge of the principles of the art, explain himself ingenuously, determine not rashly, and proceed slowly, he will not do any thing for which he can be justly blamed, and will generally be successful.*]

From Inactivity of the Uterus.—After the expulsion of the fœtus, the womb sometimes lies quiet for a few minutes, and then acts again; —the fundus and body contracting, while the mouth and neck remain open. In consequence of this contraction, the uterine surface separates from that of the placenta; and the after-birth, lying loose in the cavity of the uterus, is easily expelled by a little further expulsory effort. Although, however, the uterus generally operates in this way, it sometimes remains inactive; more especially after laborious labours; and, in consequence of this inaction, the placenta is neither separated nor expelled; and this constitutes the next difficulty of which I propose to treat. Cases of this kind, in which the placenta is retained from the inertness of the uterus, may be recognised by the following indications;—the want of pains; the softness and large size of the womb, as felt through the abdominal coverings; and in the non-descent of the cord, when gently pulled. When properly managed, these cases generally terminate favourably;—more especially if there be little or no flooding; but if the accoucheur lay hold of the cord without reflexion, and pull the placenta, an inversion of the womb, and perhaps a fatal flooding, may be the consequence. In those cases, therefore, in which the womb is inactive, it should be your first object to secure contraction of the uterus, before you take away the placenta; and, for this purpose, you may wait for half-an-hour, or an hour;—compressing the uterus, with the hand placed above the symphysis pubis. When the womb is contracted, it will feel firm and hard; and somewhat larger than the head of a full-grown fœtus. When these indications are observed, you may proceed immediately to the abstraction of the placenta; which may

* Denman's "Introduction to the Practice of Midwifery."

be removed without further difficulty. If the womb be indisposed to contract, although you have waited for half-an-hour or an hour, you may then endeavour to stimulate it by some of the deobstruents formerly recommended; but these should not be needlessly tried. Beware of flooding! Beware of inversion! Beware of tearing the placenta, and leaving a part of it unobserved in the uterine cavity! Beware of the needless insertion of the hand into the uterine cavity! It may sometimes be necessary to peel the placenta from the uterus, by interposing the fingers; but this operation it is always desirable to avoid.

Errors liable to be incurred.—Three errors we are liable to incur, in managing cases of retained placenta, in all their different varieties. In the first place, when performing our operations, we may bruise, lacerate, or otherwise injure the softer parts, by proceeding roughly. In the next place, we may persuade ourselves that the after-birth must be removed from the uterus, come what may; and, in consequence of this persuasion, we may persist in our attempts to remove it by manual efforts, when it would be better to desist. Lastly, removing the placenta with difficulty, we may detach a portion by laceration; and, neglecting to examine the placenta very carefully after its abstraction, we may leave this portion, unperceived, in the uterine cavity. In dismissing this important subject, I must not omit to observe, that I have been called to one or two women, dead before my arrival; and, on inquiry, I have been informed, that the birth of the child had occurred two or three hours before; that a flooding, not very copious, had taken place afterwards; and that moderate force only had been used to abstract the placenta. On examining the body in these cases, a day or two afterwards, I have detected, in the uterus, a lobe of placenta (not a coagulum) about as large as a pullet's egg; but no laceration,—no obvious contusion,—no intelligible cause of death. Were these deaths the anomalous effects of moderate flooding, or of the retained portion of the placenta?

[It sometimes happens that, without the accompaniment of hæmorrhage, there is merely a retention of the placenta; which may be situated high up, and firmly attached to the uterus. Here you must endeavour to excite the contraction of the uterus, by rubbing and pressing the abdomen. If it produces pain, so much the better; as this is the indication of an action of the uterus by which the placenta may be separated. But suppose your efforts are not successful; what next are you to do? There is then no remedy but to introduce the hand, and bring away the placenta. How soon, and in what manner, is this to be done? If there is no hæmorrhage, the longer you wait the better. The placenta is never so safely expelled as by the efforts of the uterus; for when it is clawed from the surface of the uterus, there is generally a piece, or shreds of it, left behind; which will undergo putrefaction, occasion a highly offensive discharge, perhaps irritative fever, and even death. I would recommend you to wait at least two hours after the birth of the child. If

you wait four, so much the better; and, at frequent intervals during this time, use pressure and friction on the abdomen. If, after waiting that time, the placenta is not expelled, you must pass up your hand and separate it. You may find it either simply attached to the uterus, or imprisoned by the hour-glass contraction, with or without an attachment to the uterus. In either case, separate and extract it. It is dangerous to leave the placenta very long in the uterus. There is a practitioner in this town*, of very extensive practice, who says that hæmorrhage is always produced by attempts to separate and extract the placenta; he, therefore, sometimes leaves it for days in the uterus; and I have seen, in one week, two deaths from his adherence to this practice. One of the patients alluded to, when I first saw her, had a face like wax, a hurried respiration, with a rapid thready pulse. She had been delivered three days; and the placenta had not been removed. I asked her medical attendant where it was. "Is it attached?" He replied,—"I know not."—"When did you examine?"—"Last night I made an examination, and found the placenta in the vagina. I took it away. It stunk worse than any of your macerating tubs." The patient died, in a few days;—from irritative fever, produced by the presence of this putrid mass. During the three days which intervened between her delivery and my visit, she had repeated attacks of hæmorrhage; which had thus blanched her face. The face, indeed, in these cases, is usually pale; except during the exacerbations of fever, when it has a hectic flush. In the other case, I found the placenta lying within the orifice of the uterus. This patient also died, with similar symptoms. Nothing had been done but to apply vinegar-cloths to the pudendum. This treatment some practitioners think the ultimatum of our art; and when the patient dies, they say very gravely,—screwing up their mouths,—that every thing was done that could be done; and thus they console themselves for their ignorance! This treatment amounts to nothing. If the placenta is retained longer than two, three, or four hours, and you cannot (by friction, pressure, &c., on the abdomen) excite the uterus to expel it, you must introduce your hand into the uterus and bring it away; and until this is done, you must not leave your patient.†]

* London.

† Gooch's "Practical Compendium of Midwifery."

CHAPTER XIV.

COMPLICATED LABOURS.

SECTION I.—LABOUR WITH MONSTROSITY.

In practice we sometimes, though rarely, meet with fœtuses that deviate conspicuously from the ordinary make. These fœtuses have been denominated "monsters" *; apparently because our besotted predecessors, some who have undertaken the perilous task of forming human opinions, have been pleased to represent such morbid structures as portending something mysterious and alarming. And this has been believed! *Credo quòd impossibile est*†. A great fish has a large swallow; but superstition,—grave, argumentative, insolent, arrogant, silly superstition,—has a swallow still larger. It enjoys a sort of omnipotence in that way. Nothing is too big for it;—nothing too small! Alas, poor human reason! According to the mood of the mind, we may weep or laugh at thee!

Into the causes of monsters,—as the subject is rather physiological than obstetric,—I forbear at present to inquire. Suffice it to observe, that monsters sometimes, if not always, are of very early formation;—produced within a few months, or perhaps (in some instances) within a few weeks, after the commencement of gestation.

Rules for Management.—If it should so happen that you have under your care a case, in which the parts of the child are deficient,—provided you adhere to some of those wholesome rules which have already been prescribed,—you will probably experience but little difficulty in the delivery. Even if you know that there is a deficiency,—a monstrosity, it does not follow that you are, in a meddlesome manner, to interfere. Meddlesome midwifery is bad. Give a fair trial to the natural efforts; and,—the child being smaller, instead of larger, in consequence of this defect of parts,—it will come the more easily away.

In cases of *redundancy*, moreover, the child may be very strangely formed; and yet, after all, it may come away from the uterus with very little assistance from the accoucheur. It sometimes happens, that the pelvis of the patient is very large; and still more frequently it happens, where fœtuses are of monstrous formation, that they come away in the sixth or seventh month. In this way, therefore, their multiplicity of members is compensated by their small size, and the conformability of their soft texture. Were I called to a case in which I knew there was a redundant monstrosity, and where there

* From *monstrum*, a strange event, supposed to foreshadow things to come.
† "I believe it, because it is impossible."

were two fœtuses formed, I should, in general, give a fair trial to the natural efforts (say for four-and-twenty hours);—unless some dangerous symptom obviously demanded delivery. If dangerous symptoms occurred, or if the patient had been in strong pains for four-and-twenty hours,—the monster not descending,—I should then have recourse to the lever, the forceps, or the perforator;—either the one or other, according to the circumstances of the case.

The surgeon who had under his management the case I mentioned,—in which the two fœtuses, of full size, are in all respects well formed, with the exception of their thoracic and abdominal junction,—perceiving something monstrous in the construction of the fœtus, deemed it necessary to do something to facilitate the labour. To this end, therefore, he took a pair of scissors, and tried to cut away the lower part of one of them;—a very rough expedient, in which he was unsuccessful. He then waited; and the consequence was, that the delivery which he could not accomplish, was completed spontaneously by the natural efforts of the uterus;—the fœtus coming away with only a small rent of the perinæum; so that, in these cases, you are not rashly to despair, and to give up all expectation of a natural delivery. As in every other case, so here, meddlesome midwifery is bad. Give, therefore, a fair trial to the natural efforts; and if dangerous symptoms supervene, or if the labour make little or no advance under a full action of the uterus for twenty-four hours after the discharge of the waters, you may then properly enough have recourse to your instruments;—to be used in the way I have already explained at large.*

[This subject affords very little room for practical observations; because the symptoms, in early pregnancy, are not different from those in natural births; and because the fœtus, whatever be its structure, is usually expelled easily and regularly, at the time of labour. We might, indeed, be mistaken in our opinion of a presenting part; but as, in any case of real difficulty, the needful investigation would discover the nature of the case; and as we should have little to consider but the simple exclusion or extraction of the monstrous fœtus, without injury to the mother, the general rules of practice would be readily applied to every exigence arising from this cause.†]

SECTION 2.—LABOURS WITH CONVULSIONS.

Premonitory Symptoms.—Convulsions from pregnancy or delivery are by no means common. Yet this is a case with which we occasionally meet; and great danger attends it. When a patient becomes the subject of convulsions, she may be seized without premonitory symptoms. The latter, however, sometimes occur; more especially in the convulsions of pregnancy. Tremors of the whole

* See Pages 296 to 340.

† Denman's "Introduction to the Practice of Midwifery".

muscular system; shudderings; crampy pains in the region of the stomach; cerebral afflux* of blood; flushing of the face; throbbing of the carotid arteries; severe and splitting pains of the head; stammering, perhaps, and failure of utterance;—these constitute some of the leading prognostics. Sometimes the patient becomes deaf; and, more frequently, her sight is affected;—dazzled with light, perhaps, or blinded. When the fit supervenes, the woman becomes entirely insensible; and, together with this insensibility, she has a violent commotion of the voluntary muscles. The arms and legs are agitated; the features flicker; the eyes are distorted; the tongue is involuntarily pushed forth from the mouth; and, perhaps, there is a spasm of the levators of the jaw;—closing the teeth, and wounding the tongue. A cork well secured between the teeth, may sometimes prevent this. Respiration is sometimes affected; and the patient may breathe with a sort of hissing noise;—as has been well observed by Denman; so that, even in the next chamber, you may hear her breathing. Foaming is by no means uncommon; and as this foam is not unfrequently mixed with blood, it gives to the patient, in the eye of friends, an alarming and even terrific appearance. When these attacks have continued for a few minutes,—a longer or shorter period in different cases,—we find the patient recovering more or less completely. In most attacks of convulsions, where the attack is not severe, the spasms cease, and the patient seems very well;—awaking up as if from a slumber. When asked how she feels, she replies, perhaps,—"Well!"—nor is she aware of the attack to which she has been subjected. It is not always, however, that the recovery is complete. Sometimes the patient lies apoplectic, or in a state analogous; or she is deaf, or blind, or incapable of speaking, or all three; or the limbs are benumbed. In fine, it seems as if the sensorium has received some permanent injury; and that the corresponding parts of the body suffer in consequence.

Three Varieties of Convulsions.—In practice, I find it useful to divide convulsive cases into three kinds or varieties;—according as they occur after parturition, during labour, or in the progress of gestation. Two cases I have now seen, in which the attack of convulsions supervened after delivery;—one of the patients doing perfectly well notwithstanding. Of these cases, one was shown to me by my friend Mr. Gaitskell; and large bleedings completely cured her. The second was shown to me by Mr. Masterman. Large bleedings were resorted to here; but the patient never recovered; and, in a few hours, died. Inspection was refused. I suspect that these attacks of convulsion after expulsion of the fœtus, are more dangerous than attacks occurring during the time of delivery.

Convulsions during Gestation.—Again, we sometimes meet with patients prone to cerebral afflux; and, in such persons, convulsions occur sometimes in the middle and earlier months, but still more frequently in the end of pregnancy. When convulsions attack a patient in the progress of gestation, she may have a single fit only, or several;—

* From *affluo*, "to flow upon."

the intervals being usually irregular and somewhat long;—not of a few minutes only; but of hours perhaps, or days. When first the attack occurs, it may happen that, on making examination, you do not find a single symptom of labour. The fœtus is unapproachable; the uterus is shut; and there is perfect freedom from uterine pains. Sooner or later, however, if the fit continue, parturition commences of itself,—without the interference of the accoucheur; and,—the womb opening, the membranes protruding, and the liquor amnii flowing,—a sudden emersion of the fœtus occurs. This may happen, not only where the patient has pain, and may give an account of her feelings; but in those cases, also, in which the disease is associated with apoplexy; so that, during the whole time, the woman is either comatose or convulsed. Hence it sometimes happens (and let this be remembered) that, under convulsions, delivery may take place unknown to the attendants;—the child perhaps being, in consequence, suffocated in the bed. In these cases, therefore, you should give directions that the patient be strictly watched; and that, on the first appearance of blood or pains, obstetric assistance should be summoned.

A lady, in the end of her pregnancy, was seized with convulsions. Her attendant was sent for; and decided that there were no indications of labour, and that a stay was unnecessary. Quitting the house, then, the midwife returned on the morrow, early in the morning; when the patient was found dead. The child, too,—the birth of which no one seems to have suspected,—lay lifeless beneath the clothes. In managing human affairs, the *men* have done so many foolish things, that they have no claim whatever to treat with severity the errors of the *women*. Allow me, however, to remark that, in this instance, the error (a great one) was committed by a *female* practitioner. "Felix quem faciunt aliena pericula cautum!"* Remember the story. It is worth a parable, or an apologue; for it conveys a useful truth.

Convulsions during Labour.—In laborious labours, or in preternatural or natural parturition, convulsions still more frequently occur; and, in these cases, a paroxysm of convulsions sometimes accompanies every pain, so that if the pains thicken, the convulsions multiply. Hence, in these cases, if, during the fit, you lay your hand on the muscles of the abdomen, you will find them very hard; and if you place the finger in the os uteri, you perceive dilatation and the advance of the fœtus. Be at the bed-side, therefore, in these convulsive cases, and watch; for, as the paroxysms return, labour may advance, and the fœtus may suddenly emerge.

Causes.—Having given you the treatment, and the characteristic history of this disease, I shall not enter largely into its causes; and the rather, because disquisitions of this kind are usually involved in night and chaos. A few remarks, however, I will venture. Should you ask me, then, in what manner these convulsions are produced, I should reply, that the more probable and immediate cause of them,

* "Happy is he who learns caution from the dangers of others!"

is pressure on the brain; and perhaps on the spinal marrow also. This pressure sometimes results from the effusion of blood; still more frequently from effused water; and, most frequently of all, from mere congestion. If you were to ask me how is it that these congestions of blood are produced, I should reply,—"Not, in most instances, by general plethora; but rather from an increased action of the cerebral vascular system;—the carotid arteries, and perhaps the vertebral." Indeed, in the adult, if we examine the carotids, we may sometimes see the pulse beating and jumping in the neck. Whether "men are but children of a larger growth," I do not stay to inquire; but I am sure that *women* are;—at least in constitution. Now, that the convulsive and hydrocephalic affections of young children, are connected with an increased action of the cerebral vessels, is certain. In young children, by placing a finger on the fontanel, you may examine the cerebral circulation, more readily than the circulation in the wrist. Where there is a disposition to convulsions or hydrocephalus, in infancy, on putting your fingers upon the fontanels, you will often find that the brain is beating most strongly. Nor is it necessary to touch it for this purpose; for, if we take off the cap when the vessels are in action, the pulsatory play of the brain may be seen distinctly by the eye. An increased action of the vessels, produces an accumulation of blood in the genitals, in the wattles of birds, and in the breasts of women during suckling; and, these points considered, it is not (I think) improbable that, in these convulsions and convulsive propensities of women, cerebral congestion,—with pressure and irregular circulation, and increased action of the carotid and vertebral arteries,—has a large share in producing the disease. In support of these opinions respecting the more immediate nature of puerperal convulsions, the following symptoms may be also stated:—the flushing of the face; the throbbing of the carotids; the enlargement of the features; the heat of the scalp;—not to mention other symptoms which are premonitory of the disease, and which seem to indicate the afflux of blood upon the head. Hence, too, the help derived from large bleedings;—especially from the cephalic vessels.

In concluding my remarks on the causes of convulsions, I may add an observation which I once accidentally made on the dog; and which seems to me well fited to illustrate the cause of those affections. Anxious to know what are the utmost powers of circulation by anastomosis*, in the dog, I contrived an instrument, by which, in this animal, I could close or open the thoracic aorta at pleasure; when, among other observations, I found, the following facts worth notice:—If I bled the dog before I tied the aorta, he lived for some hours; but if I secured the artery without a previous bleeding, he had an attack of convulsions resembling very much the puerperal

* From *ava*, *through*; and *στομα*, *a mouth*;—alluding to the junction of the vessels with each other by their mouths.

convulsions of women; and this attack could be relieved or renewed by opening or closing the aorta. When I opened the dog, I discovered, on the surface of the brain, a few small clots of effused blood, not much bigger than a pea. The explanation of the phenomenon was this:—When the aorta was tied, it collapsed below the ligature, and emptied itself into the vena cava. Then the blood came, in large quantities, from the cava, through the right side of the heart; and from the lungs, into the left side of the heart, and the aorta;—so as to reach the ligature by which its further progress was intercepted; and by which it was prevented from making its entrance into the parts below, or behind the thorax. As in convulsions, therefore, so here,—the blood accumulated in the upper or anterior parts of the system; and convulsions and death were the result.

[It is remarkable that puerperal convulsions occur so rarely in the country, that I have not been able to make some very intelligent men, of great experience, comprehend them;—they having never seen a single example. The few cases of which I have been informed, out of this city*, have happened in large towns, or among those who might be reckoned in the higher ranks of life. It has also been justly observed, that women are far more liable to puerperal convulsions in certain years and seasons, than in others. We may therefore conclude, that a remote cause of these convulsions is to be sought for in some change made in the constitution, by the customs and manner of living in cities and large towns;—especially among those who too zealously devote themselves to music; or in the particular influence of the air; though there may also be immediate causes capable of producing these convulsions in any situation, or in any circumstances.

The female constitution becomes infinitely more irritable than usual, in consequence of the changes made in the uterus during pregnancy;—every part of the body readily participating with the state of the uterus. This increased irritability, when not excessive, and only affecting in one particular manner parts not essential to the economy of the constitution at large, is so far from being injurious, that it proves eventually salutary to the parent or child. But we may conclude that, in a constitution become unusually irritable from one cause, any additional corresponding cause of morbid irritation may often excite different and more violent effects, than if that constitution had been at rest, before the application of the second cause. It is therefore reasonable to believe,—and the fact is proved by the daily occurrences of practice,—that the constitution which a delicate mode of education can scarce fail to give,—still further augmented by habits of indulgence, and the eager pursuit of pleasure in more advanced age,—renders such women at all times, and in all situations, more liable to every kind and degree of nervous effects; that the state of pregnancy make them still more disposed to the same affections, and to convulsions from slighter causes, than those women

* London.

who, by education, and habits of living, are seasoned (as it were) against impressions which might affect their minds or constitutions; for it is to both these we are to look for the causes of convulsions.

That the state of the mind does very often dispose women to puerperal convulsions, and other dangerous nervous affections, there are numerous proofs to be drawn from the histories of practice;—and a very interesting case is recorded in the Bible*:—

"And his† daughter-in-law, Phineas's wife, was with child,—near to be delivered. And when she heard the tidings that the ark of God was taken, and that her father-in-law and her husband were dead, she bowed herself and travailed; for her pains came upon her. And about the time of her death, the woman that stood by her said unto her,—'Fear not; for thou hast borne a son!' But she answered not; neither did she regard it."

Three remarkable circumstances are here mentioned:—

1. The cause;—the violent agitation and distress of the mother's mind.

2. Her state of insensibility at the time of her delivery.

3. The child was born living; though the mother died immediately after his birth. This has been more particularly observed among those women whose unfortunate situations render pregnancy an evil instead of a blessing; for,—from their seclusion from and deprivation of the comforts of society, their sense of present ill, or apprehension of future distress,—such women are especially subject to convulsions at the time of labour, and to become maniacal after their delivery. It has also been observed that, from violent and sudden impressions on the mind,—more generally from terror than any other,—pregnant women have either immediately had convulsions, or fallen into a state which showed a great propensity to them; though they did not appear before the accession of labour. The carriage of a lady who was going on a party of pleasure was broken down. She was near the time of her lying-in, and was very much frightened; though she received no apparent injury. When she fell into labour, the latter was preceded by convulsions; in which she died undelivered. In some cases, however, when the previous state has, apparently, been that of perfect health, and without any known predisposing case,—the first tendency to labour has produced convulsions; which have occasionally returned till the child was born, or even after its birth; though, in other cases, the convulsions have ceased, and the labour has proceeded with great regularity. But there is often reason to suspect, that when convulsions have once appeared, they make to themselves new causes of their return; for they have continued for many hours, or even days, after delivery; and the patients have at length recovered. There is likewise reason to think, that causes seemingly too trifling to produce convulsions, have sometimes been equal to the effect; for I recollect two instances of women who had convulsions at the time of labour, preceded by violent headachs,

* 1 Samuel, Chapter 4; Verses 18 and 19. † Eli's.

brought on, as it appeared, by the use of some mercurial preparation, mixed with the powder used for their hair.

But it is not only in weak and very nervous habits that convulsions occur; for they more frequently happen in plethoric constitutions; and are accompanied with a strong action of the vascular system in general, or of some particular part of the body. With such different constitutions and indications,—some with symptoms of debility and depression, and others of phethora and fever,—the method of treatment must of course vary; and great judgment will be required to suit the proper method (if that can be discovered) to the state of every individual patient;—both in the degree and extent to which it ought to be carried.

Besides those general affections of the body, which may be supposed to give a disposition to convulsions, affections of different parts,—such as the intestinal canal or bladder, if they should be too much loaded or distended,—may have the same power*. But, in the female constitution, the uterus is the great source of morbid irritability; and, of course, every cause capable of disturbing this part beyond a certain degree, or in an unnatural manner, may affect the whole frame;—according to the kind and degree of the original affection, or according to the previous disposition. Yet all the parts of the uterus do not appear equally liable to be disturbed; for the os uteri is evidently the most irritable part, even in a natural state, as well as when disturbed by any morbid or adventitious cause. In a case of this kind, which I† published forty years ago, I observed,—"When the os internum began to dilate, I gently assisted during every pain; but,—being soon convinced that this endeavour brought on, continued, or increased the convulsions,—I desisted, and left the work to Nature." Hence it appears that, in pregnant women, on the first tendency to labour, the changes which the os uteri undergoes, often occasion a variety of nervous symptoms; and that these may be brought on, increased, or continued (if they before existed), by artificial or imprudent dilatation of that part in the course of labour, when it is unusually rigid; or when it has an increased degree of irritability occasioned by inflammation. A woman, whose case was communicated to me by Dr. Mackenzie,—though the convulsions ceased after delivery,—died, on the fifth day, of puerperal fever. In almost every case of convulsions that I saw in the early part of my practice, there was evidently, after delivery, a greater or less degree of abdominal inflammation; but by the present practice of liberal bleeding, this has probably been prevented.

It has been presumed, that the pressure made by the expanded uterus upon the descending blood-vessels, causing a regurgitation of

* Ad spasmodica, quæ ex uteri vitio proveniunt, pathemata concitanda, non opus semper erit, ut materia corrupta et vitiata, utero inhærens, proxime et immediatè id efficiat.—*Hoffman, on Hysteric Diseases.*—"In order to excite spasmodic affections, depending on disorder of the womb, it is not always necessary that corrupt and vitiating matter should be present in the uterus itself."

† Dr. Denman.

the blood to the superior parts of the body, particularly produced convulsions, by overloading the vessels of the brain. This opinion applies to a cause very general indeed; and, if true, must have its effects so frequently as not to remain in doubt. But they sometimes first come on, or continue with equal violence after the birth of the child, when this presumed cause is removed.

It is said that women are far more liable to convulsions in first, than in subsequent labours;—which is true; and more frequently when the child is dead than when it is living; but this I cannot allow. For, when women have convulsions, the death of the children ought generally to be esteemed rather an *effect* than a *cause*; for they have very often been delivered of living children while they were in convulsions; or of dead, and even putrid children, without any tendency to convulsions. Some women have also had convulsions in several successive labours; but having had them in one, they generally, by the precautions taken, or some natural change, escape them in future. Lastly, I was for many years persuaded, that convulsions happened only when the head of the child presented; but experience has proved, that they sometimes occur in preternatural presentations.*]

[There are two classes of females particularly liable to puerperal convulsions;—the plethoric, and the irritable. The irritability which disposes to them, is common among fashionable ladies; whose nervous systems are often very susceptible. Depressing passions of the mind frequently produce this complaint. Unmarried women, who have passed the latter months of pregnancy in solitude and wretchedness, are very likely to be attacked with it; and in lying-in-hospitals which admit unmarried women, it is found that a large proportion of cases of puerperal convulsions occur among females of this class. The conclusion to be drawn from this difference in the origin of the complaint is this:—Where there is preternatural susceptibility of the nervous system, we must (if possible) soothe it; where there is plethora, we must empty the vessels.†]

(*a.*) *Treatment of Convulsions.*

Convulsions being a very alarming disease, a variety of remedies have been recommended;—every one being laudably anxious to interpose some relief, in cases of so much danger. To avoid coufusion, however, I am accustomed to divide these remedies into two classes;—the first comprising those which constitute our principal reliance; the second comprising those which, though not to be forgotten, may be regarded as of small importance. In an affection like this, which requires promptitude and decision, it is of the greatest importance to keep your minds fixed on the leading and principal remedies;—careful not to lose yourselves in the administration of those remedies which can have but small effect upon disease.

The Abstraction of Blood.—It is now, I believe, well agreed be-

* Denman's "Introduction to the Practice of Midwifery".

† Dr. Gooch's "Compendium of Midwifery".

tween those who have seen much of this formidable malady, that a main remedy is the abstraction of blood from the vascular system, as largely as the patient can safely bear. So long as the line of prudence is not exceeded, the more largely you bleed, the better. Not that these copious venesections are wholly unattended with danger; but that the convulsions themselves are so formidable and urgent, and the power over inanition is, in the present state of our knowledge, deemed to be so great, that the risk may be reasonably incurred, in order to give the patient this chance of recovery. Twenty, thirty, forty, fifty, sixty, or seventy ounces of blood, have sometimes been taken away from a woman of ordinary stature and moderate plethora, in the course of six or twelve hours. I once abstracted from a patient seventy ounces of blood, in the course of two or three hours; and she did not ultimately suffer from inanition. I was with a medical friend at the time. I tried the smaller bleedings; but they were ineffectual. This patient recovered. Be steadfast in these cases; but not rash! We little know how many under disease, perish by large bleedings. The lance has killed its thousands; and the lancet ——*. Timely transfusion, perhaps, may hereafter diminish the number of these victims.

In these cases,—I repeat it,—be steadfast; but not rash! Watch your patient diligently. If the smaller abstraction,—if, for instance, a bleeding of twenty or thirty ounces be sufficient, let this content you; but if you find the convulsions continue, and the afflux of blood remains, with due prudence your bleedings must be repeated.

Manner of abstracting Blood.—There are different ways in which the blood may be abstracted. Two modes are the most convenient;—venesection at the arm, and that of the external jugular vein. The latter is an operation which all ought to be able to perform with dexterity. Venesection of the jugular is peculiarly advantageous; because, in this mode of operating, you take away the blood from the head. More frequently, however, patients are bled from the arm; and, as our purpose is to relieve the vascular system generally, as well as the head,—for the latter is the principal object,—those bleedings from the arm may do very well. After brachial venesection, you ought to bind the arm with more than ordinary care; because, if you apply the bandage with inattention, a large quantity of blood may issue from the wound, in consequence of a displacement of the bandage during any subsequent struggles.

Remarks on Bleeding.—Bleedings from the arm are more likely to occur, than bleedings from the neck. Repeatedly have these bleedings taken place, in consequence of detachments of the dressings; and, I believe, it was the observance of the benefit derived from these large accidental bleedings, that first led practitioners, within the last few years, to resort to copious venesection. Remember further that, in order to have the full benefit of your bleedings, you must

* "Saul has slain his thousands; and David his tens of thousands."—"*The First Book of Samuel*"; *Chapter* 18; *Verse* 7.

adopt them early. Hours,—nay, minutes,—are not without their importance here. In cases of this kind, blood may be effused on the brain; and I know that water is sometimes found on its surface, and in its ventricles. When these effusions have occurred, there is little to be expected from the bleeding; but so long as the fluids are contained in the vessels, venesection, if large and early, will be powerfully effectual. Does arteriotomy possess peculiar advantages in convulsions?

[The blood should be abstracted as *rapidly* as possible, from a large vein, and by a large orifice; that the head and vascular system may be quickly enfeebled. I am convinced that, in these cases, if blood be drawn off *slowly*, the arterial system, in consequence of being relieved of a part of its load, acts with renewed vigour, and augments the existing mischief. The nearer to the part affected we can bleed, the greater will be the relief afforded. Hence,—as dissection proves to us, that the brain invariably suffers in this disease, to a greater or less extent,—we should lay it down as a rule to bleed from the jugular vein or veins, whenever practicable; or from the arm or arms, from large orifices; for (to repeat) the shorter the time a given quantity of blood be drawn in, the greater will be the advantage resulting from it. Hence, I have, in several instances, bled in both arms at once.*]

Evacuation of the Alimentary Canal.—In convulsions, again, there is a second remedy, which I wish you to look upon as of very great importance; namely, the thorough evacuation of the alimentary tube;—the stomach and bowels. In some cases, indeed, the patients (lying comatose) do not easily swallow; but in most instances, if you watch the proper moment, deglutition may be accomplished. Senna-and-salts, a smart dose of calomel, croton-oil, &c., may be thought of in these cases. Senna-and-salts will answer perfectly well, where the patient can swallow. Calomel and the croton-oil may have the preference, when you want to give a dose that lies in a very small compass. Powerful purging may be produced, by rubbing over the tongue the cork of the croton-oil bottle. Should gastric aperients fail, after a trial of three or four hours, injections into the rectum may be tried with great propriety; and these remedies are more especially useful when they are superadded to purgatives taken by the mouth, some few hours before. Two or three scruples of the compound extract of colocynth, half a pint of water, and as much soap as will blend the whole, may be thrown into the rectum every half-hour or hour, till it acts. Where patients are seized with fits of convulsion, and you have bled them, if there is any thing wrong with the stomach, you may give an emetic. The sulphate of zinc is rather a rough remedy, but its promptitude recommends it; and these are cases in which no time should be lost. Ipecacuanha is a medicine that may, in most instances, be given safely enough; and a drachm of the powder being mixed with two ounces of water, and shaken, one quarter of this mixture may be administered every

* Dr. Dewees's "Essays on Puerperal Convulsions"; Page 321.

twenty or thirty minutes, till it acts. Here, then, is a second appropriate remedy in convulsions;—a thorough evacuation of the alimentary tube. It is more especially proper in those cases which tend to the chronic form.

[Immediately after venesection, we should never omit cold applications to the head; and the exhibition of ten grains of calomel, and from five to ten grains of camphor, previously reduced to a powder by a few drops of spirit; with or without an equal quantity of musk; and, shortly afterwards, two or three drops of croton-oil. These medicines may readily be administered by mixing them in sweet butter; and introducing a portion, from time to time, over the root of the tongue, upon the end of an ivory letter folder, or upon the handle of a spoon. My experience of the excellent effects of camphor, is fully confirmed by Dr. Hamilton; although Chaussier expresses an unfavourable opinion of it, and of all heating antispasmodics. The recently published observations of Mr. Michell, are strongly in favour of musk; which he gives in doses of from one to two scruples.*]

Refrigeration of the Head.—When patients are affected with convulsions, you will generally, if not always, find symptoms of a cerebral afflux of the blood. The carotid arteries are thumping; the scalp is hot; the face is swollen; and the features are suffused and bloated. Hence the importance of another capital remedy in convulsions;—I mean the complete refrigeration of the head. A chordee is promptly relieved by plunging the organ into water. The arteries are quieted, and the parts collapse. In like manner, if the patient labour under cerebral turgescence, produced by an increased action of the carotids, apply cold water, and the action may sink. There are different modes in which the head may be refrigerated; and, provided you accomplish the object thoroughly, I am careless how you proceed. In ordinary and urgent cases, you may, if you please, very plentifully besprinkle the head and neck of the patient, by means of the hearth-brush dipped in cold water. If the case be more obstinate, it may be necessary to remove the hair; but as the latter is looked on by young ladies as a very agreeable ornament, it ought not, I think, to be wantonly sacrificed. Should this refrigeration fail, you may apply ice; which, in this metropolis, may be commodiously bought, by the pound, at the fish-mongers or pastry-cooks. Expel the air from a bullock's bladder, and half fill it with the ice; it may then be applied to the head in the manner of a cap†. You may also refrigerate the head very much, by pouring cold water upon it; and this, in some very bad cases, has been done with very great advantage. You draw the patient's bust beyond the bed-side;

* Dr. Copland's "Dictionary of Practical Medicine"; Part 2; Volume 1; Page 433; Column 1.

† The reason why ice is a more powerful refrigerant than water, is the great quantity of heat which is absorbed (becoming *latent*) in converting it from the solid to the liquid form; and also that while any of the ice remains unmelted, the water remains at the same temperature as the ice itself. The bladder is only to be *half*-filled with ice, in order that it may adapt itself to the shape of the head.—*Dr. Rogers.*

and, placing a tub or reservoir beneath the head and shoulders, you pour water on the head from a proper vessel, till the features shrink, and the scalp is thoroughly refrigerated. I know of one or two cases, in which two or three pailfuls of water were poured over the head, with advantage. The practice, like the disease, is a very rough one; but ought not to be lost sight of. It is a sort of homely shower-bath. In one or other of these modes, then,—by sprinkling, by iceing, or by pouring water on the head,—the latter is to be refrigerated. Resolutely beat down the action of the cerebral vessels; and you may thus diminish the quantity of blood in the head.

On the Propriety of Delivery.—But here you will ask,—"Is there no other remedy to which we can have resort? Bleeding, purging, and refrigeration;—is this all? Is it not further proper, in all cases, to deliver the patient?"—No, it is not. It is, I believe, an ascertained fact, that more women die when they are officiously delivered by force (as it is called), than when they are committed to their own resources. That delivery is a powerful remedy in convulsions, there can be no doubt;—for after the fœtus is expelled, the convulsions usually cease; but this remedy requires much discretion.

Rules for Delivery.—The rules with respect to delivery lie principally here;—meddlesome midwifery is bad. This is the first article of the obstetric creed. If, then, you can relieve your patient by bleeding, purging, and refrigeration, it is not fitting that you should have recourse to artificial delivery. Exceptions there may be; but this is the general rule. In considering, therefore, what convulsive cases are fitted for delivery, we may, in the very outset, reject all such cases as admit of relief by the other means.

Again. When convulsions occur, the condition of the ovum, with respect to delivery, may vary; for sometimes the head of the fœtus may lie so low, and the parts may be so lax, that the child may be removed by the forceps without difficulty. In other cases, again, the child may be altogether above the brim; and yet,—the mouth of the womb being capacious, and the parts lax, and the uterine fibres continuing in great measure at rest, it may be neither dangerous nor difficult to deliver by turning. Nor must it be forgotten that, in those cases in which the convulsions occur in the latter or middle months,—at the commencement of the disease especially,—the womb may be firmly shut. These considerations premised, let us suppose that you have one of those undesirable cases, in which delivery is indicated; inasmuch as your other remedies,—your bleedings, your purgings, your refrigerations,—have been tried without effect. What remains to be done? If,—without bruising, tearing, or otherwise injuring the genitals,—you can abstract the ovum, do so, if you please; but if you find the case is such that you cannot deliver without risk of injury, then leave the system to its own resources; for, in my mind, it is far better that the woman should die convulsed in the hands of Nature, than she should perish by the cruel and savage operation of rough and unskilful midwifery. I should wish this principle to be acted upon in my own family.

In those cases, again, where delivery is not to be accomplished without the risk of contusions and lacerations, you should still keep a close eye on the case;—making frequent examinations (say every half-hour or hour); for, as in floodings so in convulsions, sudden and extensive changes occur in the condition of the parts; and though in the morning you may not be able to deliver the patient, yet in the evening you may find the delivery easy. Nay, in half-an-hour only, in some cases, a great change may occur; and, when circumstances conduce, the delivery should be accomplished with promptitude.

Here, then, are some general principles, which, combined with the observations I have made on previous occasions, may keep you near the right line of practice, in these distressing cases. Let it be your first principle not to deliver artificially, provided you find the convulsions can be subdued by other means; unless, indeed, in those anomalous cases, in which the ovum can be abstracted without the least difficulty. Again. In those cases in which bleeding and purging and refrigeration fail, and where delivery is to be looked upon as the only remaining effectual remedy, let it still be your principle to have recourse to delivery only in those cases in which the abstraction of the fœtus can be easily and safely accomplished; since death from convulsions is preferable to death by the hand of the accoucheur. Lastly, if delivery is desirable in consequence of the failure of other remedies, should the state of the parts forbid it, you will act wisely in making repeated, though cautious, examinations; since sudden and favourable changes may occur;—completing the delivery by artificial means, if necessary, as soon as circumstances conduce. I conclude this topic by remarking, that I should be sorry to undervalue the efficacy of delivery in these cases; but moderation "is profitable unto all things"*; and I cannot bear to hear of delivery by force. *Arte, non vi.* In a scientific midwifery, force has no place. Some practitioners seem to be too fond of the turf.

[It will frequently happen that the os uteri does not dilate during the most violent convulsions. Hence Chaussier recommends the application of a pomade containing belladonna. This preparation consists of two drachms of the extract, softened with an equal quantity of water, and triturated with about an ounce of prepared lard. A piece, the size of a small nut, is to be introduced into a female syringe, open at the extremity, and conveyed to the os uteri; where it is to be applied by pushing onwards the piston. In about half-an-hour, it is said, the rigidity subsides, and the labour proceeds. In cases of unyielding rigidity of the os uteri, Van Swieten advised an incision to be made through its margin. Dubosc, and subsequently Lauverjat, Bodin, and Contouly,—who considered it perfectly justifiable, after blood-letting, the warm-bath, and other means usually employed, had failed,—have had recourse to this operation.†]

* St. Paul's First Epistle to Timothy"; Chapter 4; Verse 8.

† Dr. Copland's "Dictionary of Practical Medicine"; Part 2; Volume 1; Page 434; Columns 1 and 2.

[There are, occasionally, puerperal convulsions of a less formidable character than those above considered; consisting (as mentioned by Burns) rather of unusually violent paroxysms of hysteria, than of true convulsions. These may, however, occur during, or immediately after delivery; and, by the inexperienced practitioner, may be very readily mistaken and treated for the real puerperal convulsions. The distinction may be easily recognised by the absence of stertor and perfect coma; by the great quantity of flatus discharged from the stomach, and heard rolling about the intestines; by the globus hystericus; and by a pulse rapid and remarkably contracted during the fit, and becoming slower and expanded in the intervals. The limbs, and particularly the body, are as strongly agitated as in the true puerperal disease; but the face is much less so. There is no necessity, in these instances, to bleed the patient, or to proceed to delivery, if that has not already taken place. All that is required is free administration of the customary antispasmodics;—camphor, æther, ammonia, asafœtida, &c. Cold water should be freely dashed upon the face; and much advantage may be obtained by warm frictions, and stimulating applications freely applied to the stomach, bowels, and spine; for they produce or assist the expulsion of the flatus from the stomach, with great and rapid relief to the patient. Perfect quietude of mind and body is afterwards very important.*]

Subordinate Remedies.—In the treatment of convulsions, there are many other remedies. They are of less importance than those we have already considered; but as every auxiliary means may sometimes prove beneficial, I shall proceed to enumerate some of them. Leeches to the temples are generally innocent; and if we apply fifteen or twenty, they may sometimes, perhaps, be productive of considerable benefit, in relieving the head. A fit of convulsions while cupping-glasses were upon the patient, would be very incommodious. If you choose, however, cupping may be tried between the paroxysms. If the disease be obstinate or pressing, the head may be shaved;—more especially if the scalp be hot; but an operation of this kind need not be wantonly recommended. Of blisters I have made but little use. In the opinion of some, however, they are of real efficacy; and, therefore, should not be forgotten. Rubefacients†

* Dr. Locock, in the "Cyclopædia of Practical Medicine"; Volume 1; Page 482.

† Dr. Duncan includes Rubefacients and Escharotics among Epispastics;—as follows:——I. Vegetable.—1. Delphinium Staphisagria (Stavesacre). 2. Ranunculus Acris (Butter-Cup). 3. Ruta Graveolens (Rue). 4. Guaiacum Officinale (Guaiacum). 5. Sinapis Alba (White-Mustard). 6. Cochlearia Armoracia (Horse-Radish). 7. Amyris Elemifera (Elemi). 8. Melaleuca Leucadendron (Cajeput-Oil). 9. Eugenia Caryophillata (Cloves). 10. Gummi-Resina Ammoniacum (Ammoniacum). 11. Gummi-Resina Sagapenum (Sagapenum). 12. Bubon Galbanum (Galbanum). 13. Pastinaca Opoponax (Opoponax). 14. Anthemis Pyrethrum (Pellitory of Spain). 15. Capsicum Annuum (Cayenne-Pepper). 16. Laurus Cinnamomum (Cinnamon). 17. Laurus Sassafras (Sassafras). 18. Laurus Camphora (Camphor). 19. Daphne Mezereon (Spurge-Olive). 20. Euphorbia Officinarum (Euphorbium). 21. Piper Nigrum (Black Pepper). 22. Piper Longum (Long Pepper). 23. Pinus Larix (Venice-Turpentine). 24. Juniperus Sabina (Savine). 25. Arum Maculatum (Wake-Robin).

(especially of mustard) to the feet, more particularly where the woman is comatose, should not be neglected *. The warm-bath† I should more frequently recommend, if it could be employed in private practice, as commodiously as in puerperal hospitals. Nervous medicines (as castor, camphor‡, æther, valerian, opium, and the like), are not to be overlooked. If opium determine to the head, it will probably do mischief; if it open the cutaneous pores, and diffusely support the circulation, advantage may be expected from it§. Lastly, the ergot of rye is said to have proved effectual, when all other means had failed ||.

26. Zingiber Officinale (Ginger). 27. Allium Sativa (the Onion). 28. Allium Cepa (the Leek).——II. Animal.—Cantharis Vesicatoria (Spanish-Fly).——III. Inorganic.—1. Alcohol (Spirits of Wine). 2. Æther Sulphuricus (Ether). 3. Acida Mineralia Fortiora (Oil of Vitriol, Aqua-Fortis, Spirits of Salts, &c.). 4. Acidum Aceticum Fortius (Pyrolignic Acid). 5. Ammonia (Spirits of Hartshorn). 6. Potassa (Kali). 7. Calx (Lime). 8. Calcis Murias (Muriate of Lime). 9. Argenti Nitras (Lunar Caustic). 10. Hydrargyri Murias (Corrosive Sublimate). 11. Hydrargyri Oxidum Rubrum (Red Oxide of Mercury). 12. Cupri Sulphas (Blue-Stone). 13. Cupri Subacetas (Verdigris). 14. Zinci Sulphas (White-Vitriol). 15. Antimonii Tartras (Tartar-Emetic). 16. Antimonii Murias (Butter of Antimony).

* In those cases which assume the comatose or apoplectic characters, blisters applied to the nape of the neck, and sinapisms to the feet, or to the ancles and calves of the legs, and friction in the course of the spine, are all said to be serviceable. Burns, Ryan, and Clarke, advise a blister on the head.—*Dr. Castle.*

† The warm-bath and emollient fomentations, followed by the use of an anodyne liniment on the abdomen, have been recommended by Denman and Nauche; and the tepid-bath, after bleeding, has been practised by Carpuron.—*Dr. Copland's "Dictionary of Practical Medicine"*; Part 2; Volume 1; Page 434; Column 2; and Page 435; Column 1.

When the convulsions have continued or increased, notwithstanding the bleeding duly put in practice,—which indeed seldom is the case,—and the use of all the other reasonable means which could be devised, the patient may be put into the warm-bath; in which she may remain a considerable time, if the convulsions be suspended while she is in. There have been instances of women with convulsions, who have been freed from them only during the time they were in the bath; and I have heard of one or more cases of their being actually delivered in the bath, without any ill consequences, either to the mother or child. When a warm-bath could not be procured, or while it was preparing, I have directed flannels wrung out of hot water, or any suitable fomentation, to be applied over the whole abdomen; and, I think, with advantage. After the use of the fomentations, I have also advised some liniment, made more soothing by the mixture of opium; such as equal parts of oil and tinctura opii.—*Dr. Denman.*.

‡ On the use of camphor, see Dr. Copland's remarks, at Page 426.

§ As to the propriety of prescribing *opium* in puerperal convulsions, very opposite opinions have been given. Petit, Hamilton, Merriman, and Dewees, consider it most injurious; Manning and Bland recommend it; and Leake and Burns, with a judicious discrimination, state, that when the disease is not accompanied with fulness of the vessels of the head, it may be administered with advantage, after blood-letting. In this decision I concur; and add, that it should always be given either with camphor, as directed by Stoerck; or with the subcarbonate of the alkalies, as advised by Stutz and Bruninghausen; or with both;—more particularly when the convulsions occur from excessive irritability, or after delivery; or when they assume chiefly the characters of hysteria. Rinck applies it to the abdomen, and Hufeland to the soles of the feet.—*Dr. Copland's "Dictionary of Practical Medicine"*; Part 2; Volume 1; Page 433; Column 1.

|| Dr. Brinckle gave the ergot in such circumstances. Twenty minutes after

(*b*) *Prevention of Convulsions.*

The convulsive paroxysms sometimes make their attack without any very obvious premonitory symptoms; and yet, in other cases,—more especially (as observed before) when the disease assails the patient during pregnancy,—these precursory indications may be now and then observed. Shuddering of the muscles generally; flushing, and fulness of the face; throbbing of the carotids; heat of the scalp; very severe and splitting pains of the head; and, perhaps, a sensation as if the cerebral mass were too large for its receptacle;—these,—with weight in the head, impeded utterance, altered vision, numbnesses, or the like,—are some of the more striking symptoms by which the fits are preceded.

Venesection.—When these symptoms occur, and you are led to expect that the patient will be seized with convulsions, it comes to be an important consideration, whether there are any preventive means by which the fit may be intercepted. Bleeding, as I have observed already, is one of the most powerful antispasmodic remedies when the fits are *begun*; and it deserves, therefore, a fair trial as a *preventive*. Blood may be taken from the nape of the neck, from the external jugular vein, or from the arm, to the amount of twelve, fourteen, or sixteen ounces,—more or less, according to the symptoms; for it is not necessary to bleed so copiously in this *preventive* treatment, as where it is your object to subdue an attack which has *already commenced*. The readiest mode, no doubt, of removing the blood, is by means of the lancet; and, in ordinary cases, this may be preferred; but if you are disposed to take the blood from the nape of the neck, cupping-glasses are to be employed; or a large number of leeches may be applied to the temples. The object of this bleeding is not merely to diminish plethora, but to reduce the action of the vessels of the head (the carotid arteries, I mean, and the vertebrals); and I incline to the persuasion, that the action of the vessels is reduced more effectually by a given quantity of blood abstracted with leeches, than it would be by the same quantity of blood abstracted by means of the lancet or the cupping-glass.

Evacuation of the Alimentary Canal.—It is of great importance, also, where you expect an attack of convulsions, that you should thoroughly clear the alimentary tube. After bleeding, ipecacuanha (or any other mild emetic) may, I conceive, be given with advantage. More especially if you believe there is any offensive accumulation in the bowels, you should thoroughly cleanse the canal, by means of purgatives or injections. Castor-oil, senna-and-salts, rhubarb, or calomel, may be given; and if you wish the medicine to operate with promptitude, salts-and-senna should be preferred. The advan-

the first dose had been given, uterine action came on; and the patient did well. Dr. Waterhouse (of Philadelphia), Mr. Mitchell, and a few more also, approve of its employment; but only where the os uteri is dilated, and the external parts are free from rigidity. Dr. Copland, in one case, exhibited it in combination with borax.—*Dr. Castle.*

tage of this purification of the tube, by means of purgatives, is twofold. You cool the system somewhat; more particularly if you employ the saline preparations; and this tends to reduce the vascular action. Add to which that, by clearing the tube, you are, perhaps, carrying out of the system something that is irritative, and calculated to keep up the vascular movement, together with the determination of blood to the head. Every one who, like myself, has experienced a fit of dyspepsia, must know that the severest headach may be produced by it; and every one who has made the diseases of children the subject of his attention, must be aware how close is the connexion between a disordered state of the bowels and the state of the head.

Warm-Bath.—After thoroughly cleansing the alimentary canal, and abstracting that portion of blood which you may deem expedient, you may put your patient into a warm-bath;—a remedy more easily managed where the patient has not yet been attacked with a fit. Get a large vessel; let the water be heated to ninety-seven degrees of Fahrenheit's thermometer (the cold and warm water being well mixed with each other); and there let the patient remain for ten, fifteen, or twenty minutes;—according to the soothing effect produced. Experience has shown the advantage of warm-baths in convulsions;—whether of women or young children. Neither is theory wanting to their recommendation; for the bath seems well calculated to relieve the head; inasmuch as it operates as a diffusive vascular stimulus, and produces perspiration.

Nervous Medicines.—For the prevention of convulsions, then, these are the remedies on which I should mainly rely:—the moderate abstraction of blood; the clearance of the alimentary tube; and the putting of the patient under the bland and soothing influence of the warm-bath. Nervous medicines are advised, and must not be forgotten; though Denman says (and, I think, truly) that they are rather given from custom, than in the expectation of any solid advantage to be derived from them. Opium and camphor have been recommended;—camphor strongly. Of opium I have given the opinion which I entertain in the present state of my knowledge. If it equalize the circulation, benefit may be expected; if it stimulate the brain topically, injury.

Accelerate Delivery.—If a woman have had two or three attacks, at some former period,—so that the premonitory symptoms are more than usually alarming,—it might be worth considering whether, in a case so pressing, delivery ought to be accelerated. Of turning the child by force, you must not even think. Violence in midwifery, is the unpardonable sin which may not be forgiven; but if you can carry the fingers to the mouth and neck of the womb, so as to touch the membranes, these may be punctured with a sound bluntly pointed; and, in four-and-twenty or six-and-thirty hours afterwards, the ovum would most probably be expelled. My own opinion with respect to delivery, in the way of *preventive* treatment, is this:—If bleedings, purgings, and the warm-bath, subdue the symptoms, do

not, as a general practice, interfere with the uterus; but if you have a case where the ordinary means fail, and where the convulsive attack is in a high degree probable, then it becomes justifiable to puncture the membranes, and discharge the liquor amnii;—an operation not perhaps without its evils, but still very simple; and, as far as the woman is concerned, safe.

Post-Mortem Appearances.—When the management of this disease was less understood than it is at present, and more especially when it was customary to deliver by force, death, both of the mother and child, was by no means uncommon; whence frequent morbid dissections were made. Now, it is well worth your notice, that, in the great majority of those fatal cases which have been submitted to inspection, there has been no observable effusion of blood, either upon the surface of the brain, or on its substance. Effusions of water, I believe, from my own observations, are more common in these cases; and if a woman have a repetition of fits, I should expect to find water on the surface of the brain, between the meninges;—not to omit the ventricles of the brain, and the spinal theca. In general, women seem to die at a time when there is simply a *congestion* of blood, which remains in the cerebral vessels; or with congestion and aqueous effusion conjoined; and very satisfactory it is to know this. If a large quantity of blood is poured into the brain, or upon it, in general it is all over with the patient. Now and then, perhaps, by a spontaneous process, the patient may recover; but I am convinced that *medical* treatment can then avail but little. If, however, the blood be still contained (as it usually is) in the vessels,—as the bleeding relieves this surcharge,—you may remove that pressure which is, I conceive, a more immediate cause of the disease; and thus, perhaps, you may save the patient. Denman says that, in most of the cases which he has met with, he found the heart unusually flaccid: and without a single drop of blood in the auricles or ventricles;—adding that, in other cases, many large livid spots have been seen on the surface of the body.

[A woman in labour was put to bed; and made an effort to change her situation. She died instantly in the act of moving; but she had previously complained of a piercing pain in her head, and loss of sight. Another was in such a situation, that the child was expected to be born the next pain. She threw herself back, and died instantly. Another raised herself in bed to take nourishment, about half-an-hour after delivery. She fell back, and died immediately. She was opened by the celebrated Dr. Jenner. There was no effusion of blood in the brain or any other part, in any of these cases; but the heart was found flaccid, and perhaps somewhat enlarged; and there was not a drop of blood in either the auricles or ventricles. Yet the late Mr. Hewson informed me of a case of convulsions, in which, on examination after death, he found an effusion of blood, in small quantity, on the surface of the brain. In a case of convulsions in which the patient died about eight hours after delivery, Dr. Hooper found a coagulum of blood, weighing nearly four ounces,

lying between the dura and pia mater. It is probable that, by more careful attention, instances of effusion of blood in cases which proved fatal, might be found to have occurred more frequently than has been presumed.*]

Prognosis.—The prognosis of convulsions is rather favourable than otherwise. It is certainly a most alarming disease; and, if blood be effused on the brain, death is very probable,—not to say desirable. If, however, you are early in your operations, and treat it actively upon the principles I have laid down, I think you may generally subdue it.

SECTION 2.—APOPLEXY AND SUDDEN DEATH.

Apoplexy.—In the end of gestation, patients are sometimes attacked with apoplexy; in which condition they may lie for hours, or days; —afterwards recovering gradually, or ultimately sinking. I believe, labour does not come on so readily under *apoplectic*, as under *convulsive* attacks. Nevertheless, I would advise you to examine the os uteri occasionally; and to take care that the child be not born unperceived. In its nature, though there are no spasms, I look upon this disease as strictly analogous to the convulsions of which I have been speaking; and I would, therefore, treat it upon the same principle. I suppose it is produced, in a great measure, by congestion of blood in the head.

Sudden deaths sometimes occur during delivery. Their cause may not be always intelligible, even on dissection. Apoplexy, rupture of the heart or large vessels, and bleeding into the womb, are to be suspected.

[In every case of extreme debility, induced by any circumstance which might occur at the time of parturition, great caution was generally recommended;—that patients should not exert themselves beyond their strength, or do what they seemed able to do without much apparent difficulty. But from a review of these dreadful accidents, of which, in the course of a long and extensive practice, I† have seen and known several instances, I think they may be reduced under the following heads:—

1. When, before delivery, the patients are subject to frequent returns of spasm or cramp-like pains in the stomach, extending their influence to the heart; as is shown by the temporary suspension or interruption of the circulation, indicated by the pulse. These symptoms may return after delivery, with increased and dreadful violence.

2. When the patient is very much reduced by loss of blood at the time of delivery;—the weakness thereby occasioned remaining a long time afterwards. In these cases, on making any extraordinary exertion, the patient is suddenly overcome; and the powers of the con-

* Denman's "Introduction to the Practice of Midwifery."
† Dr. Denman.

stitution are not able, at that time, to recover vigour of action sufficient to sustain life.

3. When, without any adequate indication of the mischief to be apprehended, a faintness and a difficulty of respiration suddenly come on; and, these increasing, the patient dies unexpectedly. This event is usually preceded by her spitting a very small quantity of blood; and, on examining the body after death, an oozing or effusion of blood in the air-vessels of the lungs, has clearly shown the cause.

4. In cases of extreme debility from other causes;—particularly in the œdematous* swelling of the leg; in which there is often a surprising degree of weakness, with much disturbed action of the whole frame. On the patient's making any effort beyond her strength, and perhaps against her inclination, a fatal and sudden faintness is sometimes brought on;—before an action to which she seemed competent is completed. Death seems more unexpected and instantaneous in these, than in any other circumstances. In some cases, this occurs several weeks after delivery.

With regard to the first cause of these deplorable events, without waiting for the return of the spasm, it will be proper to give some very warm cordial immediately after delivery; such as brandy (alone or diluted);—acting in the manner usually practised, when patients are suffering from the gout in the stomach. The most suitable medicine is the confectio opiata†, given and repeated in a full dose according to the exigences of the case; and the stomach should be very often supplied with some warm drink; such as weak broth, tea of various kinds, especially those made from ginger or pepper; together with hot external applications.

With regard to the second and third causes, there is no way so likely to prevent their effects, as taking care not to fill the vessels too hastily by very plentiful nourishment;—from an impatience to restore that strength which the patient has lost; or to press her too hastily to a convalescent state.

With respect to the fourth cause, of which I have seen three instances, we are to be very careful, that we do not permit or persuade patients to make much exertion, while they are very weak; instead of leaving them to act according to their own feelings and judgment.

These observations will not, I fear, be of much importance; but we may be truly said to have a very imperfect knowledge of the subject of sudden death in these circumstances; and it deserves more accurate observation and greater consideration, than have hitherto been given it.‡]

* From οιδεω, *to swell.*

† The "Confectio Opii," of the Pharmacopœia of 1836. This preparation is remarkable for the *syrup* being ordered to be *powdered,* along with the other ingredients. Dr. Collier remarks, that if the dispenser can accomplish this, he is more clever than the College of Physicians, who ordered it to be done.

‡ Denman's "Introduction to the Practice of Midwifery."

SECTION 3.—LABOURS COMPLICATED WITH TUMOURS IN THE PELVIS.

It does not frequently happen, that delivery is complicated with large tumours in the pelvis;—an accident which, when it does occur, is often fatal. We do, however, sometimes find that these tumours concur with delivery; and, when met with, they may be commodiously divided into two kinds;—those which are recto-vaginal (being placed between the rectum and vagina, as the term implies); and those, again, which are otherwise situated.

Exostosis on the Sacrum.—It sometimes happens, that a large exostosis grows upon the sacrum;—an accident which is not common; though, occasionally, large quantities of bone are formed upon this part. A case of this kind is to be managed precisely upon the same principles as those distortions or contractions of the pelvis, which we considered under the head of "laborious labour" *; and I dismiss them, therefore, without further remark.

Urinary Calculi.—In other cases, we find that a calculus† is lying in the bladder; and this, perhaps, of no small size. Mr. Tipping, of Tooting, once showed me a urinary calculus, considerably larger than the egg of a goose. Urinary calculi‡, concurrent with delivery, are, however, by no means of frequent occurrence. If known before delivery, they ought to be taken away; as likely to obstruct the delivery. We know that calculi may be removed either by cutting into the front or back of the neck of the bladder, or by dividing the urethra; but, in cases of this kind, removal by mere dilatation would be desirable. And here I may be permitted to remark, that this practice (now generally received) of removing the calculus by dilatation, has always been recommended from this chair§. It was strongly advised by my predecessor, Dr. Haighton; and, year after year, it has been as strongly recommended by myself. Why did not some of you, who are surgeons, take the hint, and get the honour of introducing the operation into use! Sir Astley Cooper,—in whose mind, I believe, the idea

* See Pages 382 to 388.

† The diminutive of *calx*, "a lime-stone".

‡ Urinary Calculi may be arranged in six families or classes; according to the following table:—

I. Lithic Acid.	1. Pure Lithic Aid. 2. Lithate of Ammonia.
II. Phosphoric Acid.	1. Phosphate of Lime. 2. Phosphate of Ammonia and Magnesia. 3. Fusible Calculus; a compound of the two preceding.
III. Oxalate of Lime.	
IV. Carbonate of Lime.	
V. Cystic Oxide.	
VI. Xanthic Oxide.	

Lastly; there are,—the *alternating* calculus (composed of various substances arranged in layers); and the *fibrinous* calculus, of which a solitary specimen exists in Dr. Marcet's collection.—*Lee's "Chemical Diagrams."*

§ The chair of Professor of Midwifery at Guy's Hospital.

was of native growth, though anticipated,—needed no addition to his large and well-earned fame*! It has always appeared to me, that the brevity of the female urethra, and the exceeding laxity of it, were extremely favourable to dilatations of this kind; nor has the event falsified the opinion. But what is to be done if the calculus remain undiscovered in the bladder, till parturition begins? If the calculus be small, we may allow the head to pass;—the accoucheur not meddling; for meddlesome midwifery is bad. But if the calculus be large, and likely to obstruct the passage of the head, then it would be advisable (if practicable) to urge the stone away from the brim of the pelvis.

If, again, a calculus (obstructing delivery) could not be got rid of in this way, it would then, I conceive, become necessary to open the head, or the bladder, or the urethra; and of these practices, probably, the most advisable would be the removal of the calculus.

Tumours on the Sacro-Ischiatic Ligaments.—It sometimes happens, again, that you have tumours growing to the sacro-sciatic ligaments. Dr. Drew has recorded two cases of this sort; for which I am indebted to a very able obstetric writer, Mr. Burns. In one of these cases, a large tumour grew on the sciatic ligaments;—completely obstructing the outlet of the pelvis. In this case,—new to the accoucheur,—nothing was done; and both the mother and child died. In the other case there was a tumour on the sacro-sciatic ligaments, weighing about two pounds and a half; and Dr. Drew, considering the tragical event of the former, thought it his duty to extirpate by cautious dissection; when both the child and mother were saved. In these cases, then, the proper practice is obvious.

Thus much, then, respecting those tumours in the pelvis, of rarer occurrence;—arising from exostosis of the sacrum, calculus of the urinary bladder, or large indurated growths upon the sacro-sciatic ligaments. But I must now observe, that there is another tumour in the pelvis;—certainly more common in its occurrence, and perhaps more dangerous in its effects. This is the recto-vaginal;—the tumour which takes its place between the vagina and the rectum, and which may arise from various causes. Water will sometimes accumulate between the vagina and the rectum (as in cases which I have examined in the other hospital†);—forming there large swellings, which yield under pressure very readily. Sometimes, again, the intestines become interposed between the vagina and the rectum; and sometimes, though not frequently, the lymphatic glands, I suspect, enlarge at this part. Most commonly, however,—nor let this be forgotten,—when these recto-vaginal tumours form at all, they form in consequence of an enlargement of the ovarium. In nine cases of ten, the enlargement is of this kind. These ovarian enlargements are, not uncommonly, the result of incipient dropsy. They may also be occasioned by scirrhus, or by a formation, within

* Sir Astley contrived an instrument (made by Mr. Weiss) for dilating the female urethra.

† St. Thomas's.

the ovary, of parts of the fœtus; such as teeth, bones, pulp, quantities of hair, or the like. Not to dwell on these niceties, however, it may be observed that, with a view to practice, ovarian tumours may be divided into two varieties;—the solid, and those which contain pulp, or water. It is also said that, along with the ovary, a fold of intestines may descend; so as to form a compound enlargement;—partly ovarian, and partly gaseous and intestinal. I will suppose that you are called to a case of recto-vaginal tumour; and that, on making your examination, you find the outlet of the pelvis closed, the vagina lying before the tumour, and the rectum behind it. What is to be done here? If you are called to the labour early, before the child's head is forced down into the upper part of the pelvis,—as those tumours do not, in general, adhere firmly; or, indeed, do not adhere at all by inflammatory cohesion,—you may sometimes succeed by urging them above the brim of the pelvis; and of all the modes to be resorted to, this (when practicable) is the best. But what if this attempt fail? (Nor is failure improbable!) If the tumour be yielding, and its bulk small, give a fair trial to those natural efforts, which the good accoucheur never hastily distrusts; and the head, perhaps, may work its way through the pelvis;—the tumour collapsing, or bursting, or gradually ascending above the brim. Again,—If you think that there is no reasonable hope that the head will work a way for itself, there is yet a third practice to which you may have recourse;—I mean the emptying of the tumour. If the tumour be solid, of course the practice is inadmissible; but if it be filled with gelatinous matter, or with water, in such cases an evacuation of it may be effected. We have been advised to open the tumour from the rectum; but I conceive the vaginal opening is preferable; though I know the rectum will bear a good deal of violence without fatal result. It has been recommended, also, to lay the tumour open by the trocar and canula; and, if the presence of water be pretty certain, you may introduce the instrument at the most depending part of the tumour;—recollecting that a fold of intestine may lie in the way. Should you meet with water, you may then readily evacuate it; and should the substance which escapes be of viscid consistency, you may gradually enlarge the opening with a scalpel; so as to give a broader vent. Should it be doubted whether the swelling is solid, or filled with water or viscid matter, you may cautiously cut down with the scalpel, till the point is decided.

Here, then, are the three leading practices which the recto-vaginal tumours admit;—the pushing of the tumour above the brim of the pelvis; the suffering of the head to work its way spontaneously; and the opening of the tumour, whether by puncture or incision. The practice of laying open the head, in cases of recto-vaginal tumours, I believe to be bad; because, after this is accomplished, if the tumour be moderately large, you may still be unable to get it away. We have been advised further,—and this measure may be sometimes necessary,—to lay open the head, and the tumour too. In general, if the tumour is encysted, I should hope that the laying open its cavity, would

supersede the necessity of using that formidable instrument, the perforator. The application of the forceps in these cases, is an excellent topic of obstetric chit-chat; but unless the tumour be exceedingly small, you can scarcely hope to accomplish the delivery by the use of this instrument. If you want to kill your patient, turn the child by all means! Cram your hand up into the vagina; lacerate the womb; haul down the legs; tear the head off the body; and then perform the Cæsarian operation, to extricate the head from the womb! This is coarse language; but the practice is coarser.

It has been advised, in some of those cases, to perform the Cæsarian operation; and I do believe that, in some instances of recto-vaginal tumour, the Cæsarian operation dangerous, as it is, might be the safest proceeding. Still, however, I closely adhere to the general principle of British midwifery;—that the Cæsarian operation (in the present dangerous modes of performing it, at least) ought never to be attempted, if delivery, however difficult, can be accomplished by the natural passage. Unless we adhered to this rule, there would, I fear, be no end to the cases in which the operation would be needlessly performed. It has been judiciously observed, by Dr. Davis, that if the abdomen were laid open above the pubes, the tumour might, perhaps, be removed from the abdominal cavity; so as to make room for the passage of the child through the pelvis, and to supersede the division of the uterus. I conceive that, in some cases, the tumour might, perhaps, be advantageously dissected away, by laying open the back of the vagina. Two advantages would result from a measure of this kind;—the clearance of the pelvic cavity, and the liberation of the body from a diseased mass; which, in the progress of its growth, might afterwards destroy the patient. These practices, however, require much previous meditation. The success of Drew's cases is encouraging. Do not lose sight of this hint. Remember the dilatation of the urethra! In surgery we must never despair. Yet, beware of rashness!

The principal practices, then, admissible in these cases of pelvic tumour concurrent with parturition, are the following;—the urging of the tumour above the brim of the pelvis (if, indeed, this can be done with gentleness); the giving of a few trials to the natural efforts; and the reduction of the bulk of the intumescence, by puncture or incision. Other practices, of more dubious utility,—to be recollected, however, where the former fail us,—are those of turning; applying the forceps; laying open the head, in conjunction with puncture of the tumour; and the performance of the Cæsarian operation. Extirpation of the tumour, by way of the vagina, may, perhaps, in an improved state of abdominal surgery, prove of valuable use; but till facts have accumulated, it is better to refrain.

As the case under consideration is very dangerous, and of vast interest, and as it is not improbable that you may have to contend with it in practice, I now present the following list of cases, in which the result of the different methods of treatment is concisely stated.—One case I know of, in which the tumour was pushed

above the brim of the pelvis. Both the mother and child recovered. —Four cases I know of, in which the tumour was laid open by puncture or incision. In the first of these, the mother recovered with difficulty; in the second, she recovered imperfectly; in the third and fourth cases, she died (in one of the cases, about six months after the operation was performed). Three of the four children were saved. Of eight lives, therefore, five were preserved, and three were lost. —Eight cases have come to my knowledge, in which embryotomy was adopted;—this operation, unfortunately, being too easy of accomplishment. In these cases, two of the mothers recovered (one of them imperfectly); and five of them died. Of course, all the children were lost. Of seventeen lives, therefore,—for one was a case of twins,—three only were preserved, and fourteen were lost.—Of turning, I have five recorded cases. In four of them the mothers died; in all, the children. Of ten lives, therefore, one only was preserved, and nine were lost.—Of puncture and perforation combined,—that is, puncture of the tumour, and perforation of the head, —three cases are known to me. In one of these, the mother recovered; in the second, she died; in the third, she sunk, eighteen months after the operation. All the children were lost; so that, of six lives, one only was preserved.

In the second volume of the "Medico-Chirurgical Transactions," there is an excellent paper on recto-vaginal tumours, by Parke, of Liverpool; and, in the tenth volume of the same work, there is another still more excellent from the pen of Dr. Merriman*. To these papers I am indebted for many of the preceding facts. On reviewing these cases, you will draw your own inferences; but we may, I think, safely conclude from them, that unless the tumour can be urged above the brim, the most desirable practice is to open it; unless, indeed, it can be extirpated.

SECTION 4.—INVERSION OF THE UTERUS.

We sometimes find,—especially in cases which have been mismanaged,—that, together with the vagina, the womb is turned inside out; and, in consequence of this *inversion* of the uterus, as it is technically called, a large tumour is formed, and lies forth between the limbs. In other cases, where the inversion is less extensive, there is a change in the position of the uterus only; and the womb, becoming inverted alone, forms a tumour which lodges in the vaginal cavity; and which cannot be perceived without the introduction of the fingers. Nor must I omit to mention, that there is yet a third degree in which the inversion may occur; for it sometimes happens that the fundus, or summit of the uterus, is drawn down a little way only; so as to produce a sort of *depression* or *dimpling* of the upper part. Where this partial inversion of the uterus occurs, the whole womb, under efforts like those of parturition,

* To these papers we may add another published by Dr. Hemming, in the thirty-fifth volume of the "Edinburgh Medical and Surgical Journal." We may also refer to his translation of the work of Boivin and Duges, on Diseases of the Uterus and its Appendages.

may be eventually pushed down; and that independently of any thing done by the accoucheur; so that what was originally a *partial* inversion, may thus become *complete.*

In cases where the inversion is of recent occurrence, you may readily believe that there is no mutual adhesion of the sides of the uterus; and therefore no difficulty, arising from this cause, prevents the reduction. But it is to be remarked also, that where inversions of the uterus have been of very long standing,—the woman living for months, or it may be for some years afterwards,—still, so far as observation have been made, those mutual adhesions of the sides of the uterus have not taken place.

Symptoms of Inversion—When an inversion of the uterus, or of the uterus and vagina, occurs, it sometimes happens that the patient scarcely sustains a single symptom of serious inconvenience; more especially if the accoucheur, discovering what has unfortunately happened, reduces the inversion with gentleness and firmness, without a moment's delay. More generally, however, where uterine inversion takes place, very dangerous symptoms are manifested;—those symptoms consisting of collapse of the strength, with a large eruption of blood from the uterus; and, now and then, terminating in the death of the patient.

Again:—When the uterus is inverted, and remains in the inverted position,—whether lying in the vagina merely, or whether lying forth between the limbs of the woman,—it will sometimes happen that, for hours after the accident, not a single pressing symptom occurs. In general, however, when the womb is left in this inverted position, the patient is still liable (for hours and days afterwards) to large and even fatal eruptions of blood; of which I have myself been a witness. Besides, independently of the flooding, mere displacement of the parts may give rise to more or less collapse. Obstruction of the bladder, too, is not unfrequent; and the introduction of the catheter may become necessary.

Diagnosis of Inversion.—There are few diseases more readily recognised by those who are possessed of obstetric touch, than these inversions of the uterus. If, together with the womb, the vagina is inverted, the whole mass forms a tumour between the limbs, larger than a child's head; and this tumour, on careful examination, is known to be the uterus, by various marks which it is unnecessary to recapitulate. Do not, then, lay hold of it, and try to force it away! Do not take a pen-knife, and amputate it with merciless ignorance; without being aware what it is you are removing. Obstetric ignorance is a tremendous weapon! Beware!

Sometimes, again, as I have said, you have an inversion of the womb *in the vagina*; and then there is a little more difficulty in discriminating the case; for the tumour does not lie out for inspection, but is contained in the vagina;—forming a large and soft swelling, like the fœtal head when intumescent; and compared by Burns, happily enough, to a *printer's ball.* When, after the completion of the delivery, you make your examination with a view of finding the uterus

in its ordinary situation above the symphysis pubis,—an examination which, if you follow my rule of practice, you will always institute,—you soon discover that it cannot be detected there. Well, then, the womb being indistinguishable in the true pelvis above the brim, in the ordinary situation, behind the bladder, you proceed to institute an examination by the vagina; and discover there a swelling as large as a child's head, round and soft (as before stated); when there can, I conceive, be little doubt respecting the real nature of the case. Even where there is merely a partial inversion of the uterus,—one of those depressions at which I was before hinting,—this may be ascertained with tolerable facility. Passing one or two fingers of the left hand into the vagina, and feeling the os uteri, you get a bearing on the womb; and then,—pushing forward the uterus, above the symphysis pubis,—you lay the right hand on the fundus, above the symphysis pubis. You may readily feel the fundus through the abdominal coverings; which are always thin after delivery (unless the woman is usually corpulent); and thus, examining with nicety, you detect the depression.

To conclude, then. By careful and nice examination, inversion of the uterus, in all its different degrees, may be detected by a dexterous and deliberate investigator, well versed in inquiries of this kind. Should the womb be deposited between the limbs, under view of the examiner, the disease may then be readily enough distinguished at a glance; more especially if suspicions have been excited. A little more investigation is necessary when the womb is lodged in the vagina; and if depression only exist, this may require very accurate and delicate inquiry; though, even in these cases, by competent persons, a diagnosis may be made.

Prognosis of Inversion.—If the woman survive the more immediate danger, she may live for weeks, for months, nay, sometimes for years (five, ten, fifteen, or twenty, I believe), with the womb remaining inverted; and this more especially where, happily for the patient, the inversion has taken place about the period of the cessation of the catamenia. But, the womb remaining inverted, it more generally happens that, month after month (sometimes every two or three), when the patient ought to become the subject of the catamenia, instead of there being these natural discharges, eruptions of blood are observed;—as if she had miscarried. These eruptions of blood being monthly, or bimestral *, the strength collapses; the exhalants begin to pour out their fluids; and the woman,—weakened, wasted, and bloated with water,—at the end of twelve or fourteen months, is brought into the most imminent danger; or, it may be, collapses and sinks.

Treatment of the Inverted Uterus.—It has, I believe, rarely if ever happened, when a womb has been inverted for a day or two, that attempts at reduction have been attended with success. Denman, I think, says, that he has never, in one single instance, succeeded in

* Occurring every two months;—from *bimestris*, "lasting for two months."

reducing an inversion which was become chronic; nor, in the present state of my knowledge, should I, in such circumstances, entertain such hopes of success, as would lead me to make an active essay. Indeed, even if only two or three hours elapse after this displacement of the uterus, the probabilities of reduction are small. This being the case, therefore, if you should be called to an inversion two or three days after the accident, you ought either to make no attempts whatever at reduction; or, at all events, these attempts ought to be made with the greatest tenderness and caution. On the whole, I should be inclined not to attempt reduction at all; fearful (not without reason) lest, by handling the uterus, I should tear the vagina, bruise the parts, or (which is still more to be apprehended) give rise to fatal hæmorrhage, in a woman probably much reduced already.

Reduce it immediately.—Should it be your lot to be in the chamber at the very moment when the womb becomes inverted,—in other words, should the accident occur to yourselves (which, however, it can scarcely ever do, if you adhere rigidly to the plan for managing the placenta before prescribed*), remember it is a rule of primary importance, scarcely admitting an exception, that,—in all cases, without a moment's delay,—you ought to replace the uterus, immediately on discovering that inversion has occurred. Nor can you readily overlook this inversion, if, after all deliveries, you feel for the womb in the region of the bladder;—in the way so often recommended. Proceeding, then, to reduce the womb immediately after its inversion, you will probably return the womb with as much facility, as that with which it was originally drawn down; but if you were to procrastinate needlessly,—if, in a perturbed state of mind, losing precious moments, you were to wait with a view of sending for further assistance,—the womb contracting, its cavity would become small; its sides would become thickened; its substance would become indurated; and the return of it would be thenceforward impossible. Should inversion occur to you (which I hope it will not; for its occurrence is not creditable), remember that it is your office, as soon as you discover the accident, to replace the organ without the delay of a moment. *Occasionem corripe*†! "Seize time by the forelock"!

Removal of the Placenta.—Under inversion of the uterus, the placenta is sometimes completely detached; and there is no question then as to how you are to dispose of it; but, in other cases, this viscus may still adhere to the surface of the uterus; either extensively, or by a single lobe only. When this is the case, there may arise a question, which you ought to be prepared to answer, before you reach the bed-side of the patient. That question is,—whether the placenta ought to be removed or not. The rule, in a few words, is this:—If the placenta be in a great measure already detached, you had better remove it entirely. Some hæmorrhage will be produced; but that you must venture. The case is necessarily of more or less danger; nor can you therefore proceed without some risk; but if, on the

* See Pages 400 to 414. † "Snatch the opportunity."

other hand, the placenta is diffusively adherent to the uterine surface, then perhaps those are right, who recommend us to reduce the inversion with the placenta attached to the uterus;—to be removed afterwards in the ordinary manner, when the reduction has been accomplished. Fatal hæmorrhage might follow the removal of the placenta, while the womb remains inverted; and this is one reason of the rule. Contraction of the womb, while in the inverted position, might occur, if the placenta were abstracted at this time; and this is another reason of the rule. After all, however, I suspect it will sometimes be found difficult to return the womb, while the afterbirth adheres to it; but, never having inverted the uterus in my own practice, I have had no experience here; and my opinion should have but little weight.

Two Modes of Treatment.—As all the cases of inverted uterus which have fallen under my hands, have been of some hours, or rather (I may say) of one or two days standing, I have never myself had an opportunity of trying to reduce the inversion. From my own observations, therefore, I can say but little respecting the manual plan of managing this disease. I must remark, however, that there are two modes of treatment recommended in these cases; and with both of these, I think, you ought to be acquainted. The womb hanging forth between the limbs, you may, if you please, lay hold of its substance and grasp it; and, in this manner, somewhat reducing its bulk, you may press it back again into its natural situation. In this operation, the reversion begins at the mouth, and then passes to the neck, body, and fundus;—all these parts being turned back again in succession; so that at length the whole, both of the womb and vagina, becomes reduced. But there is yet another mode in which the reduction of the uterus may be attempted; for, the womb being pushed into the vagina, the accoucheur may get his bearing on the fundus, or most depending part; and beginning his reduction there, he may first push inward and return the fundus;—the body, neck, and mouth, afterwards following; and then the vagina. Of these two methods of reduction, the one or other may be desirable, according to circumstances; and therefore your ought to be acquainted with both.

Necessary Cautions.—In reducing the uterus, be careful not to urge it, unawares, against the point of the arch of the pubes. In entering the inferior half of the cavity of the pelvis, be careful to carry the womb upwards towards the promontory of the sacrum;—that is, in the axis of this part; and, in rising through the superior half, let the womb be advanced towards the navel, so as to follow the axis here also; for it will mount more easily. When reducing the uterus, be careful that the reduction is complete. Do not content yourselves with merely pushing the womb into the vagina. Be careful, too, thut you do not leave a depression of the fundus; for a depression left in the fundus may give rise to violent forcing efforts; and, under these, the womb may be again pushed down, and become irreducible.

Employment of Force not advisable.—With respect to the *force* you may employ, remember that the smallest force which will accomplish your object is the best, and that you never can use the higher degrees of force, without a most formidable risk of tearing the vagina, and perhaps the uterus. The higher degrees of force have been recommended; and I think I have heard Dr. Hamilton, of Edinburgh, say, that he has sometimes operated with a good deal of resolution. It is to be recollected, however, that, some ten or twelve years ago, we were not in possession of any operation which enabled us to save our patient, if the inversion of the uterus became chronic. In this condition of the disease, not unfrequently periodical flooding occurred;—the woman ultimately perishing cachectic. As, therefore, there was little hope of recovery, unless the womb were reduced, force, in our operation, might appear the less unjustifiable. Since, however, it has been proved by Mr. Newnham,* of Farnham, that the inverted uterus, when chronic, may be removed by ligature; since, further, in three or four different instances, the operation has, to my knowledge, been successfully performed by others †; there seems now to be no pretence for the employment of force, in our attempts at reduction. In scientific midwifery, violence has no place; and even the *vis temperata*,—force under the rule of reason,—is a dangerous auxiliary.

Means for promoting Reduction.—And here you may ask me,—"If we are foiled in our attempts to replace, is there nothing that may be done, in order to render the parts more relaxed and obsequious?" For this purpose, we are advised by some practitioners to bleed to deliquium; but this recommendation must not be too rashly adopted. Indeed, large bleeding occasionally, nay, perhaps frequently, of itself accompanies these inversions; so that all the advantages derivable from depletion are, in this manner, secured spontaneously. Tobacco-injections might, perhaps, be of great service. We all know that tobacco-injections have great power in producing relaxation of the muscular system; and, in a formidable disease like inversion of the uterus, it might be worth considering whether the injection for hernia should be tried. The warm-bath, too, might be thought of; but the risk of asphyxia, and of bleedings from the uterus, must render the warm-bath very uncertain and unsafe.

Palliative Remedies.—If, by prudent efforts, and such force as we may use, we cannot gently reduce the uterus in any way, we must then have recourse to palliative remedies. Hæmorrhage is the principal danger to be apprehended; and this appearing, you may treat

* "An Essay on the Symptoms and Treatment of Inversio Uteri; with a History of the Successful Extirpation of that Organ." Plates. London, 1818.

† Cases of successful extirpation of the uterus are recorded by Dr. Clarke, in the "Edinburgh Medical and Surgical Journal"; Volume 2; Page 419; by Mr. Baxter, in the "Medical and Physical Journal"; Volume 25; by Mr. Chevalier, as related in Dr. Merriman's "Synopsis of Various Kinds of Difficult Parturition"; Fourth Edition; Page 306; and by Mr. Windsore, in the "Medico-Chirurgical Transactions"; Volume 10; Page 358. Other instances are also furnished by Continental authors.—*Dr. Castle.*

it according to the principles already prescribed. If the urine is retained, the catheter may be introduced. If you find that the woman is wearing away under the sanguineous oozings,—the uterus lying within reach,—you may then try the effect of astringent remedies. Webber, an able and active-minded practitioner of Yarmouth, successfully extirpated the inverted uterus, on the fourteenth or fifteenth day after delivery. If the woman were evidently in danger of sinking from the oozings, extirpation,—with proper caution, and by competent hands,—might be thought of. A ligature would probably be necessary. I have seen one woman perish, who might perhaps have been saved in this manner. Observe however that, in the present state of knowledge, I dare not recommend this operation to you. Beware, I entreat you,—beware of juvenile temerity! Theologians are accustomed to stigmatize "the old man" *; but he is, I assure you, of great importance in midwifery!

[When the uterus cannot be replaced, we should, at least, return it into the vagina. We must palliate the symptoms; apply gentle astringent† lotions; keep the patient easy and quiet; attend to the state of the bladder; support the strength; allay irritation by anodynes; and the troublesome bearing-down by a proper pessary‡. The bad effects of neglecting or removing this pessary, are to be seen in La Motte's three-hundred-and-eighty-fifth case. A spring-bandage is also useful. By these means, the uterus may contract to its natural size; and the woman menstruate as usual; but generally the health is delicate §.]

Causes of Inversion.—It is not always that inversion of the uterus is produced by the mismanagement of the accoucheur; and yet, in the majority of cases, I am afraid that his practice is to blame. In general, I believe, inversions of the uterus are produced by the prac-

* "The old man, (*τον παλαιον ανθρωπον*), which is corrupt, according to the deceitful lusts."—*St. Paul's Epistle to the Ephesians; Chapter* 4; *Verse* 22.

† Dr. Duncan divides Astringents into three classes; as follows:—I. Vegetable Astringents.—1. Swietenia Mahogani (Mahogany). 2. Swietenia Febrifuga (Febrifuge Swietenia). 3. Æsculus Hippocastanum (Horse-Chesnut). 4. Krameria Triandra (Rhatany-Root). 5. Acacia Vera (Gum-Arabic). 6. Acacia Catechu (Catechu). 7. Hæmatoxylon Campechianum (Logwood). 8. Pterocarpus Erinaceus (True Kino). 9. Agrimonia Eupatoria (Agrimony). 10. Geum Urbanum (Herb-Bennet). 11. Rosa Gallica (Red-Rose). 12. Tormentilla Erecta (Septfoil). 13. Lythrum Salicaria (Willow-Herb). 14. Punica Granatum (Pomegranate). 15. Eucalyptus Resinifera (a Variety of Kino). 16. Cinchona Rubra (Red-Bark). 17. Rubia Tinctorum (Madder). 18. Arbutus Uva-Ursi (Whortle-Berry). 19. Polygonum Bistorta (Snake-Weed). 20. Rheum (Rhubarb). 21. Rumex Aquaticus (Water-Dock). 22. Laurus Cinnamomum (Cinnamon). 23. Quercus Robur (Oak-Bark). 24. Quercus Infectoria (Nut-Galls). 25. Salix Alba (Willow-Bark). 26. Ulmus Campestris (Elm-Bark). 27. Pinus Larix (Larch-Bark).—II. Mineral Styptics.—1. Acetas Plumbi (Sugar of-Lead). 2. Sulphas Cupri (Blue-Stone). 3. Sulphas Zinci (White-Vitriol). 4. Murias Ferri (Muriate of Iron). 5. Nitras Argenti (Lunar Caustic).—III. Saline Styptics.—1. Acidum Sulphuricum (Oil of Vitriol). 2. Acidum Aceticum (Vinegar). 3. Alumen (Alum).

‡ From *πεσσω, to soften.*

§ Dr. Burns's "Principles of Midwifery"; Eighth Edition; Page 521.

titioner (unacquainted, perhaps, with the principles of his art); who draws down the placenta, without previously securing the contraction of the womb;—a gross error, against which you have been repeatedly cautioned. When the womb is in this way uncontracted,—its cavity open, its fibres relaxed, its substance soft, its placenta adhering,—if you at this time lay hold of the umbilical cord, and draw down, you will easily,—very easily, accomplish an inversion; for what is there to resist it? But if, as you always ought to do, you secure the contraction of the uterus before you bring the placenta away,—the sides thickening, the cavity contracting, the fibres hardening,—you cannot invert the uterus if you would; first, because it will not double on itself; and secondly because, in consequence of this thorough contraction of its surface, the placenta becomes detached; so that when you pull, you pull the placenta only, and not the uterus. Therefore it is that, when you are withdrawing the placenta, you ought, in general, first to secure a thorough contraction of the womb; and therefore again it is that, where inversion of the uterus occurs, these inversions are ordinarily occasioned by the neglect of the accoucheur; who draws forth the placenta without previously securing the contraction of the uterus.

[It has been almost universally supposed, that an undue force applied to the cord for the delivery of the placenta, was the principal cause of this accident; but in this we differ from such authorities as have adopted the opinion;—First, because the accident has occurred after the delivery of the placenta; and, secondly, because it has taken place when no such force has been applied. But the caution of not applying too much force to the cord for the purpose of withdrawing the placenta, is founded upon just and important principles; since, if the disposition to inversion existed, and the placenta were attached to the fundus, force would be almost certain to produce the accident; when perhaps, without such force, the woman might escape from the danger.*]

Sometimes Spontaneous.—Independently of the inversion of the womb in this manner, the displacement in some cases appears to be produced by the shortness of the umbilical cord. The child is laid hold of as soon as it comes into the world;—the length of its cord, perhaps, not exceeding seven or eight inches (Dr. Haighton met with a case in which the cord was shorter); and,—the accoucheur hastily drawing the cord from the maternal genitals, and this without respect to the brevity of the funis,—a pluck at the placenta, and an inversion of the womb, is the result. Sometimes, perhaps, the womb is inverted by the falling of the fœtus from the uterus, in cases when the pelvis is large, and the parts are lax; and sometimes (as I suspect) from pressure of the intestines, or some other cause, a depression of the fundus uteri is spontaneously produced, without blame to the accoucheur; this depression, with or without vehement efforts (like the parturient), afterwards proceeding, till the inversion becomes complete. Moreover, in spontaneous depression of the

* Dr. Dewees's "Midwifery"; Page 531.

fundus, the abstraction of the placenta may complete the inversion; and, perhaps, when the placenta is drawn down with great gentleness, the accoucheur is surprised to find that the fundus of the uterus descends along with it. Thus it is, in these cases, that inversions of the uterus are produced; but more generally by the neglect of the accoucheur; who forgets to secure the contraction of the womb, before he brings away the placenta. Occasionally, however, it is by the sudden fall of the fœtus from the mother; and occasionally by the descent of the intestines, precipitated upon the fundus of the uterus, and giving rise to the commencement of an inversion; which is afterwards completed by efforts of the abdominal and other muscles; —like the efforts of parturition.

[Perhaps a short account of the two following cases,—with the former of which I* was supplied by my very able and experienced friend Dr. Merriman, physician to the Westminster Dispensary,—may elucidate this subject. Owing, probably, to a better method of acting with regard to the placenta, the inversion of the uterus has certainly been an accident of very rare occurrence during the whole of my life; yet the means of avoiding it, and the method of relieving it when it does happen, deserve serious consideration.

Case I.—In January, 1802, I was called, with Mr. Seares, to a patient who had been just delivered of her first child, by a midwife of much experience. In a short time after the birth of the child, she had endeavoured to extract the placenta by the funis; but, she solemnly assured me, with very little force. A violent and forcing pain immediately came on; the placenta was expelled with much violence; and, together with this, the uterus was completely forced out of the body of the patient. When I arrived,—which was not many minutes after the accident,—I found the uterus, with part of the placenta adhering, lying without the os externum. There was profuse hæmorrhage from those parts of the uterus from which the placenta was detached; and the patient was in so exhausted a state, that we doubted whether she would live till the uterus was replaced. No time was lost in separating the remaining part of the placenta; and, when this was done, the uterus being returned into the vagina, I introduced my hand, and carried the fundus before me, till I felt it (as it were) spring from my hand, and it was completely replaced. I then slowly withdrew my hand, and found the cervix beginning to contract. The hæmorrhage immediately ceased.

During the greater part of this time, the patient was in a state of faintness; from which she was raised by giving wine and the usual cordials. She recovered without a single bad symptom, and has since had several children.

Case II.—Mrs. —— had gone through a very tedious and hard labour with her first child. When the head was so low in the pelvis as to rest upon the perinæum, the pains left her; or, at least, became very feeble, and slow in their returns. Fearing that she or the infant might suffer from long delay in this position, I thought it

* Dr. Denman.

right to deliver her with the forceps. The operation was easy and safe. This child she suckled for nearly twelve months; and then she again became pregnant. During her pregnancy, she was thin and delicate; but went on to her full time. Her labour proceeded naturally till the head of the child reached the perinæum; when the pains left her, and the uterus remained so long inactive, that I apprehended I must again have recourse to the forceps. While I was thus deliberating, there suddenly came on a violent pain; by which the child was expelled so forcibly, that it was thrown to the extremity of the bed. The funis, besides its being naturally short, was passed twice round the neck of the child. After waiting a reasonable time for the placenta, and no pains coming on, I examined; and felt the placenta low in the vagina, but involving with it a large, firm, and round substance, which I soon discovered to be the uterus partially inverted,—with the placenta still adhering to it. This was the first case of the kind I had ever seen, and it alarmed me; but while I was considering what steps it would be necessary to take, another violent pain came on; and by it the placenta and uterus were forced through the os externum. I first detached the placenta, and returned the uterus into the vagina; but when I attempted to replace the fundus of the uterus, I could not possibly effect it; for the cervix was so closely contracted, though in this unnatural state, that, after repeated trials to accomplish it, I desisted; and left the uterus in the vagina. It then resembled a polypus, with a pedicle of no large size. The hæmorrhage was not profuse; and the patient recovered nearly as well as if nothing extraordinary had happened. At the end of the month, I prevailed upon her to let me introduce a pessary;—fearing the uterus might again drop through the os externum; but this pessary she could not suffer to remain. She suckled and nursed her child; but, from her removing into the country, I could obtain no further account of her.

My failure to replace the uterus I now attribute to the time which passed between my first discovery of the accident, and my attempts to replace it; so that if I were unfortunately to meet with a similar case, I should certainly replace the uterus without delaying to separate the placenta.*]

[Some persons have doubted the possibility of spontaneous inversion of the uterus ever having taken place; and the Editor† confesses that he himself was formerly one of this number; but a case related to him by his friend Dr. Williams of Guildford Street, has quite convinced him that such an occurrence occasionally takes place. The Doctor had attended a lady in her fourth labour; the pelvis was of ample dimensions; and the child was soon expelled. The funis was tied, and the child separated. Immediately afterwards, there was a *long* expulsatory pain; by which Doctor W. naturally enough inferred, that he should find the placenta detached and thrown off.

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 423 and 424.

† Dr. Waller.

On regaining his seat by the side of the bed, and making an examination, he felt a large substance protruding from the vagina; and it proved to be the uterus, in an inverted state. The organ, with the placenta still adhering, was promptly returned to its proper situation; and every thing went on favourably. This case affords a clear instance of inversion taking place from the action of the uterus itself; as it took place whilst the Doctor was engaged with the child;—not the slightest extension having been made by the cord. In fact, it had not been touched by the hand.*]

I have a preparation of the womb and vagina inverted. Death was the consequence. Both the womb and vagina are relaxed; and reduction would have been easy. I have also a preparation of the uterus, contracted in the way it should be when the placenta is withdrawn. Its cavity is small, and its substance thick. How difficult it would be to effect inversion here! Indeed, how impracticable!

Errors liable to be committed.—The grand errors which you are apt to commit, in the management of these cases of inversion of the uterus, are the following:—In the first place, you may produce the disease, in the way I have explained;—by neglecting to secure the contraction of the womb, before the delivery of the placenta. In the second place, neglecting to examine the uterus properly after delivery, you may not discover the accident till a day or two afterwards; when it is too late to reduce it. Thirdly, where the womb is drawn beyond the external parts,—not recognising what you have done,—you may make violent efforts to pull it away; as if it were some tumour that ought to be removed; or you may rashly have recourse to some amputating instrument;—the patient dying in consequence. Violence, in your attempted reduction, is another error which you may commit. I can never too often caution you against violence!

Eversion of the Uterus.—[This accident is sometimes called "*in*version"†; but the proper appellation is "*e*version"‡. It is not common now, though it used to be frequent at one time;—owing to the roughness with which women were treated;—the placenta being pulled away by the umbilical cord. It is distinguished from procidentia uteri, by the womb in the latter case being covered with the mucous membrane of the vagina. When the uterus is everted, press it between the hands for about half an hour; and then try to reduce it. I act in this manner from anology with paraphymosis. An everted uterus has been excised. Partial eversion sometimes takes place;—the fundus being drawn down within the cavity of the uterus. In one case, being on the spot, I pushed the fundus up again; but it is said that, after a few hours, you cannot succeed in doing this. If there should be a part of the placenta still adhering, do not peel it off; but push it up again with the fundus. Sometimes tumours resemble an everted uterus.§]

* Editorial Observations in Denman's "Introduction to the Practice of Midwifery;" Seventh Edition; Pages 424 and 425.

† From *inverto*, "to turn in." ‡ From *everto*, "to turn out."

§ Dr. Mackintosh's unpublished Lectures on Midwifery.

SECTION 5.—RUPTURE OF THE UTERUS.

Do not flatter yourselves with the idea, that disruptions of the uterus or vagina are of very uncommon occurrence. It is true, indeed, that they are not commonly made the subject of conversation; because those who have the misfortune to occasion death in this manner, are naturally desirous of concealing the fact; but from what I have seen myself, and from what I have learned in conversing with my obstetric friends, I am persuaded that lacerations of the womb are by no means infrequent; and they require, therefore, our diligent study, both in regard to their prevention and their cure.

When a laceration occurs, any part of the genitals may yield;—from the perinæum upward to the fundus; but more generally it is the neck of the womb, or the contiguous portion of the vagina opposite the symphysis pubis, or the promontory of the sacrum. Most of these lacerations are transverse; longitudinal rents are rare. One case I have myself seen, in which the womb was torn longitudinally, at the part where it unites with the broad ligament; in such a manner that, when passed through the rent, the fingers lay interposed between the folds of the peritoneum. If, when lacerations have been effected, you examine the parts after death, you will sometimes find the child lying among the viscera in the abdominal cavity; and generally a quantity of blood (from a few ounces to a pint or more) is lodging in the lower part of the abdominal cavity and the pelvis; —appearances of inflammation about the intestines sometimes manifesting themselves, if the woman should have lived long under the disease. Burns says that, in all the cases which he has examined, he has noted more or less of the inflammatory characteristics.

In one of my glass jars, there is a choice of mischieves;—the perinæum lacerated; with transverse rupture of the vagina, in front and behind. He must have been a resolute fellow who inflicted these injuries! He must have had nerves, too, with as much sensibility as the nails on his fingers!

Symptoms.—Where laceration of the genitals is about to occur, promonitory symptoms are not always observed; and yet sometimes a woman screams out that she has the cramp;—the womb giving way at that moment. Sometimes she complains of a pain very different from the parturient pains; and this pain may be felt for a quarter or half-an-hour before the laceration takes place. If the skin were laid hold of,—say on the back of your hand,—and then distended till it was on the point of disruption, great pain would be experienced. So it may be where the uterus is on the eve of giving way;—a great pain, premonitory of the rent, may be produced. From what I have seen of these cases, however, I deem it right to remark, that the precursory symptoms are not sufficiently characteristic; and this renders it very difficult to have recourse to any effectual measures, of the preventive kind, when the laceration is produced, not by the hand, but spontaneously. When laceration of the womb takes place,

I have been told that a rending noise has been heard; and perhaps the patient exclaims that something has yielded; and then the countenance falls; the stomach vomits; the extremities become cold; the pulse rises to one-hundred-and-thirty or one-hundred-and-forty in a minute; the pains, perhaps, become small, weak, and irregular;—in a word, death seems to have already seized upon its victim. Alarmed by these unexpected symptoms, where the woman seemed to be doing very well previously, you lay your hand upon the abdomen; and, through the abdominal coverings, you distinctly feel the child, and its different members, lying out of the womb among the viscera. In these cases, the effect on the head varies. More generally this part recedes;—sometimes, perhaps, lying beyond the reach of the examiner, if dexterity be wanting; sometimes, and more frequently, lodging above the brim; where it may be distinctly felt by the finger, like a float in water, very moveable under the touch; and sometimes being impacted in the pelvic cavity, so that it neither recedes nor advances, but remains immoveable, as in cases of incarceration;—much in the same manner as if no rupture had occurred. In rare cases, the child is expelled, notwithstanding the rupture;—the laceration, probably, resulting from the very pain by which the birth is completed. One case of this kind I saw behind Guy's Hospital. The woman died a few hours afterwards. Other cases are on record.

When lacerations are seated in the side of the uterus, the bleeding is more copious, because the large vessels are there; but if, as more frequently happens, the laceration is at the front or back of the uterus, the bleeding is more sparing (amounting to a few ounces only). Indeed, the extent of the wound considered, it is really surprising that more bleeding is not experienced. It must be recollected, however, that it is not by incision, but by laceration, that the parts are laid open; and the same principle holds of other parts of the body; for when the arm is torn from the shoulder, but little hæmorrhage occurs. The termination of these cases of laceration is various. The patient may sink in the course of a few hours (five or ten, for example); or she may survive for one or two days; gradually and ultimately sinking, or rallying beyond expectation; or, lastly, she may become the subject of various cachectic symptoms, and recover at the end of a few weeks. All this I have myself seen. Death is not the necessary consequence of these dreadful injuries. In repeated instances, the woman has recovered; and a well-marked case of this kind was once under my own care.

Causes.—There are two grand causes to which lacerations of the uterus may be ascribed; and let these be remembered. The one is continued resistance to the passing of the fœtus; the other is obstetric violence;—whether of instruments or the hand. That spontaneous lacerations of the uterus may occur,—when the fœtus lies unfavourably, or the pelvis is contracted, or when, from other causes, the birth is powerfully obstructed,—is a point now established beyond all controversy.

There are, also, subordinate causes of laceration; nor should these

be forgotten. The linea ilio-pectinea of the pelvis is sometimes so sharp, that the finger may almost receive a wound from it; and a bearing on this may, perhaps, dispose to rupture of the uterus. Attenuation of the substance of the uterus may also occasion laceration; —some parts of the womb not being thicker than brown paper, while others are of the ordinary thickness. Irregular contractions of the fibres of the womb are said to occasion rupture; but I incline to suspend my opinion on this point. Falls also, and other violences, may be productive of this injury. Thus, the passage of a carriage-wheel over the abdomen of a pregnant woman, is very likely to occasion it. The hand of the accoucheur may sometimes tear the genitals; although no extraordinary force have been employed. While, however, you bear in mind these less frequent agents, remember that the two most frequent causes to which these accidents are to be ascribed, are the culpable violence of the accoucheur, and the continual resistance to the passage of the child. To these, therefore, the mind ought to be steadily directed; whether in preternatural or in laborious labours.

Management.—The management of these cases,—so far as they admit of management,—may be given in few words. If the child have been thrown into the world. the accoucheur has nothing to do but to treat the patient on the ordinary principles of medicine and surgery. I will not venture to assert, that it may not hereafter be found, that extirpation of the uterus, in some cases, is advisable; but at present the operation is, I conceive, unjustifiable. If, again, after disruption has occurred, the head of the child is incarcerated among the bones,—so as to remain fixed in the pelvis, though the body lies forth through the rupture,—you may then, properly enough, apply a pair of forceps; and, in this way, supersede the necessity of the operation of turning. When lacerations of the womb occur, however, it will generally be found that the child enters the peritoneal sac; and that,—the placenta immediately following it,—the womb empties itself as effectually as when it expels the ovum through the pelvis. By examination, this ventral lodgment of the fœtus is easily made out; and when ascertained, it then becomes your duty to remove your coat, to raise the sleeve of your shirt, to lubricate the hand, and to carry it resolutely, but gently and steadily, along the vagina, and through the ruptured opening; so as to enter the cavity of the peritoneum, lay hold of the feet, and bring away the child by the operation of turning. Beware of grasping the intestines, and pulling them down along with the feet. Provided no injury be inflicted on the mother, the sooner the operation of turning is commenced and completed, the better; because, if the child is left long in the peritoneal sac, it perishes there;—in consequence of a suspension of the function of the placenta, which lies detached among the intestines; while, if the fœtus be removed promptly, there is a reasonable hope that it may be abstracted alive; and, if no violence be employed, promptitude of delivery may also facilitate

the recovery of the mother. The child taken away, the placenta is to be abstracted also;—the operator being very careful not to leave any part of it behind. In this abstraction, great care must be taken that you do not draw down any other parts, more especially the intestines, along with the after-birth. Let the mind, in these dreadful emergencies, be kept tranquil and unshaken; for unless you are undisturbed, and firmly settled upon obstetric principles, you are unfit to act. What must we say of an operator, who could take a pair of scissors, and cut off a fold of the intestine of a living woman, merely because it protruded? What must we say of an operator, who could afterwards throw this fold into a vessel;—to be seen by the nurse and other attendants? Gentlemen, this supposition is no rhetorical ornament! I have good reason to believe that it has happened more than once. Mental agitation can alone account for such wild conduct. Be calm, then! Or, if this be impossible, throw up the management of the case altogether; and send for further assistance. Do not mislead yourselves with a notion, that these cases are desperate; and, therefore, that it matters little what is done to the patient! One recovery I have myself witnessed; and there are others on record.

A woman, in this neighbourhood, had a contraction of the pelvis. It was a case that occurred to one of my pupils; but no blame attached to its management. I was called in, in consequence of collapse of the strength; and when I examined, I found the child lying in the peritoneal sac, distinct from the uterus, the aperture of which was contracted; and I found, further, a large transverse rent opposite to the bladder. In this case, agreeably to the rule laid down, I determined to turn; and introducing my hand for that purpose into the peritoneal sac, I perceived the intestines; felt the beat of the large abdominal arteries; touched the edge of the liver; and, ultimately reaching the feet of the child, I withdrew it by the operation of turning;—subsequently abstracting the placenta and membranes. The woman recovered in a few weeks afterwards. About five years after the recovery, I saw her;—not so vigorous as before the accident, but nevertheless tolerably well. On very careful examination at this time, the os uteri was found to present the natural characters; and not a vestige of a cicatrix was discoverable in the vagina any where, above or below. The rupture, therefore, had been above;—in the uterus itself. When, in this case, my hand was introduced to turn the fœtus, the womb, as large as a child's head, was felt lying upon the promontory of the sacrum, above and behind the rent.

But what is to be done where the fœtus is in the abdominal cavity, and cannot be reached;—the child being inaccessible, in consequence of contraction of the aperture? If there seemed to be a disposition to rally a little, I should feel inclined to try palliatives, if these were indicated; and I should leave the patient mainly to her natural resources. When the fœtus remains among the viscera, recovery is not impossible. Becoming converted into bone, it may

lie inert in the peritoneal sac for twenty, thirty, or forty years afterwards*. In the Museum of the London College of Surgeons, is an ossification of this kind;—presented, I think, by Dr. Cheston; and, from the history of it which he used to give to Dr. Haighton, I am persuaded it was produced in this manner. After smart labour, in this case, the presentation receded; the child left the womb by rupture; and lodged either among the intestines, or between the peritoneal covering and the muscular substance of the uterus. The woman lived for forty or fifty years afterwards;—the fœtus, as shown by dissection, becoming converted into bone.

But what if the child should escape into the peritoneal sac; and if,—the symptoms being most alarming,—there should appear to be no hope for the woman in her natural resources? In such cases, it would be for sober consideration, whether it might not be advisable to have recourse to abdominal incision; provided the patient would heartily assent. That such mode of proceeding is not altogether without hope, is proved by the following case:—A robust countrywoman, becoming with child after fracture of the pelvis, was found to be so contracted and distorted at the time of delivery, that the abstraction of the fœtus by the natural passages was impossible. Parturition coming on, a dexterous and intrepid surgeon (Mr. Barlow, of Blackburn) determined, after due preliminaries, to deliver by abdominal incision. For this purpose she was placed on a table; and, when the abdomen was laid open, the fœtus appeared to lie behind a thin membrane,—probably the peritoneal covering of the uterus; the muscular substance alone having given way. Mr. Barlow divided the membrane, and removed the fœtus; which was dead. A fortnight or three weeks afterward, the woman was well enough to engage in her domestic concerns. I give you the case as it used to

* Astruc quotes a case where the child remained in the uterus for thirty-five years. *Book* v; *Chapter* iv.

In another case, the midwife felt the child's head; but after a severe pain it disappeared; and the woman complained only of a weight in the abdomen. It was expelled by abscess.—"*Histoire de la Societé de Medicine*"; *Volume* 1; *Page* 388.

In Dr. Bayles's case, the child was retained twenty years.—"*Philosophical Transactions*"; *No.* 139; *Page* 997.

In Mr. Birkbeck's case, the child was discharged by the navel.—"*Philosophical Transactions*"; *Volume* xxii; *Page* 1000.

Bromfield's patient did not get rid of the child; but she lived for many years; and after her death the rent was visible.—"*Philosophical Transactions*"; *Volume* xli; *Page* 696.

In Dr. Syms's patient, the process for expelling the child by abscess was in a favourable train; when, by imprudent exertion, fatal inflammation was excited.—"*Medical Facts*"; *Volume* 7; *Page* 150.

Le Dran relates an instance where the uterus was ruptured on the twenty-third of April. On the thirteenth of May the placenta was expelled; and on the sixteenth a tumour was formed at the linea alba. It was opened, and a child was extracted. The woman recovered.—*Observations in Surgery; translated by J. S. Surgeon; Third Edition*; 1753. *Observation* 92; *Page* 303.

All these cases are noticed in *Dr. Burns's* "*Principles of Midwifery*"; *Ninth Edition*; *Pages* 533, 534 *and* 535.

be narrated by Haighton; and it appears to have been a case of rupture of the muscular substance of the uterus, without rupture of the uterine peritoneum;—the patient recovering, after delivery by abdominal incision. Does success, in this case, belong to an anomaly, or to a general principle?

Would extirpation of the uterus, with or without inversion, be of service in these cases? This question may be answered better next century. There is a great deal to be done in abdominal surgery; but neither by dogmatists nor empirics. A well-balanced spirit of caution and enterprise;—that is what is wanted to improve it!

[When the uterus is ruptured, the labour-pains, after having been violent, cease altogether. Shivering comes on, with pain in the abdomen, a quick and small pulse, dyspnœa, and signs of sickness. Sometimes the child gets wholly into the general cavity of the abdomen; sometimes partially; and sometimes it is fixed in the pelvis. In this last case, try to open the head. When the child has partially escaped into the abdomen, lay hold of the legs if you can get them, and bring them down. If the child be altogether in the abdomen, the treatment will depend on the time at which you are called. Dr. Hamilton * says there is no well authenticated case of a patient's surviving such an accident; but I could point out to you many. One woman to whom it happened, had afterwards an extra-uterine pregnancy; and then another child, in the natural way; and, twenty-one years afterwards, the two former came away piecemeal through the rectum.

I have a preparation taken from a woman, who died in labour of her second child, from rupture of the uterus. The head of her first child had been opened; but she said nothing about that, on the second occasion; because she thought the doctors, in the former instance, had been rash. At the dissection, the friends watched very closely; but I stole the preparation, when the body was all sewed up, except a small space. A similar occurrence took place in the case of a woman, who was attended by some pupils of mine; who were not told that, in a previous labour, the child's head had been opened. The woman died suddenly, from rupture of the uterus; and a charge was made against the pupils, by some of the friends, to the sheriff. He sent a statement of the case to Dr. Hamilton; who said that the only persons who ought to be hanged, were those who had made the charge.†]

SECTION 6.—LINGERING PARTURITION.

Where women have had a large family, it not unfrequently happens that the child is expelled in the course of one or two hours, or even a shorter period after the commencement of delivery. Yet, now and then, even where the pelvis is capacious, and the softer parts fully relaxed, parturition may be prolonged for many hours or days, in

* The present Professor of Midwifery in the University of Edinburgh.

† Dr. Mackintosh's unpublished Lectures on Midwifery.

consequence of a deficiency of pains; and it is this prolonged labour, —arising, you will observe, not from a resistance of the softer parts, or from a deficiency of room in the pelvis, but from a want of uterine effort,—that constitutes what is denominated "lingering labour"; and to the consideration of this I next proceed.

Ordinary Symptoms.—In cases of lingering labour, we know, by the usual indications, that parturition is begun. For days previously, perhaps, the abdomen has been shrinking in its bulk; for hours before, there has been a discharge of mucus, tinged with blood;—forming what is called "the *show*". The ordinary pains are felt, though unfrequently and feebly; and, when we make an examination, we observe that the os uteri is gradually dilating; that the membranes become tense under the touch during the pains, and relax when the pain ceases; and further, if the liquor amnii has been discharged, we find that the head bears upon the finger during pain, and recedes when the pains cease;—so that, by considering these circumstances in combination, we may obtain a clear proof that the process is begun, although it may be advancing very languidly.

Impropriety of Interference.—In lingering labours, generally, unless there are symptoms of danger, the less you interfere the better; for meddlesome midwifery is bad. If the protraction of the delivery be the only inconvenience which the patient suffers; and if there are no convulsions, or floodings, or well-marked signs of collapse, to excite alarm, —it is scarcely necessary the accoucheur should interfere at all. Nor need the patient herself be exposed to much inconvenience; for she may remain in her chamber, or come down to a well-aired drawing-room;—sitting, standing, walking, or lying in bed; according as her inclination leads. Food she may take regularly; and if, under these lingering pains, she gets but little rest, you may give her an opiate; so that once, at least, in the four-and-twenty or eight-and-forty hours, she may have an undisturbed sleep. But although, in lingering labour, much help is not really required, it does sometimes happen that the anxiety of the patient, or the solicitude of her friends, or, perhaps, the convenience of the accoucheur himself (not to be altogether neglected), renders it desirable that the labour should be somewhat accelerated; and it may, therefore, be worth our while to consider what milder means may be employed, with a view of augmenting, as far as may be, the action of the uterus. I say, "as far as may be"; for the action of the uterus, happily, is not much under our controul; nor can it always be stimulated by artificial means.

Position of the Patient.—Denman somewhere remarks, that he reflects, with infinite satisfaction, on various cases in which the *sedentary posture* alone has had the effect of exciting the uterus, and superseding the need of obstetric instruments. And certain it is that the mere erection of the body, whether in sitting or walking, will sometimes have the effect of pewerfully exciting the pains. In a practical view, it is sufficient to know that such is the effect of the erect posture; although we may not be able to explain how it is that

this effect is produced. Were I asked, however, to venture an opinion here, I should reply, that the excitement may be ascribed, in part, to the bearing of the fœtal head upon the neck of the uterus, and in part to the movement of the muscles within the pelvis. When, therefore, the pains are feeble, it is not unusual to direct the patient to rise and walk about. Care, however, must be taken that the woman be not fatigued by walking too much; for if she have been pacing the chamber for some hours together, you will find, by a little calculation, that she has walked several miles; and it is scarcely necessary to admonish you, that a walk of several miles is very unfit for a patient during parturition. I have seen patients moaning in their pains;—so weary with excessive exertion of this kind, that they reminded me of the ambulatory party that Dante tells of;—

> "Che gira intorno assai con lenti passi
> Piangendo et nel sembiante stanca et vinta."*

Injections into the Rectum.—By saline, or other stimulant injections into the rectum, the uterine efforts may sometimes be excited; and they are strongly recommended by some practitioners†. They are not very agreeable to women, and especially to our countrywomen; who are not so much in the habit of using purifying injections, as the ladies of the Continent. Nevertheless, it is a very simple mode of treatment; and may well deserve a trial. An ounce of salts may be dissolved in five or six ounces of senna-tea;—to be thrown into the rectum by means of a syringe, which is best for the purpose; or else by means of the ordinary bladder-and-pipe. The cases best adapted for the use of the saline clysters, are those in which the head is fairly down among the bones of the pelvis; and lies in the vagina, between the outlet and the brim; and where there is merely a want of a few forcing-pains, in order that it may be expelled.

Cordials and Stimulants.—By means of cordials, and other stimulants, taken into the stomach, the uterine efforts may be excited; and, on this principle, ale, wine, or spirit, and opium‡ in its smaller doses (six or eight drops of the tincture, for example), may be given with advantage. In administering these to patients of the lower

* "Which makes the circuit, with measured steps; weeping, and (to all appearance) weary and worn out."

† In cases of lingering labour, especially if the pains have become suspended, Mauriceau was partial to the practice of giving an infusion of two drachms of senna, in a small quantity of water acidulated with the juice of a Seville orange. After this had been taken about two hours, he threw up a stimulating clyster; and, from the combined effects of these remedies, he frequently experienced great advantage. It has been thought, that the griping quality of the senna and orange-juice, was the cause of stimulating the uterus to fresh exertions, by sympathy with the bowels. I have several times tried Mauriceau's remedy with good effect; but I have known a dose of salts and castor-oil, to be equally useful.—*Dr. Merriman's "Synopsis of Various Kinds of Difficult Parturition."*

‡ Laudanum, in small doses, if it act at all, acts as a stimulus to the uterus, through the medium of its nerves; and also by sympathy with those of the stomach. In less than a quarter of an hour, there is often an effect produced.—*Dr. Burns's "Principles of Midwifery."*

class (fond of the alcoholic stimulus, which, in one form or other, is used in all countries), you must be very careful that you do not suffer them to become inebriated. The cases best adapted for cordials, are those in which there is coldness of the extremities, weakness of the pulse, and a certain degree of nervous langour;—sometimes accompanied with a good deal of hysteric and mental depression, and a true nervous apprehension respecting the result of the labour. Women, very accessible to feeling, are not equally open to reason; and you may, therefore, find it of little avail to descant on the groundless nature of their fears. A glass of wine has its ethical excellencies; and it may sometimes dissipate these terrors, more effectually than an edifying discourse of the usual length of an hour; for it is mortifying to find, after all our exalted speculations in morals and psychology, that happiness and misery are so closely connected with the state of the stomach, that some observers might reasonably refer to the nerves or the gastric cavity, for the seat of that *summum bonum*, which philosophy has been seeking for the last two or three thousand years!

Discharge of the Liquor Amnii.—It is a well-known fact, that the discharge of the liquor amnii has a great effort in bringing on the pains; and I formerly stated to you the mode in which this may be accomplished. In different cases, there is a variety in the time which lapses between this operation and the commencement of delivery;—eight-and-forty hours being, I think, a sort of average; and thus, in a lingering labour, and more especially in the first stage, you may sometimes accelerate the birth by rupturing the membranes. There are two kinds of cases in which this discharge of the liquor amnii seems to be more especially desirable; first, those in which there is a great quantity of water in the uterus; and where, from the first, the pains are very inefficient;—I mean, before the os uteri is open; and, secondly, those cases of rarer occurrence, in which the head of the child has come down among the bones of the pelvis, so as to close the vagina, and thus, perhaps, prevent the full discharge of the waters;—these waters escaping, in small quantity, every two or three hours, with a return of the pain. Of the management of the latter cases, I have little to state from my own personal experience. By Burns, and others, we are advised to facilitate the escape of the waters, by gently raising the head;—in such a manner as to lay open the passage through the vagina. The most favourable moment for the operation, is when there is a little, and but very little pain;—the waters escaping in part by their own gravity, if the position of the patient be semi-recumbent; and in part from the expulsive action of the womb. If, again, the labour is in the first stage, and there is much water in the ovum, this water may be very easily discharged by rupturing the membranes. This little operation may be performed in the absence of pain; but the most convenient occasion is when there is a slight action of the uterus.

Stimulants to the Os Uteri.—Every man who has had occasion to use the lever, or other obstetric instruments, must be aware, that

when he gets a bearing on the head, and begins to draw down upon the outlet, not unfrequently pains are excited. Previously, perhaps, the pains have been few and rare; but when the head is drawn down, the irritation gives rise to a powerful action of the uterus; and hence we may enumerate, among the causes well fitted to excite the uterine movements, that compression and irritation of the mouth and neck of the uterus, which may be produced by the action of the lever, or by means that are analogous. On this principle it is, that some practitioners have advised us to press with the fingers on the mouth and neck of the womb; and others have recommended that, the fingers of the right hand being deposited on the back of the vagina above, these fingers should be repeatedly drawn down over the front of the rectum, with pressure of the parts; so as to stimulate and excite the pains. Both these practices, however, I mention with a view to give a caution against them. I am not prepared to say that, under prudent management, they may never be safe and serviceable; but I regard them with fear, and think it better to refrain. Daventer seems to have got some reputation by exciting the uterus, in this manner, in cases of narrowing at the brim. "Dieu sait s'il valoit mieux pour cela!"* If the womb is to be stimulated at all on these principles, the vectis is, perhaps, the best instrument for the purpose.

Secale Cornutum.—The *secale cornutum* is sometimes of invaluable use in lingering labours. This remedy is nothing more than the rye-grain altered by disease;—elongated; thickened; changed a little in its sensible properties; and acquiring, apparently, in a high degree, the power of exciting the muscular efforts of the uterus. On some parts of the Continent there has, I believe, long been an opinion that rye-bread is of an abortive nature; and, after all I have seen and heard respecting the action of the secale cornutum, I think there is no doubt that it enjoys a specific power of stimulating the uterus; provided its muscular irritability be in a state well fitted to receive the impression. The secale cornutum, it is asserted, may kill the child in some cases†; and if this were really the fact, it would be quite sufficient, in most instances, to set the remedy aside altogether, in cases of lingering parturition; for as, in general, there is no danger in delivery of this kind, if committed to itself, of course the life of the fœtus must not be put to risk. I ought, however, to state here, that I am by no

* "God knows if he is any the better for that!"

† It has been observed, that children born after the exhibition of ergot of rye, are very often dead; and, in that case, are blanched and bloodless. This has been attributed to the strong action of the uterus; but we find this action equally strong in other cases, without the production of this effect. It has also been supposed to proceed from the separation of the placenta, before the birth of the child; but this evidently must be conjectural. I would rather attribute it to the specific effect produced on the uterus itself, which has an influence on the ovum; but, fortunately, this effect on the child is by no means invariable, though I must acknowledge it is frequent; especially if the uterine action do not expel the child soon after it is excited by the ergot. This would make us more or less willing to use it, according as we expected the expulsion to be more or less speedily accomplished. *Dr. Burns's "Principles of Midwifery"; Eighth Edition; Page* 415.

means satisfied that the secale really does exert a poisonous influence on the child; though I am by no means prepared altogether to deny it. The secale cornutum is likely enough to destroy the fœtus, if you use it, not in the lingering cases which we are now considering, but where the birth is delayed in consequence of increased resistance; from rigidity, narrowing of the passage, or in unfavourable position of the head. In cases like these, if the secale cornutum be exhibited, and have a very lively effect, it may force the child down among the bones of the pelvis; where it may die by compression;—not to mention that, in the circumstances stated, there must be no small risk of rupturing the uterus. In those cases, then, in which the resistance of the uterine efforts is great or insuperable, the secale cornutum may endanger both the mother and her offspring; but in lingering labours, assuming that the rye exerts no direct and poisonous effect on the fœtus, I look upon it as a very valuable and efficient remedy;—at least in some instances. It should be observed, however, that the ergot of rye is of very uncertain operation;—sometimes, apparently, exciting the uterus most vehemently; while, at other times, it scarcely acts at all. Nor is the cause of this difference altogether intelligible. There are different forms in which the secale cornutum may be administered;—the form of powder, for example; or of infusion, or decoction. For myself, I generally add a drachm of the secale in powder, to three ounces of boiling water;—decocting the whole briskly, with continual agitation, till it is reduced to about an ounce and a half; and then pouring off the decoction, I administer to the patient one of the three table-spoonfuls every twenty minutes, till the effect is produced. Sometimes the whole quantity is necessary to excite the action of the uterus. More generally, however, after the first dose has been exhibited, the pains become more frequent and more forcing; and the child may be expelled.

[There has of late years been introduced into practice, a remedy which appears to have a very decidedly specific effect upon the action of the uterus; and, consequently, to be well calculated for administration in those labours which are rendered tedious from defective uterine action, where there exists no mechanical impediment to the birth of the child. This substance is the secale cornutum (ergot, or spurred-rye). From some cause not at present correctly known, some of the grains in an ear of rye become diseased, and greatly lengthened;—shooting out to the extent of about an inch; and, owing to this projection bearing some resemblance to a horn, it has been termed "secale *cornutum*"; and also "*spurred* rye", from its resemblance to the spur of a cock. Externally it is of a darkish-brown colour; internally it is greyish, with a slight tint of pink. If an infusion be made, the pink predominates. Like most other remedies, it experienced on its introduction considerable opposition;—some believing that it had no particular effect; while others asserted that it exerted a deleterious influence upon the child. But the evidence of its efficacy has at length so accumulated, that it is now acknowledged, by those who have had the best opportunity of using it on a

large scale, that it is a most valuable acquisition to the materia medica of the accoucheur; and that, when used in certain states and conditions of the uterus, it has the power of increasing uterine contraction in a most extraordinary manner. A difference of opinion exists as to the best form of exhibiting it;—whether in infusion, decoction, powder, or tincture. Numerous cases have been brought forward, to prove the advantage of each of these formulæ; and therefore it would probably be fair to infer that they are equally serviceable. The Editor* generally uses the powder;—giving half a drachm in a cup of warm tea, or gruel; and repeating it in twenty minutes, if the first dose has not produced the desired effect. The powder may be carried in the pocket, so as to be always at hand; and it may be administered more speedily than the infusion;—some time being necessarily consumed in the preparation of the latter. The effect of the secale cornutum where it acts favourably, is manifestly and suddenly to increase the bearing-down or expulsatory efforts of the uterus; and should therefore never be exhibited, unless the parts of generation are in a state to bear these efforts without injury; or, in other words, until they are perfectly dilated, or in a dilatable condition. Where the difficulty to be overcome arises from increased resistance, from whatever cause produced,—whether disproportion between the size of the head and the pelvis, rigidity of the soft parts, or extraneous growths,—this remedy ought not to be employed. But where the os uteri is dilatable, the pelvis well formed, the presentation and situation natural, the vaginal secretion abundant, and the pains regular but trifling, the secale cornutum may be given, in the way recommended, with every probability of success. From having tried its effects in a great number of cases, the Editor* is prepared to bear ample testimony to its efficacy, when given in these circumstances. Not that it is to be considered a never-failing remedy;—where, in the whole materia medica, is such a remedy to be found? But its failures are by no means greater than those which fall to the lot of some of the most established medicines. It does not appear that the opinion of its being prejudicial to the child is entitled to much credence. Where the pains have entirely ceased, its effect is by no means so certain as when there are regular though feeble ones;—the ergot seeming to have the power of *increasing*, rather than of *producing* uterine action. It cannot be depended upon, therefore, where it is found necessary to induce premature labour. Most extravagant notions of its utility have been entertained by some authors;—one of whom goes the length of stating it as his opinion, that its administration will almost, if not entirely, snpersede the necessity for the forceps. But the propriety of using the ergot is very doubtful in those cases which really require the use of instruments; for the difficulty, in these circumstances, is almost always to be referred to some mechanical impediment; and if the remedy were used, the womb might be thrown into violent spasmodic

* Dr. Waller.

action, and a rupture of the organ be the very probable consequence.*]

Manual or Instrumental Aid.—Meddlesome midwifery is bad; and lingering labours are not usually so dangerous, as peremptorily to require the assistance of art. Hence it follows, as a matter of course,—an inference which I hope you will all have the good sense to remember,—that in these labours, generally, manual interference is scarcely required. To turn the child, merely because a labour lingers, is an abominable abuse. I think myself justified in using those two words; and I considerately repeat them;—*abominable abuse.* In carrying the hand to the feet of the child, you may rupture the uterus; and, in abstracting the head and shoulders of the fœtus, you may destroy it. To perforate the head, merely because the labour lingers, is a sort of murder; and if you do this, not from ignorance, but for the sake of saving time only, you are, I conceive, in *foro conscientiæ*†, as criminal as the felon who dies on the gallows. But I hope none of you can be guilty of so enormous a crime;—no, not even in thought! The lever and forceps may, perhaps, be now and then employed in lingering labours; but the judicious use of them must be rare. I have the satisfaction of knowing, that I can employ those instruments with some dexterity; but I never employ them in a lingering labour. Instruments even in the best hands, are evils,—and great ones; and you ought never to have resort to those obstetric evils, until there is an absolute necessity for them. I repeat it, therefore.—When the labour is prolonged, without dangerous symptoms, without deficiency of room among the bones, without rigidity of the softer parts,—the delay arising solely from the inertness of the uterus,—it can but rarely happen that manual operations will be adopted by the skilful accoucheur.

After-Treatment.—After the child comes into the world, in labours of this kind, you may expect an inertness of the uterus during the birth of the placenta. Be prepared, therefore, for floodings; and be on your guard against inversions of the womb. If you lay hold of the placenta, and abstract it without reflection,—acting first and thinking afterwards,—you are all (I trust) aware, from what has been said already, that you run no small risk of inverting the uterus. After the child is born, unless there be flooding, it becomes you to wait for an hour, to allow the womb to repose. Your second duty consists in feeling for the uterus, and grasping and compressing it gently, so as to urge it to contract; while, at the same time, in feeling the uterus, you are enabled to ascertain whether it exhibits those characters of roundness, firmness, and hardness, which indicate that contraction is complete. The womb contracting, your third duty consists in removing the placenta;—according to the rules already prescribed ‡.

* Dr. Waller's Remarks in Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 236 and 237.

† "In the court of conscience".

‡ See Pages 115 to 120; and 400 to 404.

Original Weakness of Habit in the Mother.—[I believe this to be a very rare cause. It must arise either from increased rigidity of the passages, or diminished expulsive power. In consumption, the power is diminished; but then the resistance is diminished also; and the same thing is observed in women in India; in which country lingering labour rarely occurs. It takes place more frequently in strong, hearty, laborious women;—owing to increased resistance. If you meet with such a case, you may give a stimulant, or apply the forceps. It is better, however, to give patience a fair trial first; for when on the point of applying instruments, you will often be stopped by the consideration, that you would not like them to be adopted, if the patient were your wife or sister. See what is confided to you. More than a man's fortune, or his good name! In a case of fever, you can obtain the assistance of another practitioner; but a woman does not like to be exposed to two men. I have never felt happier, than when going home after a case has terminated well, without the use of instruments; though I had been on the point of applying them.

The first remedy, then, is patience; the second is the soothing system. You can generally, with a little tact, get the patient to acquiese in the latter; but she is sometimes very impatient. One woman, in a lingering labour with her first child, jumped out of bed; snatched off the doctor's wig; and stamped about the room! In the midst of all this the child was born, and died. One woman, and one only, foiled me in a case of lingering labour. She sent for another surgeon; who applied instruments, and ruptured the perinæum.

Another plan is to rub the os uteri very hard. They used to introduce into it a plug of garlic; or inject into the rectum a solution of salt, or introduce a finger into it;—all with a view of stimulating the uterus to increased action; but I do not think such methods advisable. Senna, in strong doses, will bring on labour; but, three times out of four, it has caused inflammation of the intestines. The grand remedy is ergot of rye; but no other has been so much abused;—either from getting a bad preparation, or from giving it injudiciously.

In the first case in which I tried the ergot, I gave two drachms, infused in three or four ounces of hot water. In five minutes, the woman had a pain; and, a little while afterwards, another; which never left her till the child was born. In the next case I gave three drachms; and in ten minutes the pain came on, and continued till the child was born. I have tried it in cases where there were no pains at all, in doses of three or four drachms. The last case was about the twentieth in which I have employed it. It was that of a lady who did not marry till she was forty; and, though the labour is generally lingering, I would rather attend such a case, than that of a girl of fifteen; for she thinks a child quite a god-send, and bears the pains resolutely. Besides, the parts, though rigid, are better prepared in the former case than in the latter. I gave her three drachms;

and so violently did the uterus act, that I was afraid it would burst. Never give the ergot, till the os uteri is well open, and the external parts are fully dilated; for the uterus sometimes bursts from the violence of its own contractions; and we are obliged to give opium, in order to moderate them. The ergot of rye often saves us the necessity of resorting to instruments. I like to get it in the state of the spur, and to cut it up. Messrs. Duncan and Ogilvie* have sent me a tincture, which I shall try; for the drug, in its crude state, requires to be infused half-an-hour. Some authors say it will not act if the child be dead; which I cannot understand. They likewise say in America, that it kills the child, if the latter be not born at once. I once did an American lady good, by laughing at this notion; for she was previously much distressed on account of her child having been still-born, after the use of the ergot. Manner, and knowledge of human nature, are of great advantage. Some men are very cold-blooded animals; and they do no good in medicine.†]

The placenta removed, you ought then to ascertain whether there is inversion, flooding, or retention of any portion of the placental mass. By examining the placenta, when spread out upon a cloth, you are enabled to decide whether or not the whole has been abstracted. An *internal* flooding is known by compressing the uterus above the symphysis pubis, in the region of the bladder; and *external* bleeding is so obvious, that it cannot be overlooked. Should inversion have occurred, you will find the womb lying, like a child's head, in the vagina; and should it not have occurred, you will find this viscus in its ordinary situation, between the umbilicus and the symphysis pubis.

Cautions.—Beware, in these cases, of abstracting the placenta, without previously ensuring the contraction of the uterus. This is a principal error. Beware, too, in these cases, of taking a needless alarm. Remember that, in lingering labours, women generally do well. Beware, lastly, of needless interference in these labours. The hope of terminating a state of undesirable suspense, is the seducing Siren‡ by whom you are liable to be misled! Remember, then, that meddlesome midwifery is bad; and that you are never to interfere with the operations of nature, unless compelled by necessity.

"Vitanda est improba Siren,
Desidia"§—

ceases to be a wholesome maxim, when applied to obstetrics. In midwifery, you are sometimes forced to act; and with vigour, too; but, in general, the less you interfere, the better. He is often the best accoucheur, who keeps his hands in his pockets.||

* Now Messrs. Duncan and Flockhart; the first Apothecaries in Edinburgh.

† Dr. Mackintosh's unpublished "Lectures on Midwifery".

‡ The Sirens were monsters who owed their existence to the imagination of the poets. Their figure was compounded of a woman and a fowl. They lived on the coast of Sicily; and, by their sweet singing, tempted mariners on shore, to their destruction.

§ "Avoid that wicked Siren, idleness!"—*Horace's "Satires"; Book 2; Satire 3; Lines* 14 and 15.

|| See Pages 296 to 340.

SECTION 7.—PLURALITY OF CHILDREN.

In general, as we all know, women present us with a single child only. Sometimes, however, they favour us with two, three, four, or five, at a birth; and their generous fecundity may even exceed this number. Sennert relates the case of a lady, who produced at once as many as nine children; nor does this appear to be wholly incredible. Ambrose Paré tells us of another lady,—a co-rival of the former, I presume,—who gave to our species no fewer than twenty children, in two confinements. I have, in my possession, specimens of a double placenta, and also the after-birth of triplets I have also a remarkable preparation, in which no fewer than four placentas may be observed; as the birth was doubly twin. It appears, from the statistical accounts transmitted to Government, about the year 1801, that, in these islands, on an average of sixty-five cases of parturition, one is a birth of twins. From registers of the Middlesex Hospital, as cited by Burns, it seems that the twin-births in that establishment are, on an average, one in ninety-three. Not having given much attention to inquiries of this kind, I am not prepared to give an opinion, as to whether or not they are correct. Certain it is, however, that whether more frequent or rarer, twin-cases, on the whole, are by no means uncommon; and it is desirable, therefore, that you should not be unprepared for them.

Division of the Signs of Plurality.—To determine whether or not there is a plurality of children, practitioners have got together a variety of indications; and these, according to custom, I shall divide into three classes;—according as they occur before, during, or after the birth of the first child. I shall first treat of those indications which are observed during gestation, before the labour begins.

Signs during Gestation.—If a woman, throughout gestation, have an abdomen unusually small, you may generally be assured that there is not a plurality of children; and, in such cases, in general, the question will not be asked. On the other hand, however, if you find that the abdomen is very bulky, and particularly the uterus,—of which, perhaps, the outline may be easily distinguished,—a plurality of children is by no means improbable. It is clear, however, that the large bulk of the abdomen, if it stand alone, is a very uncertain proof of twins; for the bulk of the abdomen may be occasioned by dropsy of the peritoneum, or by enlargement of the ovaria, or by a redundancy of the liquor amnii;—not to mention flatus, adeps, and other causes. In some women, too, we have much convexity of the lumbar curve*, with a corresponding hollowing of the lumbar region behind;—peculiarities which may give, perhaps, an additional grace to the figure; but certainly do not facilitate our obstetric diagnosis. This curve, which has the effect of advancing the abdomen, has also the effect of carrying forward the uterus; so that,

* The curve *forward*, which the spinal column makes, in the lumbar region.

even where there is only a single child,—the lumbar vertebræ, together with the uterus, being pushed forward,—the abdomen, when viewed in profile, may appear as large as from twins. I the rather mention this, as the sex are often deceived by it. The sex, and even the accoucheur himself, in his forgetful moments, might be misled by first appearances; but, on laying the hand upon the loins of the woman,—particularly if the dress be loose,—the case becomes evident enough. It is an abdominal enlargement, arising merely from the advancement of the uterus.

When there is a plurality of children, the fœtuses may be deposited in the sides of the uterus; and hence, when the patient is in the recumbent posture, if the hand be laid on the abdomen, the womb may sometimes be felt separating, as it were, into two lateral tumours, one on either side the spine;—a sort of groove being traceable between them. If this observation be made obscurely, no certain inference can be drawn from it; but where it is repeatedly and clearly ascertained, I think it constitutes one of the most valuable signs, indicative of plurality, of which our art is possessed.

If there be a plurality of children, the womb may be expected to enlarge the faster in consequence; and it is asserted, accordingly, that the fundus uteri ascends in the abdomen more rapidly, where these pluralities exist. Again:—The movements of the fœtus, we are told, may be felt more extensively where there is a plurality of children, than where there is a single fœtus only; and of course the abdomen is likely to feel heavier, when the ovum is not single. On these signs, however, after all, but little reliance can be placed. The cumbersome weight of the uterus, the rapid ascent of the fundus, and the large bulk of the abdomen, prove but little; and of the diagnostics enumerated, the only one on which I should myself venture to lay stress, is the separation of the uterus into the two lateral tumours;—in the manner before stated.

Indications during Parturition.—We are sometimes able to ascertain that there are twins in the uterus, during the birth of the first child; and this class of indications may next deserve a little attention; though it is unnecessary to dwell much on diagnostics of this kind; because they lead to little practical advantage. If there be a plurality of children, you may find, after the discharge of the liquor, that the uterus is still very bulky; and some might venture to infer, that this large bulk of the uterus could not exist after the discharge of the water, except there were a second child in it. If there be a second child in the uterus, the full action of the womb is sometimes prevented; for which reason skilful accoucheurs sometimes take a hint from the inertness of the uterus. When there is a second fœtus in the uterus, that which is passing may be prevented from feeling the full effect of the pains, because a second child is interposed; so that the slow advance of the fœtus, without other causes to which it may be referred, may be suspected to arise from plurality of children. When there is more than one fœtus, you may have, though rarely, a presentation of two right arms or legs; or three arms or legs; *et*

hoc genus omne *;—and this would be a clear proof of plurality, unless the child were monstrous.

It sometimes happens, where there are two children, that there is but one membranous receptacle; and, in consequence, but one gush of water. More frequently, where there is a plurality of children, each is contained in a separate cyst; and each has its own liquor amnii. Two or three gushes of water, are certainly no decisive proofs of twins; for these sometimes happen (indeed, not uncommonly) where there is but a single fœtus; nevertheless, if you do observe two very large and distinct gushes of water taking place,—more especially where the bag from which the first gush issued, has been thoroughly lacerated,—there can be little doubt of there being twins. Dr. Hull, of Manchester, has (I think) met with a case, where there were as many as five gushes;—the woman producing five children at a birth. Sometimes, therefore, during the birth of the first child,—by repeated gushings of the water, by the protrusion of supernumerary members,—by the inefficiency of the uterine action,—by the inertness of the parturient effort,—and by the large bulk of the uterus, after the liquor amnii has been thoroughly discharged,—you may be led to suspect there is a plurality of fœtuses.

Indications after the Birth of the First Child.—It is, however, after the first child has come into the world, that the question of plurality becomes of the greatest practical importance to us; and to this part of the subject I request your particular attention. To know that there is a second fœtus before the birth of the first, is seldom needful; but it is highly desirable that every good practical accoucheur should be able to say, whether another child remains in the uterus after the first is away. If another child remain in the uterus, you may in general know it the very first moment after the birth of the first, by laying the hand on the abdomen; for, instead of finding this part collapsed and flaccid (so that the coverings may be grasped in folds), and with a uterus contracted, round, and hard (easily to be distinguished when you have acquired a little manual experience), you observe the abdomen to be nearly as large as at the end of nine-months' pregnancy. When, therefore, the reduction of the abdomen is by no means considerable after the birth of the first fœtus, you may be pretty well satisfied that there is another in the uterus. Should doubts arise, however, the point may be further investigated by internal examination; when, if there is another fœtus in the uterus, you feel the bearing of a bag of water;—as at the commencement of an ordinary labour; or, if the bag be broken, the child itself may be felt. Of course, if no other fœtus be lodging in the uterus, neither the members nor the cyst of a second child will be distinguishable. To carry your hand into the uterus unnecessarily, is always improper;—not to say culpable or criminal; and in these cases, generally, the fingers will be quite sufficient to make the examination, without the introduction of the whole hand. Thus, then,—sometimes by external examination; sometimes by examining within;

* "And every combination of that kind."

but most certainly by combining the two methods of investigation,—we may at the bed-side determine, and with certainty too, whether or not there is a second fœtus in the womb.

[The symptoms to which practitioners have chiefly trusted, *after* the birth of one child, are the following:—1. The diminutive size of the child; and the waters being disproportioned to the distention of the gravid uterus. 2. The umbilical cord, after it is divided, continuing to bleed beyond the usual time. 3. The recurrence of regular labour-pains. 4. The retention of the placenta. 5. The abdominal tumour not being sensibly diminished between the stomach and umbilicus. But as all these symptoms are seldom united, and as several of them are, by themselves, fallacious, the most certain method is to attend to the usual diminution of the abdomen; and, in doubtful cases, to introduce the hand into the uterus; but this will very seldom be found necessary*.]

Circumstances liable to mislead.—Fool-traps, however, are set for us here, as usual; and hence, in managing these investigations, caution becomes necessary. Thus, when a child is away, its membranes may fall over the os uteri; and then, blood collecting in clots behind the membranes, which push forth into the vagina, something like the bag of a second fœtus may be felt; so that if, guided by internal examination, you neglected to examine externally also, you might persuade yourselves that there was a plurality of children, when, in fact, there was not. Cases of this kind are not very unfrequent. One occurred to Dr. Haighton; and one very remarkable one fell under my own care. By rupturing the membranes, these cases may be easily unmasked; for then the blood comes gushing forth; and, on examining externally, you find that the womb is very completely contracted; so that there is no room for a second fœtus. Nor must it be forgotten that, in examining externally,—if careless or incompetent,—we may now and then be deceived; for the woman may have an enlargement of the spleen, the liver, the kidneys, or the ovary (the last especially); or there may be air (or gas), or a great deal of water in the abdomen; and from these causes, after delivery, she may remain very large. To guard against this error, to which we are not unfrequently obnoxious, follow the advice already given, of feeling for the uterus. Do not content yourselves with simply laying the hand upon the abdomen; but do more than that. Feel for the uterus itself; grasp it; ascertain its form and outline; and then, in general, you will be able to satisfy yourselves, whether there is or is not another child in its cavity. A small uterus is to be esteemed a certain disproof of another fœtus; for blighted ova are not worth considering here. A large womb should always lead us to suspect another fœtus; and, in dubious cases, make your examination internally. By passing the hand into the uterus, the point may at all times be set at rest; but, in general, this movement is not necessary.

Thus much, then, respecting the indications of twins; accord-

* Dr. Hamilton's "Outlines of Midwifery".

ing as they occur before, during, or after the birth of the child. Study well the signs of the third class;—those, I mean, which are observed after birth. Not a labour occurs in which it is not proper to consult them; for in every delivery, after the birth of the first child, it becomes our duty to decide whether there is or is not another fœtus in the uterus.

The Second Fœtus sometimes Detained.—It sometimes happens that the twin enters the world so quickly, that you have scarcely time to prepare for its exit from the pelvis; but, in other instances, it remains in the uterus for hours and days;—not a bad symptom occurring. Nay, if twin-labour have supervened prematurely, the first child leaving the uterus, the womb may close; and the second child may not escape for weeks, or even months. A case of this kind occurred to my friend Mr. Newnham, of Farnham. However, when the second child remains in the uterus after the first is born, the woman is always liable to floodings; and therefore, I conceive, we ought not to leave the second child in the uterus, except in cases where the first child has quitted the pelvis prematurely, and a disposition to hæmorrhage is not observed to manifest itself. In those cases, then, in which the child is not disposed to come away, the accoucheur will be justified sooner or later in interfering;—the risk of flooding rendering it his duty to preside over the birth of the second child, just as he would over that of the first.

Delivery of the Twin.—If you find, upon the advent of the first child into the world, that there is a second in another membranous receptacle, one of the first operations to be performed, is that of rupturing the membranes as soon as you find the bag is bearing down into the vagina towards the external parts; for I would not do it till then. Should the head of the child be lying in the cavity of the pelvis when the membranes are ruptured, in general you have merely to sit at the bed-side;—not interfering with the birth, more than in natural labour; and should the feet, breech, or transverse presentations occur, you may assist the birth exactly in the same manner as you would the birth of a single fœtus.

But what are you to do, provided there be a presentation of the feet, breech, or vertex; and the fœtus is indisposed to come away? In this case, I would accede to Denman's rule; which is,—to wait for three or four hours, so as to give the womb an opportunity of acting; after which, should the uterus fail, artificial help becomes justifiable; for so long as the fœtus is in the uterus, the patient is exposed to risk. This help must be given according to the general principles of midwifery;—as already fully explained. But what, if you find that the child is lying across the pelvis;—the presentation being of the arm, the back, or the shoulder of the child? In these cases,—the child lying across in the pelvis,—it is your duty not to wait in the way which Denman has recommended; but rather to carry your hand into the uterus immediately on rupturing the membranes; in order that you may perform the operation of turning; for, in all probability, this must eventually be effected; and, in such cir-

cumstances, the sooner it is effected the better. If you delay your operations, the womb may close and obstruct you; but operating immediately after the first child is in the world, you find the parts lax, dilated, and unresisting; so that the hand may be passed into the uterus with considerable ease.

As the number of ova may rise to four, five, or even more, you should always ascertain, after a fœtus escapes from the uterus, whether another remains behind;—investigating in the manner already described.* As it is proper to designate the order of the birth, this may be conveniently indicated by a ribbon on the neck of the first.

Removal of the Placentas.—When all the children are born, then is an excellent time for blundering. You may lay hold of all the umbilical cords; you may begin to pull down; and at once, if thoughtless, you may invert the uterus, and produce a flooding! As many vessels are laid open, you ought, at this stage, to proceed with great caution;—managing the delivery, in these twin-cases, just in the same manner as when there is but a single child. Let it be your first office to ascertain that there is no other child in the uterus; for while there is another child in the uterus, in general you are not to remove the placenta. In cases of plurality, one placenta may be common to both children; and where there is more than one placenta, they may be connected with each other marginally; and this is a strong argument against a premature removal. Add to this that, if you bring away one placenta while there is another child in the uterus,—the uterine contraction being prevented,—dangerous bleeding may occur. Hence, then, in this and all other deliveries, it is a rule of first importance, before you remove the placenta, to ascertain that there is no other fœtus in the womb. Satisfied upon this point, and assuming that no dangerous symptoms occur, wait the hour, as usual; in order that the womb may contract;—occasionally compressing, and (as it were) shampooing it; so as to urge its contraction, and to ascertain whether that contraction has taken place. Further;—When the womb is round, hard, and not large, and you are satisfied that there is no risk of inversion or bleeding, you may next proceed to remove the placentas; and this more especially if the insertion of the cords can be felt, or the substance of the placentas be lying forth into the vagina. In some cases it may be proper to withdraw them in succession; but, in general, the better method is to take the two umbilical cords, to coil them together, and then to abstract the placenta at once;—taking the cords in the right hand, and the substance of the placentas in the left, and proceeding afterwards as in ordinary labours. Having done this, lay your hand on the uterus, and feel that it is contracted, and in its natural situation, behind the bladder. Lay the placentas on a cloth, and examine them; that you may assure yourselves of their being no part left behind in the uterus.

Women require more than ordinary care after twin-deliveries.

* See Pages 468 and 469.

The children, if more than two, are (I believe) seldom reared. They sometimes live, however. I myself had for a pupil, a very handsome young fellow, who told me he was one of three; all of whom had lived to man's estate.

There are two errors, or rather blunders, which you many commit, in managing these twin-cases. One is, that of bringing away the placenta of the first, without satisfying yourselves whether or not there is another child;—the child that is left behind perishing, perhaps, in consequence. The second error is that of rising from the bedside, smiling and congratulating the patient; then leaving the room with a courtly incurvation; and,—"good-bye, dear madam"!—while a second child enters the world, as soon as you have crossed the threshold!

SECTION 8.—DELIVERY AFTER THE DEATH OF THE MOTHER.

Duration of Fœtal Life.—You are not to suppose, that as soon as the life of the mother becomes extinguished, the life of the fœtus is extinguished also; for it is a well-ascertained fact, that children will continue to live in utero for many minutes, or even half-an-hour, after the maternal circulation is stopped. When the death of the mother creeps on her gradually, whether from bleedings or other causes, the chance of saving the child by removing it from the body of its deceased parent, is exceedingly small; nor is it unlikely that, in these cases, the fœtus dies before its parent. But where the death of the mother occurs in consequence of apoplexy, or some sudden accident incident to the most vigorous health, the probability that the fœtus may survive the mother is much greater. What may be the longest time that the child may continue to live in the liquor amnii, after the circulation of the mother is stopped, is a very interesting problem, well deserving of your consideration. In the country, more especially in a farming district, you may have an opportunity of making your observations on the sheep or cow, when with young; and after death takes place, whether by accident or intentionally, it would be easy to observe, in these cases, how long a term afterwards the fœtus is capable of resuscitation.

There are not wanting facts, which may encourage us to hope, that the child, within the body of the deceased parent, may live even for a considerable time. I am indebted to Mr. Moseley for the history of a *heifer* which, in the end of its pregnancy, died in consequence of some accident in the farm-yard. In about three-quarters-of-an-hour afterwards, it was flayed and embowelled; during which operation it was observed, that there was some little motion in the uterus. This led to closer inspection; when, on laying open the abdomen and uterus, the calf was taken out in a state of suspended animation, from which, in the course of a few hours, it became completely resuscitated. Thus, then, Mr. Moseley's statement, which (I trust) is to be relied upon in all its parts, furnishes us with an

interesting example of the prolongation of the life of the fœtus for three-quarters-of-an-hour after the vitality of the parent had become extinct.

It sometimes happens that a fœtus is still-born; and in that condition it may remain dead, to appearance, for twenty, thirty, or forty minutes; or even for a longer time than that. While it is in this still condition, there is no obvious respiration or circulation; yet, though it is in a state very nearly approximated to that of a person after death, it is now and then very unexpectedly resuscitated. I have myself resuscitated a child that had been lying in this state, without any obvious signs of active life, for more than twenty minutes together; and Mr. Tomkins, of Yeovil, in Somersetshire,—a gentleman formerly of this class,—gave me a case in which a fœtus, after lying still for more than an hour (as measured by the watch), was nevertheless resuscitated by artificial respiration. As Mr. Tomkins is a very accurate observer, I can rely on his statement with more than average confidence.

If, in this way, a fœtus lies apparently dead for an hour after birth,—to be resuscitated, however, by artificial respiration,—I think it is not unreasonable to hope that a fœtus might remain equally long in utero, without getting beyond the reach of resuscitation;—if, by the Cæsarian operation, or otherwise, it could be brought forth, so as to secure a trial of the remedies which I shall presently enumerate. To be short, then:—In the present state of our facts and knowledge, if a child be taken out of the uterus within half an-hour or an hour after the death of the mother, and more especially if the mother have perished by a sudden and violent death, we may reasonably hope that the life of that child may be preserved.

Case of Removal after the Mother's Death.—Some three or four years ago, a woman, in the end of her pregnancy, crossing a street near this Hospital, was run down by one of the stages; the wheel of which passed over the body, and divided the liver into two pieces;—death following in the course of a very few minutes afterwards. This poor creature was brought into the Hospital; and Mr. Green, who chanced to be going round at the time, gave it as his opinion, that the Cæsarian operation ought to be performed. I was accordingly sent for, to give a little obstetric assistance; when, within thirteen minutes from the last respiration of the deceased, the abdomen was laid open; and the child was taken out, within fifteen minutes from the last respiration. The lungs were inflated by means of the tracheal pipe (my principal resort);—the warm-bath, also, being afterwards tried. In thirteen minutes more, the child first began to breathe a little; and the umbilical cord began to act; and, by perseverance in this method, the fœtus was completely resuscitated. It lived for a day or two; and would probably have been living still, had it been more judiciously managed by those to whose care it was committed. Should you be called, then, to a case in which the parent had suddenly deceased but a short time before, it is then highly probable that the fœtus is alive. Should motion be perceived

in the abdomen, there can then be no further doubt; and, of course, the removal of the child must be made the subject of deliberation.

Two Modes of Removal.—There are two ways in which, after the death of the mother, the child may be taken away. The one is by making an opening into the abdomen with a razor, or any other convenient instrument; and this method, on the whole, is the shortest and the best. The other turns on the introduction of the hand into the uterine cavity, and the abstraction of the fœtus by the operation of turning. This operation may be easily performed here; as the passages may be dilated with more force and celerity, if the mother be really and thoroughly dead; though, even in these cases,—such is my strong dislike to obstetric violence,—that I would not employ a greater degree of effort, than is absolutely necessary in order to get the fœtus away. *Arte, non vi.* And here let me observe, that it is only when the woman is dead beyond all doubt and controversy, that deliveries in these wretched cases ought, I conceive, for one moment to be thought of. Who that has a heart of flesh in his bosom, could coolly sit down, in a real case, to argue for the advantage to be derived to the fœtus from the performance of the Cæsarian incisions, before the maternal life is totally and beyond all doubt extinct? Who that has a heart of flesh in his bosom, could have firmness sufficient to perform this operation in such circumstances? Who could look on the dying eyes of his patient, without suffering the knife to drop from his hand? Who would himself like to be disturbed in such a moment? As long as men are surgeons, surely surgeons may continue to be men; and while they make it their duty to subject their feelings to their reason, doubtless it is still their duty to act under that moderated influence of the feelings, which gives the last finish to the manly character. I like the sentiment of the lively Figaro,—"Elle a raison, ma mere; elle a raison, raison, toujours raison! Mais accordons, maman, quelque chose à la nature! On en vaut mieux apres!"*

SECTION 9.—DELIVERY COMPLICATED WITH FEVER AND INFLAMMATION IN THE LATTER MONTHS.

Inflammations in the End of Pregnancy.—In the end of pregnancy, you will sometimes find inflammations taking place in the thorax, abdomen, or head; more especially in the thorax and abdomen. If these inflammations are unattended with any extraordinary symptoms,—which probably they will be,—you should treat them precisely in the same manner as you would an inflammation in which there is no pregnancy; because, though it may be true that your remedies, and more especially large bleedings or purgings, may not altogether suit the pregnant condition, yet, where you have inflammation of the thorax or abdomen, it is absolutely necessary that such inflammation should be subdued. It is to be remembered, however, that where there is an inflammation going forward, and where a great deal of blood is taken away, not very uncommonly miscarriages

* "What she says is reasonable, my mother,—very reasonable! But let us allow something for nature! Nothing will be lost by that!"

and floodings occur; nor is it to be forgotten that, during the abstraction of the placenta and the membranes, further and large quantities of blood may be discharged from the uterus; which, with the previous venesection, may sink the patient;—at least, unless transfusion be interposed. Three cases of inflammation, in the end of pregnancy, I have had occasion to see. Two of those cases did very well; and in the third, in which the inflammation supervened but a short time before delivery, the inflammatory action was completely subdued; but, in a few days afterwards, parturition commenced; a good deal of blood was lost; and ultimately, as my informant tells me, the lady sank.

Inflammation concurrent with Parturition.—You will sometimes find, as I have seen myself, an inflammation concurrent with parturition. Perhaps inflammation begins with delivery; or it may supervene after the process is begun. When delivery is coming on, and there is inflammation in the abdomen, if you do not perceive that the abdominal inflammation is aggravated by the labour,—meddlesome midwifery being bad,—I would not have you interfere. On the other hand, however, if it is clearly obvious that the labour is hurrying the inflammatory action, then the more promptly delivery is terminated the better. If the head be within the reach of instruments, you may endeavour to accelerate the delivery by the use of the lever or forceps; or, in some rarer cases, by the perforator. If the head be above the brim, then the undesirable operation of turning must be adopted; and by it the fœtus may be brought away.

Sometimes mistaken for Parturient Pains.—It may not be amiss to note here, what I think I stated before; I mean, that where women have spasmodic and inflammatory pains,—about the lower part of abdomen more especially,—these pains are sometimes mistaken for the pains of parturition. That they are *not* the pains of parturition, we know by their seat, by the tenderness of the parts, and by their wanting the ordinary regularity of return. That they *are* the pains of parturition may be safely inferred, when we find, on examination, that the os uteri is becoming more and more dilated; that, during the pain, the membranes are tense, and lax during the absence of pain; or, that the head bears down on the tips of the fingers during pain, and recedes during the absence of it. By these characteristics it is that, in general, I judge.

Fever in the end of Pregnancy.—In the end of pregnancy, or during delivery, it sometimes happens that fevers supervene; and it may now be proper to add a few remarks on this variety of disease. When fever occurs in the end of pregnancy, if the attack be severe, it is not improbable that the expulsion of the child may take place; and for this accident, therefore, you ought to be prepared. So long, however, as there are no peculiar obstetric symptoms occurring, so long it is unnecessary for you to interfere; and even if the delivery should supervene, I think the process ought to be conducted on the general principles of midwifery. I need scarcely repeat what I have so often asserted; I mean, that meddlesome midwifery is bad; and

this being admitted, it follows that, in these cases of fever, the mere concurrence of the disease with the end of gestation, is, in itself, no valid argument why you should interpose. Should there be a concurrence of any other urgent symptom, which delivery alone can relieve, then assist if you please; provided you can assist with safety; but remember that fever, alone, will not justify your interference.

Fever during Parturition.—If fever concur with *parturition*, in general, I believe, the labour will proceed well enough; though it may frequently linger;—the pains not being so frequent and powerful. If floodings supervene, or other dangerous symptoms, you may then assist artificially;—helping with your instruments (the lever, forceps, or perforator), or turning the fœtus; according to the circumstances of the case. But if, on the other hand, the labour lingers, and no symptom of danger concur, then, agreeably to the doctrine already laid down, you had better trust to the natural efforts; of which you are never hastily to despair. If the fever be *infectious*, and it becomes necessary to turn the child, some precaution becomes necessary. A friend of mine being engaged in turning a child, in a case where the mother laboured under a fever of the typhoid kind, he, to all appearance, caught the disease from his patient; and it had very nearly cost him his life. If a woman is labouring under the measles, for instance, or the scarlet-fever, and you have not been secured by a previous attack, it becomes necessary that you be upon your guard. I think you would be doing but justice to yourselves and your friends, were you to send for a practitioner who has had those affections already; because, if it can be avoided, valuable lives ought not to be exposed. If, however, it become your duty to act, of course you must, at all risks;—never retreating from your post. Fall we all must, sooner or later; nor can we fall better than in the ranks! In cases of this kind, however, it may be proper to have the patient lifted on to another bed; or, if this cannot be done,—in order to keep down the steaming vapour,—it may not be amiss to raise the patient a little, and to spread out two or three blankets beneath her, before you begin your operations. The prognosis, in these cases, is not favourable.

Fever and Inflammation.—[During labour, there is generally some degree of pyrexia; which is relieved by perspiration, and probably also by the discharge which takes place from the vagina. If any local inflammation should rise during pregnancy, treat it as if pregnancy did not exist. Indeed, you should act with more vigour; for the system makes blood more quickly than in the unimpregnated state. In many cases I have not taken enough. Sometimes the abdomen is so painful in labour, that the pressure of the bed-clothes cannot be borne. Here, if the pulse will bear it, you must bleed. I once attended a woman who was so weak, that I dared only to put on twenty leeches. She got a little better, and I put on forty. She still improved, and I bled her; after which, fifty more leeches were applied; and she recovered.*]

* Dr. Mackintosh's unpublished Lectures on Midwifery.

SECTION 10.—EXTRA-UTERINE PREGNANCY.

Its Varieties.—In general, when women conceive, the ovum takes its place, as it ought to do, in the uterine cavity; but sometimes it lodges in the peritoneal sac; and far more frequently in the fallopian tube, or the ovary. This it is that constitutes *extra-uterine* gestation; which is divided into three varieties;—the *tubal*, the *ovarian*, and the *ventral*; according to the situation of the ovum. To these three varieties may be added a fourth, first shown me by Dr. Ramsbotham, the younger;—the utero-tubular, as it may be called; in which the fœtus lodges in the uterine portion of the tube.

[Dr. Breschett also speaks of a *fourth* species of extra-uterine pregnancy; which he terms *graviditas in uteri substantiâ**. In this kind of pregnancy, the ovum is enclosed in the parenchyma† of the uterus itself; excepting that a cyst separates it from the substance of the viscus;—as is the case in the instance of foreign bodies introduced into organic textures. A few cases he considers to have been recorded on good authority; and relates a case himself.‡]

Ventral Pregnancy.—I have myself seen a fœtus, on the whole not imperfectly formed, about the size of six or seven months, and which was taken from the body of a boy; where it lay in a sac, in communication with the child's duodenum;—the boy being pregnant. It being, therefore, not impossible for a fœtus to form within the body of a male,—in such a situation too,—I cannot accede to the opinion advanced by some;—namely, that it is impossible that a fœtus should form, in women, within the peritoneal sac, among the abdominal viscera. The probability is, that this accident is possible; but that it is of very rare occurrence; and I think with Dr. Merriman, that it is not impossible that some of those cases that have been looked upon as ventral pregnancy, have, in reality, been cases of rupture;—the case having been mistaken for ventral pregnancy, in consequence of the discovery of the ovum after death among the abdominal viscera; the rent in the womb being overlooked.

Ventral pregnancy being rare, I personally know nothing of its symptoms; but it is said that, in those cases, the placenta and fœtus form in the ordinary way;—the blood-vessels of the maternal viscera enlarging wherever the placenta chances to adhere.

Ovarian Pregnancy.—When patients die the victims of *ovarian* pregnancy,—a disease which is far more common than the *ventral*,—we sometimes find a great deal of blood effused among the viscera; with a fœtus, perhaps, not bigger than the thumb, and an ovary laid open by laceration. More generally, however, in these cases, the ovary becomes as large as the uterus at the seventh, eighth, or ninth month of pregnancy; when it is found to contain a full-sized fœtus, with a placenta often remarkable for its tenuity; or (as observed

* "Pregnancy in the *substance* of the uterus."

† From παρεγχυω, *to strain through*; because the ancients believed that the blood was strained through it.

‡ "Medico-Chirurgical Transactions"; Volume 10; Page 34.

hereafter) this fœtus becomes putrid, and is contained in a sort of abscess, where its softer parts gradually disappear; or, in the course of years, it is transmuted into fat or bone.

Tubular Pregnancy.—When *tubular* pregnancy has been the cause of death, it rarely happens that the fallopian tube becomes as large as in the ovarian pregnancy. I have never seen any case of tubular pregnancy in which the tube was of great size. More generally this canal enlarges to about the size of a small fist; sometimes to the size of a pullet's egg only; and, in the early part of gestation (say in the second or third month), this cyst bursting open, the child escapes into the peritoneal sac, and the woman suddenly perishes by an internal hæmorrhage. Many women, I have little doubt, die in this way; but, being buried without examination, the real cause of their death is never ascertained. Three or four tubal gestations of this kind, have taken place within the circle of my own obstetric acquaintance; whence I infer, that the case is by no means rare.

State of the Womb.—In extra-uterine pregnancy, the state of the womb varies somewhat; but it is remarkable that it generally becomes two or three times as large as in its virgin condition. In some cases, the tunica decidua is found to form in its cavity; much in the same way as if the fœtus were there. This, however, is by no means constant. Mr. Langstaff, who has paid so much attention to morbid anatomy, examined a case in which there was no well-formed tunica decidua; and I have myself seen two tubal cases, in which the decidua was wanting; while, in a third case which I saw, where the patient died between the second and third month, the tunica decidua was very distinctly produced in the uterus.

Symptoms of Extra-Uterine Pregnancy.—When extra-uterine pregnancy occurs,—whether of the ovarian, tubular, or perhaps of the ventral kind,—the symptoms by which it is marked are not always very intelligible in the earlier months; whence it is not improbable, should you meet with a case of this kind, that you may not recognise it till after the decease of the patient. In the early months of extra-uterine gestation,—say in the first, second, third, fourth, and fifth month,—the woman believes herself to be pregnant; for she observes all the ordinary signs; but the characters are so obscure, that it may not be very easily recognised. But if the woman, after all the signs of pregnancy, be seized with severe, but anomalous pains and spasms of the abdomen, together with fits of fainting and collapse, you may always suspect extra-uterine fœtation. In ovarian pregnancy, too, and more certainly in the tubal, there is a great deal of anomalous tenderness, pain, and spasm; which are referred to one or other side of the abdomen, more especially its lower part. After these symptoms have continued for some time, the patient, suddenly perhaps, is seized with a fit of collapse, under which she sinks; and this, it is probable, not always in consequence of abdominal hæmorrhage.

When the full pains of parturition come on about the ninth or tenth month, there is a fair cause for suspecting that the pregnancy is extra-uterine. The woman, up to this moment, has believed her-

self to be pregnant in the ordinary way; and now she supposes herself to be in labour. If you at once examine the abdomen, you find it much of the usual form;—its enlargement, however, tending laterally; but if you empty the bladder, and make a careful examination through the abdominal coverings, you may, at least sometimes, distinctly feel the fundus of the uterus, just above the symphysis pubis, as large as after recent delivery. If you can do this, there is a good proof that the fœtus is not there. Moreover, if you can slide one or two fingers along the neck of the womb, after the decidua comes away, and if you thus insert your fingers into the uterus, you may clearly ascertain the absence of the fœtus; so that,—by examining the uterus of the expulsion of the tunica decidua, by feeling the fundus of the uterus above the symphysis pubis, and by finding that the woman has all the pains of delivery,—you obtain pretty decisive characteristics that the pregnancy is extra-uterine. Of course, if inflammation and suppuration form, and you have a discharge of the fœtus piece by piece, there can be no doubt of the case. The only difficulty of detecting it will be while the inflammation is going on, and before the discharge of the fœtus;—a difficulty of less importance, because, while the imflammation is proceeding, it must be treated on general medical principles.

Prolongation of the Ordinary Period of Gestation.—Gestation advancing to the latter months*, more especially in the *ovarian* pregnancy, the case may still remain obscure. The patient believes herself to be pregnant; but, perhaps, she exceeds the ordinary term of gestation;—proceeding, perhaps, for ten, twelve, or fourteen months, before any very conspicuous changes occur. After the full term of gestation has passed away, however, it may be she is seized (sometimes earlier and sometimes later) with pains very like the pains of parturition; so that she fancies herself in labour. Under these pains,—in some cases very slight, and in others very severe,—there comes away a little blood; and if the tunica decidua be formed, it is expelled also; but, of course, no part of the fœtus;—that not being contained within the uterine cavity. If, then, the practitioner examines carefully at this time, he finds that the tunica decidua is expelled alone; and, inserting a finger or two into the uterus,—easily searched in this manner,—he finds it enlarged and opened a little; but without the vestige of a child there. These abortive attempts at parturition, usually (I believe) cease in a few weeks; but in some cases, and in one of an analogous kind which I myself saw, the patient may suffer in this way for years. The woman to whom I allude, a native of Aberdeen, was anxious to have a sort of Cæsarian operation performed; that she might get rid either of her pains or her life; and she came to London for that purpose;—the surgeons of Aberden having, as she said, refused (and very properly refused)

* The extraction of an extra-uterine fœtus in the ninth month, has been seldom observed. Instances of its arrival at the full period are recorded by Haller, Baudelocque, Leroux, and Galli.—*Dr Ryan's "Manual of Midwifery"; Third Edition; Page* 444.

to perform the operation in the circumstances in which she was placed. Her sufferings had been protracted, and dreadful indeed; so much so, that she had taken a razor, and attempted to perform the operation herself. She showed me the scar.

Different Terminations of these Cases.—Before the parturient efforts occur, or after these symptoms have gradually worn away, the patient is liable to be attacked with an inflammation in the cyst where the fœtus is; which inflammation gives rise to tenderness, pains, stabbings, adhesion, suppuration, and absorption. Under these operations, the cyst opens on the abdominal surface, or (less desirably) into the vagina or rectum; and, morsel by morsel, the fœtus may be expelled. In other cases, instead of terminating in this manner, the extra-uterine pregnancy is brought to its close in a way very different; nor is this the least interesting. In this termination of the disease, the ovum lies inert within the abdomen for ten, twenty, and thirty years, or longer; and during this time,—as observed before,—it becomes gradually changed into a bony, or sebaceous substance;—occasioning the patient little further inconvenience, than that which arises from its bulk and weight. In this state of the genitals, another impregnation may, I believe, occur.

Treatment of Extra-Uterine Pregnancy.—In the present state of our knowledge, extra-uterine pregnancies are rather matters of curiosity, than the subject of much active treatment. If, in the earlier months, the woman have spasmodic or inflammatory pains, you must treat them on general principles. I have nothing peculiar to recommend for them. They are, however, both severe and dangerous. If you suspect an extra-uterine pregnancy, you ought to mention to the friends the chance of sudden death from internal bleedings; for, should that occur, this previous intimation to the friends may, with reason, tend to preserve their confidence in your skill and knowledge. If, in the end of gestation, a great deal of parturient effort occur, and the womb be found to contain nothing but the tunica decidua, and the abdomen be as large as in a pregnancy of nine months, and the woman have exhibited previously all the indications of pregnancy,—there can be little doubt (if any) respecting the nature of the case; and anodynes and opium ought to be administered. In such cases, too, it might come to be a consideration, whether a sort of Cæsarian operation ought to be performed; or, at least, whether an opening should be made into the abdomen, to take out the child.* On the whole, however,—considering the danger of the incisions, and the risk of a fatal bleeding internally,

* After the most minute consideration of all the circumstances of ventral fœtation, Capuron, Desormeaux, Gardien, Velpeau, and various French writers, are advocates for gastrotomy, after the seventh month. They argue, that the woman must either be lost by hæmorrhage, from the bursting of the fœtal sac, or by inflammation; and that the infant is also sacrificed. They hold the operation to be 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.—*Dr. Ryan's "Manual of Midwifery"; Third Edition; Page* 445.

when the extra-uterine placenta is taken away,—abdominal incision seems to promise but very little success; and, therefore, I should be averse to try it. If the fœtus, piece by piece, is coming away from the abdomen, the best office which you can render the patient, if nothing forbid, is to enlarge the opening, and to take out any parts you can remove without violence. Sometimes the discharge of the fœtus occupies many months, or even some years; and, during all that time, the patient is kept in a state of cachexia; though, in some cases, I believe, she is relieved in a few months. If, then,—by prudently dilating the orifice of the cyst, and removing the bones with the forceps, or otherwise,—you can accelerate the evacuation, and shorten this period, you may render the patient a very effectual service.*

* Instances, more or less interesting, of extra-uterine pregnancy, with their different histories and treatment, may be consulted in various works. See the following:—Bonet, Sess. III. XXI. 57; Herst, Opss. I. 131, II. 521; Barthol. Hist. An. VI. 92; Ess. III. 250; Fulp. IV. 40; Bayle, Bromfield, Copping, Middleton, Giffar, Marley, Simon, and Winthorp, in the "Philosophical Transactions"; Gemmil, in the "Edinburgh Medical Essays", Volume 5, Page 336; King, 441; Chamoux, Jour. Mid. XXXIX.; Langür, XLI.; Thibault, Rec. Pér. I. 368; Debenham, in the "Philosophical Transactions" for 1751-92; Young, in the "Edinburgh Physical Essays", Volume 2, Page 273; Morgagni, Ess. 48, n. 42; Bard, in the "Medical Observations and Inquiries", Volume 2, Page 369; Kelly, in the "Medical Observations and Inquiries", Volume 3, Page 44; Hay, in the "Medical Observations and Inquiries", Volume 3, Page 341; Haller, M. Ac. Par. 1773; T. Bell, "Mid. Com. Ed"., Volume 2, Page 72; Percival, "Mid Com. Ed.", Volume 2, Page 77; Smith, "Mid. Com. Ed.", Volume 5, Page 314; Walther Geschichte, 4, Berl. 1778; Fitzgerald, in Duncan's "Medical Commentaries," Volume 8, Page 329; Bland, in Duncan's "Medical Commentaries", Volume 11, Page 334; Maclarty, in Duncans's "Medical Commentaries", Volume 17, Page 481; Gerson, Brobachtung, 8, Hamb. 1784, Lit. Obs. II. 15; Cammel, in the "London Medical Journal", Volume 5, Page 396; Moyle, in the "London Medical Journal", Volume 6, Page 52; D. Jacob, in the "London Medical Journal", Volume 8, Page 147; Underwood, in the "London Medical Journal", Volume 8, Page 320; Baynham's "Medical Facts", Volume 1, Page 73; Turnbull, in the "Transactions of the Medical Society of London", Volume 3, Page 176; Meaze, in the "Transactions of the Medical Society of London", Volume 4, Page 342; A. Fothergill, in the "Transactions of the Medical Society of London", Volume 6, Page 107; Gordon, in Duncan's "Medical Commentaries", Volume 18, Page 323; Wilson, in Duncan's "Annals", for 1797, Page 317; and for 1799, Page 401; Forrester, in Duncan's "Annals", for 1798, Page 379; Goodsir, in Duncan's "Annals" for 1802, Page 412; Clarke, Grivel, in the "Edinburgh Medical Journal", Volume 2, Page 19; Anderson, in the "Edinburgh Medical Journal", Volume 2, Page 180; Coley, in the "Edinburgh Medical Journal", Volume 6, Page 50; Blizard, in the "Edinburgh Transactions", Volume 5, Page 18; Lallemand, "Nouv. Journ. Trans.", Volume 2, Page 320; Tucker, in the "Medical and Physical Journal", Volume 29, 448; Bianchi, "De Nat. in Hum. Comp. Vit. Morb. Gener.", Page 166; Mounsey, in the "Philosophical Transactions", Volume 45, Page 131; Firn. XXI. 121; Langstaff, in the "Medico-Chirurgical Transactions", Volume 7, Page 437; Sabatier, "Med. Oper.", Volume 1, Page 343; Bushell, in the "Medico-Chirurgical Review", for June, 1824; Perfect's "Cases", Volume 2, Page 164.—*Dr. Castle.*

CHAPTER XV.

AFTER-MANAGEMENT OF THE PUERPERAL STATE.

Although there seems to be no doubt, that the majority of puerperal women would do perfectly well, even though they were subjected to no peculiar rule of discipline; yet, as it is certain that women become more susceptible of disease after parturition has taken place, a particular method of treatment is usually prescribed even for the healthiest and most robust women; and of this I now proceed to speak.

Examine the Perinæum.—Immediately after parturition has been completed, if you have no reason to suspect that laceration of the perinæum has occurred, it is not necessary that you should examine this part; but if,—from the circumstances of the labour, the rigidity of the softer organs, the largeness of the child, the unfavourable position of the head, the use of instruments, or other considerations,—you have reason to believe that more or less laceration of the perinæum has taken place, a very convenient time of satisfying the mind upon this point, is the moment after the child has come into the world. Neglecting to make your examination at this time, you may perhaps afterwards meet with symptoms, which lead you to suspect laceration; and,—disliking to examine the parts a day or two after delivery, for fear of alarming the patient,—your mind may be kept in a state of suspense and distraction;—of all others the most unpleasant to the feelings. When lacerations occur, you may always know it by the touch;—allowance being made for the narrowing that takes place after the transverse distention occasioned by the child's head. If you still doubt, you may inspect; nor is it necessary, in doing this, to occasion much exposure of the person.

Guard the Genitals from Cold.—I know not whether the opinion of women is well grounded or not; but their persuasion is, that they are very liable to catch *cold* in the uterus, and parts contiguous, after delivery. As such an opinion prevails, it is proper that the softer parts should be immediately clothed; and though, on a former occasion, I explained the manner in which this ought to be done, yet I will again advert to it; as it is a point of practical importance. In performing this office, you take a napkin (dry, and properly aired by the nurse), and fold it into an oblong form; and,—the woman lying on her left side,—you place the napkin over the pubes;—carrying it up in front and behind, so as to cover the genitals. A second napkin being prepared in the same manner, you pass it between the bed and the lower hip; afterwards carrying it upwards, so as to fold it over the hip which lies uppermost; and then, taking a third napkin, you lay it over the hips above;—afterwards carrying it beneath the under hip. By the application of these three napkins, the centre of the person may be kept very secure;—so that the patient is shut out, as it were, from all the blood, and water, and other

moisture, that may lie about her person; and the access of the cold air is also intercepted.

Compress the Abdomen by a Bandage.—In all cases where there has been a large child, or a plurality of children, or where, from other causes, there has been sudden and great collapse of the abdomen, it becomes necessary to compress the abdomen with a broad bandage;—so as to give an agreeable support to the muscles; for the woman, after delivery, feels as if she were falling to pieces. This practice, which should certainly be adopted on all occasions when there is an unusual collapse of the abdomen, may, I think, be followed with advantage in most instances; and I am now accustomed to apply a broad bandage of calico, or a towel, round the clothes externally;—so as to comprise the abdomen, and give it support. It is better, perhaps, that this bandage should be put on before the patient takes her place on the bed, for the purposes of delivery; but should you delay its application till the delivery is completed, it may not be amiss to remember, that you ought not to raise your patient to the sedentary posture. In these cases, she ought to lie almost still; and when the bandage is to be passed, the operator may glide his arm beneath her person, so that the hand appears on the other side; when, grasping the end of the bandage, he easily draws it forth;—afterwards adjusting and fixing it, so as to give the necessary support to the parts. For this office, Gaitskell's bandage is well adapted; and I will presently give you his rules for managing it.

Exhibition of Cordials.—After most deliveries, and especially those where there has been a good deal of exertion, the patient is liable to feel very exhausted and weary. This exhaustion, more especially felt immediately on the birth of the child, may be relieved by the administration of some cordial;—say, for instance, of two or three tea-spoonfuls of brandy, rum, or gin, diluted with five or six of warm water;—a little sugar and nutmeg being added, to flavour the draught. It warms the stomach, and exhilarates the spirits; and, in general, the administration of it gives no dissatisfaction to the patient.

Necessity of the Recumbent Posture.—Where alarming floodings have taken place,—a great deal of blood being lost,—in general it becomes necessary to confine the woman strictly to one position, for twelve or sixteen hours; nor ought she needlessly to stir hand or foot; lest further flooding or collapse should ensue. In ordinary cases, however,—and such I am now considering,—after the birth of the child and the removal of the placenta, it is enough for the patient to lie in one position for three-quarters-of-an-hour or an hour; during which time the nurse may wash and dress the child, and set the room in order. After reposing in this manner, she is to be put into bed; and though I believe that our women, after delivery, might often rise and walk with impunity,—like those of barbarous nations,—nevertheless, in many instances, there would be no small danger

from such exertion; for the womb might descend; and I have myself seen a woman perish, under a flooding induced by rising to the erect position. Before delivery, therefore, the bed should be arranged; and then, after the birth of the child and its placenta,—provided the nurse thoroughly understands her duties,—the patient may be deposited in it with very little disturbance; and it can seldom be necessary, or proper, to raise her to the erect position.

The Patient not to be hastily left.—As it has repeatedly happened that, within the first hour after delivery, women have been carried off very unexpectedly,—sometimes by internal bleeding, and more frequently by discharges of blood externally,—I should recommend you, more especially if you are beginning practice, to remain in an adjoining chamber till the patient is put to bed; and to see her afterwards before you quit her apartments; for accidents may occur. The daughter of one of my friends was delivered by an excellent practitioner; who left her, to appearance, doing well. She was put into bed; and, just as he was on the point of quitting the house, alarming symptoms occurred. He hurried to the bed-side; and, within the compass of five minutes, saw her dying and dead! These cases are not common; but their occurrence is sufficiently frequent to give value and importance to the rule which I have just prescribed. I wish not to alarm you needlessly, by relating accidents of this kind. After delivery, in country practice especially, the vast majority of women will certainly do well. Let it not be forgotten, however, that in some anomalous cases, women sometimes die very unexpectedly; and, therefore, that it is wise (particularly when you are beginning practice) to remain in an adjoining apartment, and to pay your farewell visit when the patient is in bed. Finding the woman in her bed, you may satisfy yourselves whether the bandage, or the *safeguard* as it is called (a sort of petticoat open in front), has been brought to a due degree of tension. I should further observe that, on seeing the patient, if there has been the least proneness to flooding, you should inquire into the circumstances of the bleeding. In general, you are told that no discharge is felt; and when, anxious to satisfy yourselves of the fact, you lay your hand on the abdomen, you find the uterus contracted. On compression with the hand, likewise, you do not find that blood is urged away. Sometimes, however, bleeding really occurs; and if there should happen to be an *internal* hæmorrhage, you may distinguish it by the coldness, weakness, and faintness of the patient; and by the gushing forth of the blood, when you press forcibly on the abdomen.

Administration of Anodynes.—Seeing the patient after she has been put to bed, you will then order what medicine is necessary. If she has had no child before, probably she will have no pains; but if she has had a large family, she may have very violent after-pains; and for these you may prescribe from twenty-five to thirty drops of the tincture of opium, a drachm or two of syrup of red-poppies*,

* The "Syrupus Rhœados" of the London Pharmacopœia.

and an ounce of camphor-mixture. Of these draughts, you may order two;—one to be taken an hour after you quit the patient, should pain urge; and one to be administered an hour after the preceding, should the former fail to relieve.

Attention During the First Two or Three Weeks.—Although, as I have observed before, the majority of women do very well after parturition, particularly in country places, yet it is to be remembered that they are liable to some very formidable diseases; and certainly more frequently so in large towns, and in the middle of a dense population. Hence the necessity of attending to the woman during the first two or three weeks. It may not be amiss to remark, that there is a popular opinion, that if women get beyond the ninth day, they are secure. And this popular opinion is not without some truth for its foundation; for almost all the more formidable accidents to which puerperal women are liable, occur within the first few days after delivery; and, therefore, in town-practice especially, it is most important that you should be very attentive to your patient during the first week. Bring her safely through the first week; and she will generally do well.

Ascertain whether there be any Incipient Disease.—When you are visiting a patient after delivery, one of your first objects should be to ascertain whether there be any incipient disease; for sometimes the bladder is getting overloaded with urine; or the bowels, not having been cleared out before delivery, remain constipated; or inflammation begins in the peritoneum; or there is inflammation in the breast, phlegmasia dolens*, fatal cerebral disease, or the like. If you find your patient looking cheerful and well, and complaining of no uneasiness whatever, there is little doubt that all is secure. On the other hand, if you find something hanging about her, and preventing her getting forward in the usual manner, you should then be more solicitous in your inquiries; as the incursion of some disease may be suspected. In those cases, you should learn whether her nerves have been much disturbed, or whether she sleeps badly; for sometimes women are liable to puerperal irritability, or to puerperal mania. Ascertain what is the state of the bowels. Sometimes they may have been constipated before delivery, and may remain so afterwards; and a great deal of pain, like that of puerperal fever, may be produced; all which, however, readily yields to purgatives. Inquire, again, respecting the after-pains. When women are doing very well, they usually have the after-pains slightly; but if puerperal fever is prevalent at the time, you may suspect it is going to attack your patient;—provided these pains recur with unusual severity; and you should, therefore, direct your inquiries accordingly Women themselves are anxious about the lochia†; and you should, therefore, inquire how that discharge is going on. If it is moderately copious, all is well; if, on the other hand, it has been suddenly suppressed,—provided there be no other bad symptoms,—you need

* From φλεγω, *to burn* (alluding to *inflammation*); and "dolens", *painful.*

† From λοχευω, *to bring forth.*

not disturb yourselves; but you ought always to inquire for these symptoms, and for the symptoms of uterine inflammation more especially; for inflammation of the womb is sometimes found to occasion the suppression of the lochial discharge.

You should not neglect to inquire into the state of the bladder. The woman generally passes her urine well enough; but sometimes she does not pass it sufficiently; and sometimes one or two pints, or even one or two quarts, may accumulate; although the urine comes away in a copious stream;—the bladder never being thoroughly evacuated. Enlargement of the abdomen, violent spasms, and much fever may be thus produced; and the bladder may be in danger of bursting;—an example of which I saw not three weeks ago. The state of the mammæ is not to be overlooked. The breasts are often enlarged, hardened, and painful; especially on the third day (reckoning the day of delivery as the first). If the woman should have had abscesses in her breast, you ought to watch the bosom with more than ordinary care. If puerperal fever be prevalent, of course you will inquire whether the patient have symptoms of this;—more especially on the second or third day. If the labour have been laborious, and you have been obliged to use instruments, inquire whether there has been much swelling of the softer parts; whether the urine flows freely; and whether the rectum preserves its retentive power. If the patient have risen,—which she usually does about the fifth day, as the general rule,—then learn from her whether she has any symptoms of prolapsus uteri;—a disease to which women who have had large families, are extremely obnoxious. In restoring the uterus to its proper place, the horizontal posture is a great help; and if the tendency to prolapsus be strong, the patient ought to confine herself to the one posture (the horizontal) for five or six weeks together, as religiously as an oriental fanatic. In all cases, on visiting the patient after delivery, be sure to count the pulse. I will not say the woman is always in danger when her pulse is above one-hundred; but when this is the case, you ought always to watch her. On the other hand, when the pulse is below one-hundred,—when it is ninety-five, ninety, eighty-five, or eighty, in the minute,—you may be sure she is safe. There is no one symptom which indicates disease or safety so neatly and clearly, as the frequency of the pulse.

Here, then, are some important points, to which your attention may be directed, for the first few days after delivery;—the state of the perinæum; the state of the nerves; the state of the bowels; the state of the after-pains; the state of the lochia; the state of the bladder; and the state of the breast. If puerperal fever be prevalent, inquire into the symptoms of that disease in the incipient state. If the labour has been more laborious than ordinary, attend to the state of the bladder, rectum, and soft parts. If the patient be risen, ascertain whether there is or is not any disposition to prolapsus of the womb. The pulse ought always to be counted; as the frequency of it is so valuable an indication of the security or danger of the patient.

Attention to Diet.—When you make your visit the day after the

delivery, you will be often asked what diet the patient should employ. During the first three inflammatory days, and till the period of the milk-fever is passed away, it is best, according to the old practice, to keep the woman on very low diet;—consisting of gruel or arrow-root, or milk-and-water (equal parts). To dilute the *London* milk is unnecessary;—thanks to the kind and preventive forethought of those who distribute it! There are a very few cases of very delicate women, in which it may be requisite to allow beef-tea, or even solid food, from the first day; but those cases are to be looked upon as exceptions to the general rule. After the period of milk-fever has passed away, the patient may be gradually brought back again to her usual mode of living. Beginning with beef-tea, she may then proceed to the use of the white meats (chicken, veal, and fish);—afterwards making use of mutton, beef, and stronger food. Although it is certainly unwise,—especially when the puerperal fever is epidemic,—to bring the woman too rapidly forward as to her food, yet I am persuaded we may sometimes err in not giving enough; and especially where the woman is giving milk to support the child. With respect to the beverage, it may consist of milk-and-water, or toast-and-water, or weak black tea, before the period of milk-fever; but after the period of milk-fever is passed, a more stimulant beverage may be used;—not, however, unless symptoms seem to require it.

Exhibition of Medicines.—When the patient is, on the whole, doing well, there is little need of having recourse to medicines; but should the patient be solicitous, you may order something that will do no harm;—to be taken four or six times during the course of the four-and-twenty hours. Now and then, operative medicines are required; and, on the third day, the bowels may be cleared;—castor-oil, or rhubarb, or senna-and-salts, being administered for the purpose. In general, I prefer castor-oil to any other medicine; but there are some women who have a great dislike to it; and their stomachs reject it. Again,—when women are nervous (as they frequent are), or irritable, after delivery, some medicines which are calculated to sooth may be given;—such as castor*, camphor, æther†, valerian‡, opium, or above all, hyoscyamus§. Spermaceti‖-draughts are as good as any thing;—"the sovereignest thing on earth for an inward bruise"¶; as we learn from very ancient authority. If there is a little fever, diaphoretics (the liquor ammoniæ acetatis, for example) may be given. From half-an-ounce to an ounce, with a little camphor-mixture, may be administered, in the course of the four-and-twenty hours. Sometimes double this quantity may be taken with advantage.

* From *καστωρ*, "the beaver"; probably *à castrando*; because the animal was said to castrate himself with his teeth, in order to escape the hunters.

† From *αιθηρ*, a supposed subtile fluid.

‡ From *Valerius*, who first particularly described it.

§ From *υς*, *a swine*; and *κυαμος*, *a bean*; probably because hogs are said to eat it as a medicine.

‖ From *σπερμα*, *seed*; and "cete", *the whale*.

¶ Shakspere's "First Part of King Henry the Fourth;" Act 1; Scene 3.

Women should not be allowed to rise till the fifth day. It is an error to rise earlier; and gives rise to the coming down of the womb. When they sit up, they should do so at first for a few minutes only;—lying down again whenever any bearing-down is perceived. In general, sofas are preferable to easy chairs; and the horizontal posture is better for the patient than the sedentary. Patients are not usually allowed to quit the bed-chamber till the end of the third or fourth week. In warm weather, they leave the nest a little earlier.

When you make your visits, it will be expected that you should see the child. Of course, it is always unusually handsome; and it would be a pity to deprive the mother of the pleasure of hearing that! Indeed,—to drop all badinage,—it must (I think) be admitted, that the first few years of life are often full of graces. The principal points, however, to which you are to attend medically, are the bulk of the child, and the state of the bowels. If the infant is large and plump, and of rapid growth, the omens are favourable; but should it waste, you will then frequently learn, on inquiry, that the bowels are acting six or eight times (or even oftener) daily; and that the infant, openly or clandestinely, has been taking spoon-meat. One kind of food only is thoroughly well adapted to the stomach and bowels of young infants; and that is the human milk. If children thrive on spoon-meat, it is all very well; but the experiment ought never to be made wantonly; and when the food is given, even though it seem to agree with them, they ought to be closely watched. Infants sometimes thrive well enough on an artificial diet during the first fortnight; and then suddenly give way.

I here introduce to your notice the following directions for applying Mr. Gaitskell's obstetric bandage; to which frequent reference has been made in the preceding remarks on parturition*.

This bandage is applicable to four different periods of parturition.

1. *The Eighth Month of Pregnancy.*—At this period, the abdomen is often pendulous;—particularly in fat women, and those who have borne many children. The over-stretching of the abdominal muscles destroys their tone, and lessens the elasticity of the integuments; which produces pain in the lumbar region, and many uncomfortable feelings. These are greatly relieved by the application of the bandage; which should be placed under the linen, and tied in the middle of the loins.

2. *At the Commencement of Labour.*—In this instance, the bandage should be applied outside the clothes, and tied on the right side of the abdomen;—the patient lying on her left. It can be applied with more facility in the erect position of the trunk. The pressure must be regulated by the feelings of the patient; as the integuments and fascia are, in some cases, exquisitely tender. When the membranes are broken, and the waters discharged, the second row of tapes must be tied. By these means, the parietes of the abdomen are brought into contact with the enlarged uterus; and, embracing

* See Pages 110 and 483.

it, furnish several additional points of support. This enables that organ to act with more energy in expelling the fœtus.

3. *After the Fœtus is expelled.*—The third row of tapes must now be employed;—in order to lessen the abdominal cavity, and compress the uterus. At this period it is most essentially useful; by facilitating the action of the uterus, in detaching and expelling the placenta.

4. *After the Expulsion of the Placenta.*—Many a woman, after an easy labour, and early expulsion of the placenta, is subjected to an atonic state of the uterus, followed by internal flooding and death; though there is no external appearance of hæmorrhage.

[In this way I have known five instances of sudden death;—the os tincæ being closely contracted, and the cavity of the uterus distended with fluid and coagulated blood. This was not suspected, till discovered by post-mortem examination. The proper application of the bandage completely prevents this misfortune. Another good effect is that of restoring the energy of the abdominal muscles, and improving the personal figure. In illustration of the dangers pending on those females who are so unfortunate as to be delivered without a supporting bandage, I subjoin a few cases.*]

Case 1.—A lady, aged thirty, of a delicate constitution, was brought to bed of a fine healthy child. She had an easy labour; and the placenta followed in about fifteen minutes, with no more than the usual discharge. As the patient felt a little refreshed, the accoucheur went down to his breakfast; but had scarcely begun, when the nurse ran down, and, in a flurried accent, stated that her mistress was fainting. The accoucheur immediately visited his patient; and found her as described by the nurse;—the face and skin pallid; the extremities cold; and the pulse feeble, quick, and scarcely perceptible; while the abdomen was greatly enlarged. On examining the napkins, they were found unsoiled; and, on examining the vagina, the os tincæ was found closely contracted. Upon pressing it with the finger, it produced pain; with the expulsion of much fluid and coagulated blood. He now thought it necessary to dilate the os tincæ, introduce the hand, and empty the uterus of its contents; and, at the same time, to give support, by pinning a napkin tightly round the waist. By these means, uterine contraction was completed; the hæmorrhage stopped; and the patient finally, but with great difficulty, recovered. The quantity of blood lost on this occasion, was calculated at more than two quarts.

A similar case occurred to the same gentleman, a few years afterward; and induced him to employ a table-napkin as a bandage of support; since which, in forty years' extensive practice, he has had the good fortune to meet with no more such distressing circumstances.

Case 2.—A lady, in this parish, was delivered by a female midwife. The labour was fair and easy, and every thing went on to her wishes. The midwife left her without pressing the abdomen, or applying a bandage, while she dedicated her time to the child. A few

* These observations are taken from a small Tract published by Mr. Gaitskell.

minutes after this, her patient grew faint, turned pale, and quickly expired. There was no external hæmorrhage. On the post-mortem examination, the uterus was found filled with fluid and coagulated blood; and extended to the scrobiculus cordis.

[The remarks I have to offer on these cases are;—the necessity of compressing the abdomen immediately after the expulsion of the placenta; of examining the pulse and countenance; and of a not too hasty departure of the practitioner; for, in the case of all those who have been rescued, it has been accomplished by the prompt introduction of the hand into the cavity of the uterus, in order to effect the discharge of its contents;—aided by external compression, and the mechanical stimulus of the hand bringing on proper uterine contraction. Should these fail, there is only one more resource;—the transfusion of human blood,* as recommended by my friend Dr. Blundell.†]

[We are informed by Mr. Gaitskell, whose experience has been almost unlimited, that, out of seven thousand cases of midwifery, occurring in his practice during the last forty-five years, he cannot recollect a single instance of fatal uterine hæmorrhage. Before he constructed this bandage, he was in the constant habit of employing a small table-napkin. But the bandage in question is more extensive in its application, while it is extremely simple; for it is applied at the very commencement of labour, and follows it through all its different stages.‡]

The bandage is made by a poor deformed young woman;—Miss Grierson, No. 6, Bedford Place, Lower Road, Deptford. It costs only four shillings; and will last a female for life. The utility of this bandage would be increased, if a small pillow were placed on the abdomen, previously to drawing the tapes.

[It is very injudicious to give stimuli to all women after delivery. The routine practice is to give every woman half-a-glass of brandy; but unless she is used to it, it does harm;—by preventing sleep, increasing the rapidity of the circulation, and augmenting nervous irritability. If the patient, however, has been accustomed to stimuli, you must give one, or she will die. In such cases I allow wine-and-water; but otherwise I never give any thing but gruel or tea. Tea is a better cordial than is generally supposed. I take it, when on a journey, as often as possible;—eating lightly at the same time. They used to give caudle at all the Lying-in-Hospitals. I like it much; for it is a very nice tipple. Nurses receive a present when they hand it to visitors. The nurse who was engaged by Mr. Coke,§ of Norfolk, to attend his lady, but was not employed, prosecuted him; and laid the damages at five hundred pounds, to cover the loss of caudle-money!

Some people order chicken for a patient the day after delivery; but the powers of the stomach are very much impaired; and such a practice either feeds inflammation, or causes indigestion. In some

* See pages 209 to 248.
† Quoted from Mr. Gaitskell's Tract.
‡ Remarks by a reviewer of Mr. Gaitskell's Tract.
§ Now the Earl of Leicester.

old, weather-beaten women, much debilitated, you may allow a little. I do not give beef-tea, or chicken-broth, if I can help it, till the secretion of milk is established; for fear of giving rise to milk-fever. Slops are not good to be used too much; for people like a great deal of them, to make up by quantity for their meagre quality. Hence people often take a great quantity of gruel, although without an appetite; because they think they must support their strength. Indeed poor people eat a great deal at all times. I am sure I have seen them eat six pounds of oatmeal for breakfast.

Have a cotton-bandage ready, to be tied round the abdomen, sufficiently tight to make the patient comfortable; but I have known inflammation produced by binding too tight, and for too long a time.* Do not let the patient be wrapped in a flannel-petticoat; but if she feels cold, put an additional blanket on the bed. As soon as delivery is completed, put a warm napkin to the external parts. Change the linen; for the patient has perspired, and is wet and uncomfortable. If there should be hæmorrhage, this is not to be attempted; but if there be nothing unusual in the case, the linen may be changed as soon as the placenta is removed. The head, however, must not be raised from the pillow;—for fear of syncope. Feel the patients feet after delivery; and put a bottle of hot water to them, if cold. If she feels inclined to shiver, put a bottle to the back, and give a warm drink; for you know not what is to happen. The room used to be kept much too hot; but now it is kept cooler, and fewer women die than formerly. Whisper in the patient's ear to send for you if she should wish to see you; and tell the nurse the same, and the husband also. It is very annoying to be called up at night; but do not let them *see* that you are annoyed; or it will injure yourself, and the patient too. One gentleman abused the nurse, for summoning him on a false alarm; and he was never employed in that house again. Rather do you rejoice that the alarm *is* false; for it is far better than that the patient should be in danger; and your reputation is not so likely to suffer.

Pay your first visit after delivery, within from six to twelve hours. If an epidemic is prevailing, I call three or four times a-day. After-pains often mislead us, by simulating inflammation. They are caused by contractions of the uterus; which take place for the purpose of expelling coagulated blood, &c. They are slighter in first labours, than in subsequent ones; but their greater or less severity depends very much on whether any part of the placenta has been left behind. They should be accompanied by a little discharge. Inquire after them at every visit, for the first two or three days; and pass the hand over the abdomen, to see whether the binder is quite smooth. Ask if urine has been passed; and how the bowels are; but the latter should be seen to before delivery. Then ask after the child; and be sure to take notice of it; and ask if it has passed urine and fæces. Endeavour, by every means, to keep the mind of the patient easy.

* The binder should be generally applied by the medical attendant himself; though, in England, this is usually left to the nurse.—*Dr. Rogers.*

Accoucheurs sometimes magnify difficulties, in order to exalt their own skill. "Honesty," will be found at last, however, to be "the best policy." If the patient is doing well, put the infant to the breast in twelve hours; for it pleases the mother, though the child may get nothing. It also prepares the nipple for being sucked; for if this be not done till the breasts are distended, it requires a great effort on the part of the child. This early application of the infant, causes a determination of blood to the breast; which is what we want in that unsettled state of the vascular system, which attends parturition. The lochial discharge lasts longer, and becomes more sanguineous, at every successive pregnancy. In the earlier pregnancies, blood ceases to appear in it after seven days; and it then consists of a glairy mucus, amounting to about four ounces in the twenty-four hours. Women who work much in the open air, have often no lochia at all after the first day.

Let the bowels be kept open, and low diet be adhered to; and the milk-fever will be seldom dangerous. The same diet, however, will not agree with all women. If you keep an English woman to gruel, for instance, she will loathe it, and hate you. Give her plenty of bread, or biscuit, or crisp toast, a cup of gruel with a little wine in it, or arrow-root. It is but rarely that I allow patients a little chicken; for I do not like them to eat much solid food, till they leave their own room. And when should that be? If they get up too early, the uterus sinks low in the abdomen; and that may give rise to many diseases. It is true I have seen soldiers' wives march the day after delivery, without any ill result; but many females suffered from prolapsus uteri, forty years ago, in consequence of exerting themselves too soon. Till the blood disappears from the lochial discharge, do not let them get up. This you can often prevent, by taking advantage of the popular prejudice, that the ninth day is a dangerous one. Leucorrhœa may be the consequence of their getting up too soon. Do not let the bed be made for five or six days.

In Edinburgh, in good society, the accoucheur gets ten guineas as his fee. In England he is not so well paid; but makes it up by the price of the medicines which he sends. Do not order many medicines; or the patient will not take half; and, finding herself no worse for the omission, will think you are making a job. The women whom I attend, often do not pay a shilling for medicines; but in puerperal fever, they may have to pay fifteen pounds for leeches. If they want a fuss made, order twelve grains of quinine, in twelve ounces of water, with two ounces of orange-syrup, and forty drops of nitric acid, or aromatic sulphuric acid. It is better to keep the bowels open with stewed prunes, than with medicines. If there be any retention of urine, apply hot fomentations to the region of the bladder; and if there be any pain about the latter, give a pill of camphor and hyosciamus.*]

* Dr. Mackintosh's unpublished Lectures on Midwifery.

CHAPTER XVI.

SIGNS OF RECENT DELIVERY.

SECTION 1.—CONCEALED DELIVERY.

[Delivery is most commonly concealed under the idea of destroying the offspring immediately after birth. In suspected cases, therefore, the examining physician should attend to the following points:—1. The proofs of previous pregnancy*; on which I will only remark, that, ordinarily, no investigation has taken place at the time when this was advancing. Circumstantial evidence is not to be trusted; but it is proper to inquire whether an enlargement of the abdomen has been observed, whether this was connected with any apparent disease, and whether any precautions as to dress were used to conceal it 2. The proofs of recent delivery. 3. The connexion between the supposed period of parturition, and the state of the child that is found. An infant recently born is distinguished by the redness of the skin, and by the attachment of the umbilical cord to the navel; and the female, if the mother, will be found to have the marks of a late delivery on her.

Delivery, whether concealed or pretended, can be elucidated only by referring to its real signs; and it will, therefore, be proper to commence with a notice of them.

If the female be examined within three or four days after the occurrence of delivery, the following circumstances will generally be observed:—greater or less weakness; a slight paleness of the face; the eye a little sunken, and surrounded by a purplish or dark-brown-coloured ring; and a whiteness of the skin, like that of a person convalescing from disease. The abdomen is soft; the skin of the abdomen is lax; lies in folds; and is traversed, in various directions, by shining reddish and whitish lines; which extend especially from the groins and pubes to the navel. These lines have sometimes been termed "lineæ albicantes"†; and are particularly observed near the umbilical region, where the abdomen has experienced the greatest distension. The breasts become tumid and hard; and, on pressure, emit a fluid, which at first is serous, and afterwards gradually becomes whiter. The presence of this secretion is generally accompanied with a full pulse, and soft skin;—the latter covered with a moisture of a peculiar and somewhat acid odour. The areolæ‡ round the nipples are dark-coloured. The external genital organs and vagina are dilated and tumefied throughout the whole of their extent;—from the pressure of the fœtus. The uterus may be felt through the abdominal parietes;—voluminous, firm, and globular; and rising nearly as high as the umbilicus. Its orifice is soft and tumid; and

* These will be noticed hereafter in Part V.

† From *albico*, "to become white."

‡ From *areola*, the diminutive of *area*, "an empty space."

dilated so as to admit two or more fingers. The fourchette, or anterior margin of the perinæum, is sometimes torn; or it is lax, and appears to have suffered considerable distention.* A discharge (termed "the lochial") commences from the uterus. It is distinguished from the menses by its pale colour, its peculiar and well-known smell, and its duration. The lochia are, at first, of a red colour; and gradually become lighter until they cease†.

These are the signs enumerated by the best writers on the subject; and where they are all present, no doubt can be entertained that delivery has taken place. Several of them, however, require further notice;—for the purpose of indicating the mistakes which observers may experience concerning them.

1. The lochial discharge might be mistaken for menstruation, or fluor albus, were it not for its peculiar smell; and this it has been found impossible, by any artifice, to destroy.

2. The soft parts are frequently relaxed as much from menstruation as from delivery; but, in these cases, the os uteri and vagina are not so much tumefied, nor is there that tenderness and swelling. Again, when all signs of contusion disappear after delivery, the female parts are found pale and flabby. This circumstance does not follow menstruation.

3. The presence of milk. This must be an uncertain sign. "It is possible for this secretion to take place independently of pregnancy."‡ The most unequivocal form in which it can appear, is when the breasts are tense and painful, and filled with the fluid of its usual nature;—not serous or watery, as is observed in pretended cases. It is also to be remarked that this secretion goes on during the presence of the lochia; while, on the contrary, the breasts become flaccid, and almost empty, if the menses supervene, and fill again when they disappear§. Should, therefore, a case occur where doubt is entertained, it would be proper to notice the state of the breasts while the discharge (of whatever nature it may be) is present.

4. The wrinkles and relaxation of the abdomen which follow delivery, may be the consequence of dropsy, or of lankness following great obesity. This state of the parts is also seldom very striking after the birth of a first child; as they shortly resume their original state.

5. The lineæ albicantes will often remain for life; and hence should not be depended upon in cases where females have had several children‖.

Hence it is the duty of the medical examiner, to view all the signs enumerated in connexion with each other; and where all or most of

* See Pages 51 and 126.

† Foderé, Volume 2, Section 1; Mahon, Volume 1, Pages 166 to 170; Capuron, Page 124; Hutchinson on Infanticide, Page 90; Burns on Midwifery, Page 326.

‡ Burns's "Principles of Midwifery"; Page 326.

§ Foderé, Volume 2, Page 15.

‖ They are sometimes wanting in females who have had several children; and Dr. Montgomery saw them very marked in a male labouring under general dropsy. —"*Cyclopædia of Practical Medicine.*"

them are present, it is his duty to declare that they are the consequence of sexual intercourse. So far he can pronounce with safety. But if the question has a bearing on the charge of infanticide, the existence of the child should be proved. To prevent mistakes, inquiry should also be made, whether the individual has laboured under dropsy, menorrhagia, or fluor albus; or whether any external violence has been applied to the genital organs.

Within what Time should this Examination be made?—An astonishing difference occurs among females in the period of recovering from the effects of delivery. Some have been known to proceed to their occupation on the day that the child is born; while others remain enfeebled for weeks. Much, in this respect, depends on the constitution and habits of life. There is, however, a term in all, when the signs of delivery disappear, and the parts return to their natural state; and a general rule ought to be established, beyond which an examination should be deemed inconclusive and void. A majority of writers have fixed on the term of eight or ten days for this purpose; and it is probably a correct one. After that period, the signs become equivocal, and may lead to error; particularly if the delivery has been natural*.

SECTION 2.—PRETENDED DELIVERY.

In pretended delivery, the female declares herself a mother without being so in reality. This is not so revolting to our feelings as the former; but it is, notwithstanding, improper; and should be guarded against. Its most common origin is cupidity, or a weak desire to produce an heir to large estates; and hence we hear most of it in Europe; where property is entailed, and families anxiously desire the birth of a son to perpetuate their honours.

Pretended delivery may present itself under three points of view:—

1. *Where the Female who Feigns has never been Pregnant.*—This, if thoroughly investigated, may always be detected. There are signs which must be present, and cannot be feigned. An enlargement of the orifice of the uterus, and a tumefaction of the organs of generation, should always be present; and, if wanting, their absence is conclusive against the fact†.

2. *Where the Pretended Pregnancy and Delivery have been preceded*

* Farr (Pages 50 and 51) enumerates certain signs that a woman has *formerly* been delivered of a child; which signs it may be proper to mention:—1. The loss of all the signs of virginity. 2. The orifice of the uterus wanting its conical figure, and its lips being unequal. 3. An expanded and pensile abdomen. 4. The lineæ albicantes. 5. The frænum of the labia obliterated. 6. The breasts flaccid and pendulous. 7. The nipples prominent. 8. The areolæ of a brown colour.

"The most precise criterions of the date of delivery, are derived from the date of the milk-fever, the gradual alterations of the lochia, and especially the appearances assumed by the genital organs in their return to the ordinary healthy condition."—"*Edinburgh Medical and Surgical Journal*"; *Volume* XIX; *Page* 458.

† Cases of this kind are recorded by Male, Page 212; by Capuron, Page 110; in the "Annales d'Hygiène", Volume I, Page 227; and in Dodsley's "Annual Register" for 1775.

by one or more Deliveries.—The facility of counterfeiting, in this case, is certainly greater than in the former; particularly if the examination be not made within eight or ten days. Attention should be given to the following circumstances:—1. The mystery (if any) that has been affected respecting the situation of the female. 2. Her age; and particularly whether she had been previously barren. 3. The condition of the husband;—whether aged or decrepid. All these would be corroborating evidence against the actual occurrence of delivery.

3. *Where the Female has been actually Delivered, and substitutes a Living for a Dead Child.*—This cannot be elucidated by physical proofs;—unless some persons have been present at the delivery. In this, as well as in the former case, a strict examination should be instituted of the witnesses who have attended. Zacchias and Mahon* lay considerable stress on the resemblance that may exist between the parent and child; but this is of little value.

Post-Mortem Appearances in Pretended Delivery.—It sometimes happens, that the female dies shortly after the supposed or pretended labour; and it is necessary to examine the body, in order to ascertain the truth. We are to examine both the uterus and its appendages; as it is evident that the former may have been enlarged from causes independent of actual pregnancy.

The appearances that are considered to indicate delivery, are the following:—"The uterus is found like a large flattened pouch, from nine to twelve inches long. Its cavity contains coagula, or a bloody fluid; and its surface is covered by the remains of a decidua†. Often the marks of the attachment of the placenta are very visible; and this part is of a dark colour; so that the uterus is thought to be gangrenous, by those who are not aware of the circumstance. The surface being cleaned, the sound substance of the womb is seen; and the vessels are observed to be extremely large and numerous. The fallopian tubes, round ligaments, and surface of the ovaria, are so vascular, that they have a purple colour; and the spot where the ovum escaped, is more vascular than the rest of the ovarian surface. This state of the uterine appendages continues until the womb returns to its unimpregnated state. A week after delivery, the womb is as large as two fists. At the end of a fortnight, it will be found almost six inches long, and generally lying obliquely to one side. The inner surface is still bloody; and is covered partially with a pulpy substance, like decidua. The muscularity is distinct, and the orbicular

* Zacchias, Liber I, Titulus 5, Questio 4; and Liber VIII, Titulus 2, Questio 8. Mahon, Volume I, Page 209.

† The decidua is sometimes produced in cases of difficult menstruation; and it is important to remember, that it may be mistaken for abortion. It resembles it in the pains, discharge of blood, &c. But the one presents an embryo, at various stages of increase; while, in the other, it is altogether wanting. It seems now agreed, that the discharge of this membrane (recognised by Dr. Baillie to be similar in structure to the decidua) frequently occurs in unmarried females. It would appear to be generated spontaneously by the inner membrane lining the uterus.—*Blundell on Membranous Discharges from the Uterus. Ashwell on Parturition; Page* 119.

direction of the fibres round the orifice of the tubes very evident. The substance is whitish. The intestines have not yet assumed the same order as usual; but the distended cæcum* is often more prominent than the rest. It is a month, at least, before the uterus returns to its natural state; but the os uteri rarely, if ever, closes to the same degree as in the virgin state."†

To these it has been customary to add, with great confidence, the presence of a *corpus luteum* in the ovarium‡.

I have endeavoured, in several parts of this chapter§, to inculcate the idea, that medical examiners should, in disputed cases, limit their opinion to the fact, whether evidences of conception are present or not. The law is so constituted, that nothing further is required of them on this point. In order to bring a charge of infanticide‖, an infant must be found; and in all other instances, it will be sufficient if we prove previous sexual connexion;—whether the product has been an organized fœtus or not. The following case is calculated to enforce the necessity of confining our opinion to this fact.

Mrs. Cunningham, aged twenty-four, and the mother of three children, considered herself nearly four months advanced in pregnancy, when the rudeness of a licentious person required her to make a violent exertion. On the succeeding day, she perceived a slight discharge of blood from the vagina; which ceased in about twenty-

* From *cæcus*, "blind"; because it is closed at one end.

† Burns's "Principles of Midwifery"; Page 326. The dissections of Mr. Mayo (quoted in the "London Medical Repository," Volume XXI, Page 343), and of Dr. Hewson ("North American Medical and Surgical Journal," Vol. IX, Page 371), of females dying immediately after delivery, corroborate the above statement. In both, the os tincæ was much dilated; being, in the former, when disposed in a circular form, about two inches in diameter. In Dr. Hewson's case, the uterus was about the size of a man's fist.

The following measurements, from Velpeau and Madame Boivin, may be useful in some cases:—

Length of the Unimpregnated Uterus from the most salient point of the Fundus to the end of the Anterior Lip of the Neck, 26 lines, and from that to 28 (Velpeau).

Length of the Neck, 13 lines.

Uterine Walls, 5 lines in thickness.

Cervical Walls, $3\frac{1}{2}$ to 4 lines (2 to 3, Velpeau).

Weight without Appendages, 4-9 drachms (Boivin), 8 to 12 drachms (Velpeau).

Breadth of the Neck, $9\frac{1}{2}$ lines; thickness, 7 lines.

After Several Pregnancies.

Total Length - - - - - -	$2\frac{1}{2}$ to 3 inches.
Length of the Neck - - -	13 to 15 lines.
Length of the Body - - -	2 inches.
Breadth of the Neck - - -	18 lines.
Thickness of the Neck - - -	8 to 10 lines.
Thickness of the Uterine Walls	6 lines.
Weight - - - - - - - -	$1\frac{1}{3}$ to 2 ounces.

(Velpeau's "Midwifery"; Page 61. "Edinburgh Medical and Surgical Journal"; Volume XXXIX; Page 210).

‡ The value of this sign will be more fully examined when the Physiology of Conception is described.

§ Chapter VII, in Dr. Beck's "Elements of Medical Jurisprudence". Sixth Edition.

‖ From *infans, infantis*, "an infant"; and *cædo*, "to kill."

four hours. A day thereafter it returned with increase, and continued (gradually diminishing) for three days. All this time she suffered no pain; nor was she prevented from managing her domestic affairs. There was a slight tenderness of the abdomen only. At the conclusion of the time last mentioned, she was seized with pains resembling those of parturition, and accompanied with a profuse hæmorrhage. Mr. Lemon, a surgeon, was called; and on examining *per vaginam*, he found the os uteri dilated to the extent of half-a-crown, and a bag protruding through it. A fleshy cake, three inches in diameter, possessing every character of a natural placenta, and having a membranous bag connected with it, was shortly thereafter expelled. The shape of this mass was oblong. On cutting into the bag, which was flaccid, the contents gave an appearance similar to what is presented on the exposure of the abdominal and thoracic viscera of a very young fœtus; but the expansion of the placenta rendered the nature of the appearance evident. Its whole surface was covered with tumours. There were about twenty-two distinct, besides many inconsiderable ones, of various size, shape, and colour, and some in clusters;—all seemingly connected together by veins. The largest tumour was equal in magnitude to a small walnut. Some were of a livid colour, others fleshy brown, and two or three light yellow. The livid ones had generally condensed fat at the extremity; and they, as well as the brownish, contained coagulated blood.

The woman, during the growth of this mass in the womb, had every symptom of pregnancy;—nausea, capricious appetite, enlargement of the breasts, prominent firmness of the abdomen, and a cessation of the menses. She had not, however, felt any actual motion.

Mr. Lemon remarks, that if this female had died from hæmorrhage, and her death being made a subject of legal investigation, the womb would probably have exhibited all the proofs of impregnation. Even the *placental mark* would have been present; and yet no fœtus or umbilical cord was formed in this instance.

The observations of the editors of the journal from which this case is taken, are a satisfactory commentary on it. This mass was evidently the product of conception and impregnation. The whole catalogue of symptoms tends to prove it; and the only circumstance against it, is the absence of a fœtus and umbilical cord. "But this furnishes no conclusive argument; for there are innumerable instances of fœtuses so exceedingly imperfect, that their nature can scarcely be recognised; and, with a still more imperfect organization, they degenerate into a mass like the present."* The *placental mark*, then, in this instance, would have been a satisfactory proof of conception.

* "Edinburgh Medical and Surgical Journal"; Volume XI; Page 96.—"Case in which a Mass, resembling a Placenta without a Fœtus, was discharged from the Womb. By M. Lemon; Member of the Royal College of Surgeons, London." With Observations by the Editor.

SECTION 3.—MEDICO-LEGAL QUESTIONS CONNECTED WITH THE SUBJECT OF DELIVERY.

1. *Can a Woman be Delivered without being conscious of it?*—This question must be answered in the negative; with, however, some exceptions. Delivery is, undoubtedly, to a certain degree, independent of the will; and there may hence be certain situations, in which it will take place without the female's knowledge. The administration of narcotic substances may cause such a state; as in the instance, in 1641, of the Countess de Saint Geran; who was plunged into a deep sleep by a narcotic beverage; and, during its continuance, was delivered of a boy. In the morning she awoke, and found herself bathed in blood, and the infant gone. Her relations had suborned individuals to remove it; in order to deprive her of the pecuniary advantages of her situation*. There is also a class of diseases commonly called "comatose"; and either accompanied with fever or not; during the presence of which, delivery may take place without the female's knowledge. Hippocrates mentions a case, in a woman eight months advanced, who, on the fifth day of a typhoid fever, accompanied with coma, fell into labour; and was delivered without being conscious of it. I will only add to these, the account given by Dr. Hoyer, of Mulhausen, of a female dying in labour; who was put on the bier for interment; and while there, an infant was suddenly born†.

These examples prove that it is possible for a woman to be delivered without being conscious of it; but at the same time they shew, that if some extraordinary and striking cause do not intervene, the assertion is to be disbelieved. The early pains of pregnancy may be mistaken for those of colic; and flooding may commence during sleep; but it is hardly credible that the whole process of labour and delivery can be gone through, by a healthy woman, and of sound mind, without her being aware of it.

2. *Can a Woman, if alone and without Assistance, prevent her Child from Perishing after Delivery?*—This is a most important question; and deserves our serious consideration;—from its bearing on the subject of infanticide.

There are undoubtedly many cases, in which an unassisted female will be unable to prevent the death of her infant. Among these may be mentioned very rapid and early delivery. Instances of this nature occur to all accoucheurs; and Foderé relates of his own wife, that a single pain brought forth the child. Such is the conformation of the pelvis, and so powerful the action of the womb, that the membranes and fœtus are expelled together. Now a female taken thus, might be unable to prevent the child from falling; and its death would ensue,

* Foderé; Volume II; Page 10;—taken from the "*Causes Célèbres.*" The authors of this crime were discovered; and the child was restored to its rights, in June, 1666.

† Foderé; Volume II; Page 11.

if she remained unassisted. Such a state of the parts is, however, very uncommon in a first delivery; and this is the one that commonly is considered in cases of infanticide. If a woman has, in a previous labour, experienced so rapid a parturition, it is her duty to guard against its consequences, when a second is impending. Another possible circumstance is, that a woman may be taken in labour and delivered while passing her fæces. The pressure of the uterus, in the latter days of pregnancy, produces an inclination of this kind; and even during labour it is very common. But delivery in this position may not only be fatal to the child, but very injurious to the mother;—by tearing off the umbilical cord, or inverting the uterus. Delivery may also be attended with hæmorrhage, and consequent debility; or with fainting or convulsions; and the female may be unable to assist her offspring. These are cases which do not often occur; and when they do, they leave traces sufficiently evident;—paleness, swoonings, the state of the pulse, and of the infant*. A fourth case is, when the mother being alone, and the child having its face to the sacrum, is delivered with it downwards. In this position it cannot breathe, unless it be turned; and it is well known that the slightest substances impeding respiration in a new-born infant,—such, indeed, as a portion of the bed-clothes, or a piece of wet linen,—will destroy it.

There are, also, some infants so weak at birth, that they require the warm-bath, rubbing with stimulant applications, &c., in order to preserve their life. An unassisted mother cannot, of course, save these. It has also been suggested, that the female may be suddenly delivered while in a standing posture; and the infant falling, may be found with a fractured skull. In such a case, however, we should look for a rupture of the cord, and a violent hæmorrhage, consequent on a forcing away of the placenta†. The cord may, also, be wound round the neck; and thus prevent respiration.

Lastly, the infant may perish, and the mother not be able to prevent it, when the umbilical cord has not been tied after being cut, broken, or torn. The first of these, however, is such a proof of presence of mind, that we may justly be distrustful, if she denies being afterwards unable to tie it‡. It may be broken and torn, as we have

* Mahon; Volume II; Page 383.

† Smith's "Principles of Forensic Medicine"; Page 370.

‡ The following remarkable case shews that it is possible for the division of the funis to "occur in such circumstances as to imitate precisely the effects of criminal violence inflicted after delivery." Mr. Chamberlayne, of London, relates that a patient of his was taken so suddenly in labour, that the child shot forth from her with such force as to separate the funis; which broke exactly in the right place, and as evenly as if it had been cut with scissors. Not so much as one drop of blood followed; although the child was strong and very lively.—"*London Medical and Physical Journal*"; Volume VII; Page 284.

M. Meirieu relates the case of a female walking in her room, who was suddenly seized with labour-pains. She took firm hold of the bed-post; brought herself nearer to the ground; retained the infant by means of her clothes; and placed it on the floor. The whole was the affair of an instant. On examining the child,

already stated, by the weight of the infant, and the mother be unable to save it. There are, however, instances in which the mother and the heroine are admirably combined. The wife of a goldsmith at Marseilles was seized in labour while walking her room. The infant fell, and the cord broke. She took it up, and called for assistance; but was not heard. Finding that it was losing blood by the cord, she compressed the latter with her fingers, and held it so for two hours; when she was found fainting. Her life, however, and that of the child, were both preserved*.

These are the exceptions to the general doctrine that may be laid down in such cases; namely, that every woman is more or less acquainted with the time when she is to be in labour; and that it is her duty never to be so far alone as to render assistance accidental. Even during labour, the vast majority of females make known their situation by their pains; and they will be suppressed only by those in whom shame and the fear of dishonour are predominant passions. It is a question of moment, whether we should feel that sympathy for this sense of shame, which some authors, and particularly Dr. William Hunter, have inculcated in their writings. It is, at all events, misplaced as to time; and the female who destroys a human being, and her own offspring, to escape its effects, should have felt its influence at an earlier period. "To the moral and political philosopher, Dr. Hunter may appear to have exalted *the sense of shame* into *the principle of virtue*; and to have mistaken the great end of penal law; which is not vengeance, but the prevention of crimes."† It is not necessary, however, to enlarge on this point. Circumstantial evidence generally guides in the preliminary decision of it, when accusations of infanticide are made; and great stress is properly laid, in disputed cases, on the incidents of time and place, and of situation and character.‡]

no trace of contusion could be found; but the umbilical cord was broken, at about four inches from the ring; and the end was drawn out to a point.—"*Quarterly Journal of Foreign Medicine and Surgery*"; *Volume* V; *Page* 634.

* Foderé; Volume II; Page 31. The following extract, from a late writer on law, is directly applicable to the question considered above:—"One thing is very remarkable, and occurs in most cases of concealment and child-murder;—namely, the strength and capability for exertion evinced by women in the inferior ranks shortly after child-birth;—appearances so totally different from those exhibited in the higher orders, that to persons acquainted only with cases among the latter, they would appear incredible. A mother, two or three days after delivery, walked twenty-eight miles in a single day, with her child on her back. In the case of A. Macdougal, 1823, it appeared that she was sleeping in bed with two other servants; but rose, was delivered, and returned to bed, without any of them being conscious of what occurred. Many respectable medical practitioners, judging from what they have observed among the higher ranks, would pronounce such facts impossible; but they occur so frequently among the labouring classes, as to form a point worthy of knowledge in criminal jurisprudence."—*Alison's "Principles of Criminal Law of Scotland"*; *Page* 161.

† Percival's "Medical Ethics"; Page 84.

‡ On this question, see Foderé, Volume II, Page 25; Capuron, Page 131; Smith, Pages 365 to 377; Mahon, Volume III, Page 381; &c. Cases of sudden delivery are noticed by most obstetrical writers; and in many periodicals. I will

[The substance of the preceding observations may be summed up in the following general corollaries:—

1. The signs of delivery are most distinct after the birth of a full-grown child; and least so when the uterine contents have been expelled at an early period of pregnancy.

2. The proofs are more distinct in proportion to the recency of the delivery; and any examination made after the lapse of ten days from the time the delivery, is not likely to afford satisfactory information; —the most decisive signs, in general, disappearing within a week.

3. The third, or fourth day, generally, presents the results of delivery very distinctly;—the condition of the breasts being then most remarkable, from the active secretion of milk.

4. A first delivery is more easily detected than subsequent ones.

5. We cannot, safely, rely on any of the signs of delivery viewed separately; but must consider them collectively; as well as their mutual relation and correspondence with each other, and with the other collateral circumstances of the woman's case and history.

6. The chief points of attention ought to be the state of the uterus, the external parts, and of the breasts.

7. There are certain physical signs which, when present, are sufficient to establish a negative decision; such as, for instance, a perfect hymen, or an imperforate state of the parts.

8. But, on the other hand, a woman may have borne children, and no one mark remain, by which, the fact of delivery could be proved, after the lapse of even a few weeks.

9. A woman may be delivered while in a state of insensibility, or even during deep natural sleep; so that her child may perish, merely from want of attention, and without any moral delinquency on her part.

10. A woman may be naturally pregnant, and the life of her child ascertained; and yet childbirth may not occur;—the child perishing and being decomposed before the time of delivery.*]

only add a few to those already cited. Two cases by Mr. Tatham ("London Medical Repository", Volume XXI, Page 287). One of these was with a *second* child, and not with a *first*; as is incorrectly stated in the "Medico-Chirurgical Review", Volume V, Page 237. Cases by Mr. Thomas, "London Medical and Physical Journal", Volume LII, Page 353. Davis, Ryan, &c.

The preceding part of this Chapter, and most of the Notes, are taken from the "Elements of Medical Jurisprudence; by Theodric Romeyn Beck, M.D.; and John B. Beck, M.D". Sixth Edition. Pages 153 to 173.

* "The Signs and Symptoms of Pregnancy and Delivery"; by W. F. Montgomery, A.M., M.D., &c. Pages 317 and 318.

PART III.

DISEASES INCIDENT TO THE PUERPERAL STATE.

INTRODUCTION.

PUERPERAL DISEASES IN GENERAL.

[If many circumstances concur to render the diseases of female youth peculiar, this is still more emphatically true of *puerperal* diseases. This fact will appear sufficiently obvious, upon a simple enumeration of the puerperal causes of these diseases; and still more so when it is considered that, in general, two or more of these causes operate together, in producing the cases which present themselves to our notice in actual practice. In both these points of view, indeed, the subject of puerperal diseases appears to me * to present a peculiar interest to the physician. In scarcely any other cases do so many and such various circumstances require to be taken into consideration at once, as in puerperal diseases.

This class of diseases may be considered as embracing all those morbid affections which arise out of the state of pregnancy, of child-bearing, or of lactation. They may be divided into those which occur in the *earlier*, and those which occur in the *later*, periods of pregnancy;—immediately *before*, *after*, and *during* the act of parturition;—during what is termed "the *puerperal* state"; and during the period of *lactation*.

In the early period of pregnancy, many organs suffer, in consequence of the source of irritation then set up in the uterine system. These affections are, for the most part, well known; and do not come within the design of this work †; the object of which is to treat only of certain morbid affections, which occur in the puerperal state; and which appear to me* not to have hitherto received the degree of consideration which is due to them.

In the latter periods of pregnancy, several causes combine their influence, especially to endanger the state of the brain. It is upon the conjoined and separate operation of these causes, that our attention should be particularly fixed, with regard to the diseases of this period; for it is frequently by their co-operation alone that their morbid influence upon the brain is brought into activity; while it may occur, afterwards, that one or even several of these causes may be removed, and yet a remaining one may renew or continue the morbid effect upon the brain, which they had conjointly begun.

* Dr. Marshall Hall.

† Dr. Marshall Hall's "Commentaries".

The causes which co-operate in the last period of utero-gestation, in inclining to a morbid state of the brain, are chiefly uterine and intestinal;—concurring with the actual pressure of the gravid uterus, upon the various viscera and vessels situated behind it; and the state of plethora of the vascular system especially, occasioned by this pressure.

During parturition, the contractile efforts of the uterus and of the abdominal muscles, add another source of danger to those already mentioned; and it is at this period that the brain is most subjected to fulness and pressure, and that convulsions or apoplexy are apt to occur.

Several sources of danger are removed when delivery has taken place; and yet this is not always sufficient to protect the patient from an attack of convulsions; for this terrible affection has first occurred even after delivery had been effected. In this case, especially, I suspect that a case of intestinal load and irritation has been the exciting cause of the attack of convulsion. This observation confirms the remark already made;—that when several causes have co-operated to induce a state of danger, some may be removed; and yet, if one remain, it may lead to the most disastrous events. This, in the study of puerperal diseases, cannot be pointed too often, or too strongly.

Convulsions do occasionally occur after delivery, even although the system be in a state of exhaustion from hæmorrhage. The state of exhaustion is not, I believe, incompatible with a state of fulness of the brain; but convulsions of this kind will be found, I think, frequently to involve also a state of intestinal load and irritation. But immediately after delivery, danger may arise more directly and simply, from a state of inanition and exhaustion; the effects of an emptied condition of the uterus and abdomen, of abstracted pressure upon the viscera and vessels along the spine, and perhaps of loss of blood. To these sources of danger after delivery, must also, perhaps, be added the effects of protracted suffering, of violent pain, of mental alarm, and of what may be termed the "shock" of parturition.

There is another series of puerperal affections, which do not occur, for the most part, until some hours after delivery. These affections consist principally in uterine or peritoneal inflammation; in the effects of intestinal irritation; in the effects of loss of blood; or in two or more of these combined. There are two other sources of irritation;—in the condition of the mammæ, and occasionally of the uterus; and there is that terrible disease, the epidemic puerperal fever.

Considering the important and sudden change which takes place in the condition of the uterus, in parturition, we cannot be surprised that this organ should frequently be the subject of inflammation, in the puerperal state. Neither can it be matter of surprise, that its appendages, the adjacent viscera, and the peritoneum at large, should, not unfrequently, participate in this morbid condition. When we consider, further, the degree of violence to which the brain has

been subjected, during parturition, we must be led to expect that this important organ should be left, by that process, in a state of proneness to inflammation. This is precisely the case; for, next to the viscera of the abdominal cavity, the brain is, perhaps, the organ which is most apt to become affected by puerperal inflammation.

There is another not less fertile source of puerperal disease, in the state of the alimentary canal after delivery. This state consists, in general, in a loaded or disordered state of the large intestines; but sometimes, also, in improper things being taken into the stomach. It is most important to observe, that the effects of gastric or intestinal irritation, are very similar to those of inflammation as it affects the head or abdomen; for on the just diagnosis of these cases, depends the proper application of the remedies. Similar observations apply to the effects of the loss of blood, when these effects are of a remote character, and are attended by the phenomena of re-action. In this case, the head is apt to be affected;—so as to lead to the idea of inflammation of the brain; and the heart;—so as to present the symptoms of disease of that vital organ. But it is rare that these sources of disease act thus distinctly. It is far more usual to observe them operating together, to produce a mixed case; and it is in such complicated cases, that all the attention and energies of the mind are required, in order to appreciate the influence of each, and to adapt the remedies to this complicated form of disease.

There is not unfrequently, also, a source of irritation in the state of the uterus itself. A certain degree of after-pain occurs in almost every case; but a state of irritation and pain are frequently kept up by the presence of clots of blood, and by the efforts for their expulsion. This state of the uterus is full of dangers; not in itself, but by masking and concealing the beginning of dangerous diseases; for pain of an inflammatory character is too apt to be neglected, under the impression that it is but the usual after-pain. A similar remark may be made with regard to the irritation excited on the establishment of the secretion of milk. This process is apt to be attended by pain, fever, and affection of the head; which frequently mark the beginnings of puerperal disease.

Both these sources of irritation concur to add complexity to the character, and difficulty to the diagnosis of puerperal diseases; and to constitute that peculiarity of this study to which I have already alluded.

The first of these classes of disease might perhaps be denominated *parturient*; whilst the second might be distinguished by the epithet *puerperal*;—the former* occurring, chiefly, in or near the act of parturition; the latter, usually, some hours afterward. There is a third class of morbid affections, which follow still more remotely upon child-bearing; and which consist, chiefly, in the more continued effects of intestinal disorder, or loss of blood; and issue, for

* These (namely, Apoplexy and Convulsions) have been already described in the Chapter on "Complicated Labours"; Pages 416 to 435.

the most part, in an inability to support the drain occasioned by lactation.

A fourth series of puerperal maladies,—using this term in its most extended sense,—arises out of undue lactation. They consist in the various forms and effects of exhaustion; and constitute a most important and interesting subject for renewed inquiry; for I believe them not to be at present, by any means, fully understood.

There is still another consideration which is full of interest, in regard to puerperal diseases; namely, the state of health of the patient previously to her confinement. It frequently happens,—owing to previous disorder of the general health,—that the recovery after confinement is tardy; the secretion of milk scanty, or even morbid (affecting the health of the infant); and that there are many local affections, especially of the head or of the heart, which are full of pain and suffering.

I have now taken a rapid survey of the principal causes of puerperal diseases. It may be truly said, that many of these causes cooperate in every case; but it is also true, that each puerperal disease is to be referred to one or two of these causes more especially. Every case of puerperal affection may, therefore, be considered as a case of modified disease, requiring that the hand of the physician should be active and comprehensive; so as to embrace the numerous circumstances of the disease. This is true in a degree, which scarcely obtains in any other class of diseases; and it is on this account that I have represented the study of puerperal diseases, as requiring peculiar habits of inquiry and investigation.*]

CHAPTER I.

PATHOLOGY AND GENERAL TREATMENT OF PUERPERAL FEVER.†

Of all the diseases to which the puerperal condition is liable, by far the most formidable is the fever of which you must have heard so much;—the puerperal plague, as it might be called;—so sudden in its attack, so rapid in its progress, so fatal in its effects, and so choice

* "Commentaries on some of the more important Diseases of Females; in Three Parts; by Marshall Hall, M.D."

† I think it very important to discard the term *Puerperal Fever* altogether. So many are satisfied with putting a name to a disease; and language has such an influence on us all, that I think it desirable to get rid of a term, which means nothing or every thing. Make useful practical distinctions; and let each distinct disease have its distinct designation. We must then, if we attend to the diagnosis at all, arrive at the conclusion, that this is not a distinct disease, or form of disease; and must treat it accordingly.—*Dr. Marshall Hall.*

Puerperal Fever, it should be remembered, is a generic term, which in reality designates only a prominent symptom of disease; but which, in ordinary usage, embraces complaints having little or no connexion;—either in their nature, their seat, or their treatment.—*Dr. Conquest's "Outlines of Midwifery".*

in its victims, among the young and the beautiful;—assailing those who are the most endeared to us;—those young wives and mothers,—the moulds of the human species,—who (in European society, at least) form not the least valuable, nor the least interesting part of the domestic circle.

SECTION 1.—THE PATHOLOGY OF PUERPERAL FEVER.

[The term "puerperal fever" has been employed, for upwards of a century, to designate the most fatal inflammatory disease to which child-bed women are liable. The name is now generally adopted by medical writers; and is considered to be synonymous with the terms, "puerperal peritonitis", "child-bed fever", "peritoneal fever", or "the epidemic disease of lying-in women".

The records of medicine afford indubitable evidence, that puerperal or child-bed women have, from the most remote periods of antiquity, been liable to attacks of this destructive affection. In the works, however, of the earlier authors, its history is short and imperfect: and it is probable that the disease did not attract the particular attention of physicians, before the middle of the seventeenth century; when it occurred, as a malignant epidemic, in the lying-in wards of the Hotel Dieu. Since that period, it has often occurred in the principal cities and lying-in hospitals of Europe.

Most vague and contradictory opinions have hitherto prevailed respecting the nature and treatment of this disease. Inflammation of the peritoneum, omentum*, or other of the abdominal viscera, has by some been considered as the cause of all the phenomena; and copious blood-letting and cathartics have been recommended for the treatment. Other writers, who refer all the local and constitutional symptoms to a specific fever, peculiar to women in the puerperal state, deprecate the employment of venesection, and urge the necessity of employing the most powerful stimulants and cordials. The morbid sensibility of the hypogastrium†, usually observed at the commencement of the attack, and the changes of the structure (from inflammation) often discovered after death, both in the uterine and other organs, have been considered by them as the consequences of this idiopathic‡ fever;—in like manner as inflammation of the brain, lungs, or intestines, often supervenes during the progress of typhus.

Those who have most attentively perused the works of Drs. Hulme, Leake, Denman, Walsh, Gordon, Joseph and John Clarke, Hamilton, Hey, Armstrong, Douglas, Campbell, Mackintosh, and Cusack, must have felt convinced that the pathology of puerperal fever required a more careful investigation than had been made by any of these distinguished authors. To reconcile their discordant statements, with respect to the nature and treatment of the affection, it appeared to me§ requisite, that it should be examined not only in

* From *omen*, "a guess";—so named because the soothsayers prophesied from an inspection of this part.

† From *υπο, under*; and *γαστηρ, the stomach*.

‡ From *ιδιος, peculiar*; and *παθος, an affection*.

§ Dr. Robert Lee.

hospitals, but also in private practice, for several successive years, throughout all the different seasons. In this manner only did it seem possible to ascertain, whether diseases essentially distinct from one another had been described; or merely varieties of the same affection ;—modified perhaps by some powerful, but unknown causes.

From the first of January 1827, to the first of October 1832, one hundred-and-seventy-two cases of well-marked puerperal fever came under my immediate observation in private practice, and in the British Lying-in Hospital, and other public institutions in the western districts of London. The symptoms and progress of these cases were watched with close attention; the effects of the different remedies employed were observed; and, where death took place, I carefully examined the alterations of structure in the uterine and other organs.

Of fifty-six cases which proved fatal, the bodies of forty-five were examined; and in all was found some morbid change, decidedly the effect of inflammation ;—either in the peritoneal coat of the uterus or uterine appendages, in the muscular tissue, in the veins, or in the absorbents of the uterus;—accounting, in a most satisfactory manner, for the constitutional disturbance observed during life. The peritoneum and uterine appendages were found inflamed in thirty-two cases; in twenty-four, there was uterine phlebitis; in ten, there was inflammation and softening of the muscular tissue of the uterus; and in four, the absorbents were filled with pus. These observations are therefore subversive of the general opinion now prevalent, that there is a specific, essential, or idiopathic fever, which attacks puerperal women; and which may arise independently of any local affection in the uterine organs, and even prove fatal without leaving any perceptible change in the organization of their different textures. As the constitutional symptoms thus appear to derive their origin from a local cause, it would certainly be more philosophical and more consistent with the principles of nosological * arrangement, to banish entirely from medical nomenclature the terms, "puerperal fever" and "child-bed fever", and to substitute that of "uterine inflammation", or "inflammation of the uterus and its appendages in puerperal women." "Puerperal peritonitis" and "peritoneal fever", are terms not less objectionable than "puerperal fever"; for, in many fatal cases, there is no proof whatever of the existence of any morbid affection of the peritoneum.

All writers state that, in puerperal fever, there is exquisite sensibility of the abdomen, with pyrexia †; and that these are the only characteristic symptoms of the disease. After the inflammatory symptoms of the uterine organs subside, those of collapse follow ;—as in the last stages of inflammation of the brain, lungs, liver, intestines, and other abdominal viscera. Then the abdomen becomes distended and tympanitic; and, after death, extensive alterations of structure are found in the uterus and its appendages;—the other ex-

* From *νοσος, a disease;* and *λογος, a discourse.*

† From *πυρ, fire.*

ternal and internal organs presenting no morbid appearance. Besides, there is nothing to be remarked in the condition of a puerperal woman, to render her more liable to attacks of typhus-fever than other individuals; and lying-in women,—as I had an opportunity of observing in the epidemic typhus, which prevailed in Edinburgh in the years 1816 and 1817, and also during the last six years in this metropolis,—are rarely affected with typhus. It is to the uterus,—left in a condition, after delivery, in which no other organ can be similarly placed, and rendering it peculiarly liable to attacks of inflammation,—that we are to look for an explanation of all the phenomena of puerperal fever.

Until a recent period, the pathological* anatomy of the uterine organs, in puerperal women, had not received that attention which its importance demanded. Nevertheless, in the histories of the different epidemic fevers which have prevailed amongst lying-in women since the middle of the seventeenth century, the symptoms and morbid appearances, though imperfectly described, strongly confirm the accuracy of the conclusion, that the whole phenomena (local and general) of these fevers, are to be referred to inflammation of the uterine organs: and that the symptoms vary according as the superficial or the deeper-seated structures of the uterus are affected.

The recent valuable researches of Andral, Luroth, Dance, Danyau, Tonellé, and Dupley, confirm, in a remarkable manner, the accuracy of the views now given of the proximate cause of puerperal fever. In the epidemic of 1829, at Paris, numerous opportunities occurred of examining the morbid appearance in those who were cut off by the disease. In one-hundred-and-thirty-two out of two-hundred-and-twenty-two fatal cases, puriform fluid was found in the veins and absorbents of the uterus; and in one-hundred-and-ninety-seven, some important alteration of structure was observed in the uterine organs. In a few rare cases described by M. Tonellé, under the term "ataxic puerperal fever", the changes which had taken place in the uterine organs were comparatively slight; and consisted of an exudation of lymph at the neck of the uterus, and into the cavities of the uterine veins. In these cases, the symptoms were considerably different from those commonly observed in uterine inflammation; and were probably referrible to other causes.

The preceding observations seem to warrant the following general inference (which I drew from the observations I had made previously to October 1829);—"That inflammation of the uterus and its appendages must be considered as essentially the cause of all the destructive febrile affections which follow parturition; and that the various forms they assume,—inflammatory, congestive, and typhoid,—in a great measure depend on whether the serous, muscular, or venous tissue of the organ has become affected."†]

* From *παθος, a disease*; and *λογος, a discourse.*

† "Researches on the Pathology and Treatment of some of the most important Diseases of Women." By Robert Lee, M.D. London, 1833.

SECTION 2.—SYMPTOMS OF PUERPERAL FEVER.

Period of the Attack.—On the second or third day it is,—reckoning that of delivery as the first,—that puerperal fever usually makes its first onset;—on a Tuesday or Wednesday, for example, if the child was born on a Monday. I have known death to occur, however, with all the symptoms of puerperal fever, within the first four-and-twenty hours after parturition; and Dr. Haighton used to relate the case of a woman, who perished under a puerperal fever which commenced ten or twelve days after delivery;—indeed, if my memory serve, after the patient had made her appearance in the drawing-room. The later the attack, the less is the pertinacity of the symptoms; and the fever which seizes the patient on the fifth day, is much less likely to prove fatal, than that which commences on the first.*

Chills and Heats.—Puerperal fever usually commences with chills and heats; and those chills, felt more especially along the back, arise, I suppose, from a peculiar condition of the spinal marrow. They are, I believe, rarely perceived in the lumbar region; but frequently about the shoulders and the neck. There is a good deal of variety in the intensity of the chill; for some women, when attacked, will chatter as in an ague-fit; while, in others, the refrigeration is so slight, that unless you search them with the accuracy of a sectarian catechist, you may not be able to find out that there have been any chills at all. It is said, indeed, that the fever may sometimes assail without a chill; and, certainly, it is not perhaps impossible that,—half asleep at the time,—the patient may not perceive its occurrence. The intensity of the chill is no measure of the subsequent vehemence of the fever. A fierce fever may follow mild chills; or the chill may be moderate, and yet the fever violent. Indeed, I incline to suspect that, when the disease opens in this mild manner, there is more cause for fearing its future progress. *Ipsâ silentiâ terrent*†.

Abdominal Pains.—About the time of the rigor, the woman

* The morbid affections which occur in the *puerperal*, as distinguished from the *parturient* state, usually commence at such a period after delivery, as may give space for re-action to take place;—after the state of inanition and exhaustion, which usually obtains immediately upon parturition. It should be observed, however, that there is scarcely a disease of the puerperal state, which does not occasionally show itself *before* delivery. But, in these cases, the disease usually remains stationary, or nearly so, until parturition has taken place; and then assumes its exasperated form.—*Dr. Marshall Hall, on some of the Diseases of Females; Page* 171.

† "They affright by their very stillness."

It is a dangerous opinion, that puerperal inflammation of the abdomen must be ushered in by rigor,—must be attended by great fever. This disease is often insidious. It frequently begins with *slight* rigors;—sometimes with no rigor at at all. Violent rigor, great heat of the surface, frequency of the pulse, and affection of the head, denote the addition of intestinal irritation to the state of inflammation.—*Dr. Marshall Hall, on some of the Diseases of Females; Page* 259.

I have known many instances of acute puerperal inflammation within the abdomen, unattended by heat of the skin; and many cases resembling inflammation, but not in reality inflammatory, in which the heat of the surface was extreme. —*Dr. Marshall Hall, on some of the Diseases of Females; Page* 177.

complains of abdominal pains; which are sometimes very slight, so that their detection has its difficulties; but at others so severe, that the touch of the finger is regarded with apprehension, and the weight of the coverlet is complained of as a distress and a burden. These pains may be felt all over the abdomen;—above, below, to the right, to the left, in the region of the diaphragm, and in the lumbar region. This diffusion, however, is neither constant nor frequent; and you will find, especially in the less malignant varieties of the disease, that the patient complains most in the region of the navel, and more especially below it. Hence, whenever you suspect the approach of puerperal fever, you should immediately lay your hand upon the abdomen below the navel, in the region of the womb. In some varieties of the epidemic *, severe after-pain is not infrequently felt; so that, as soon as you enter the chamber on your second visit, the nurse addresses you by saying,—"Sir, my mistress has suffered a great deal from the after-pains." You approach the bed; and you then perceive the rising cloud. This pain, I suspect, is felt most severely where the uterine peritoneum is the seat of inflammation; and where the inflammation has a tendency to spread down into the substance of the uterus. Mild fever may accompany intense pain; and the reverse. A circumscribed pain is always favourable; but much is to be apprehended when the pain and tenderness are diffused extensively over the surface of the abdomen; although the intensity of the pain be slight.

[With the pain or tenderness there is, frequently, either general tumidity of the abdomen, or a local hardness. In the latter case it is frequently such as to denote an enlarged and inflamed condition of the uterus; but it occasionally arises from an affection of the ovarium, or from partial inflammation and suppuration of the peritoneum.†]

The State of the Pulse.—An excellent characteristic of puerperal fever, is derived from the number of the pulse; which is always frequent. In this disease, it scarcely ever happens that you have a pulse as low as one-hundred-and-fifteen in a minute; unless the disease be giving way to a remedy. It generally rises as high as one-hundred-and-twenty, one-hundred-and-thirty, or one-hundred-and-forty; and I have myself counted pulses one-hundred-and-sixty-five or one-hundred-and-seventy in the minute. Those are mistaken who tell us that these frequent pulses cannot be numbered. You may count, in the rabbit when agitated, a pulse of three hundred; and, of course, there can be no difficulty of numeration arising from mere number, while the pulse in the human subject is below two hundred.

[The pulse has almost invariably, in this disease, an unusual quickness from the beginning. It has often the strength and vibration observed in disorders of the most inflammatory kind, in robust constitutions; and yet is sometimes exceedingly feeble and quick;—

* From επι, *upon*; and δημος, *the people*;—alluding to its wide diffusion.

† Dr. Marshall Hall's "Commentaries". Page 178.

beyond what might be expected from the concurring circumstances. The latter is to be reckoned among the most dangerous signs;—proving, perhaps, increased irritability with great violence of disease; and that the powers of the constitution are unable to struggle with it, or scarcely to bear the operation of the medicines which might be necessary for its relief. There is much variation in the subsequent stages; but there is scarcely a worse omen than a very weak and accelerated pulse; even though the other symptoms may seem to be abated. But the mere quickness of the pulse, if not attended with other perilous signs of inflammation or fever, is not to be considered as indicating danger; experience having shown that very irritable patients have sometimes an unusually quick pulse, unaccompanied with any other alarming symptom.*]

The symptoms which I have here mentioned, I have purposely detached, and separated from the rest; because I look upon them as constituting, in great measure, the character of the disease. If, upon the second or third day of delivery, the patient is attacked with chills and heats, and abdominal pains and tenderness; and if, together with these symptoms, you find the pulse rising above the healthy level to one-hundred-and-thirty, one-hundred-and-forty, one-hundred-and-fifty, or one-hundred-and-sixty, in the minute; and, more especially, if puerperal fever is prevalent at the time,—there can, then, be little doubt respecting the nature of the case;—provided you make those diagnostics which I shall hereafter expose to your consideration.

Symptoms of Less Importance.—Besides these principal and pathognomonic† symptoms, however, we find the patient affected with others of less importance. Vomiting may occur; and purging and headach; and increase of the animal temperature;—and failure of the milk. Cephalalgia‡, in some epidemics, has been a constant symptom; and Lowder, with others, was disposed to place it among the pathognomonic symptoms; but cases have occurred, within my own observation, in which no headach at all has been felt; or, at all events, where the attack has been so slight, that it could scarcely deserve attention as a characteristic symptom.

[There is usually either a vomiting of green or yellow bitter matter, or a nausea and loathing of the stomach; with an offensive taste in the mouth. An instantaneous change, both in the quantity and appearance of the lochia, takes place; and sometimes, though rarely, they are wholly suppressed. The milk, if secreted, recedes or is diminished; and its taste and appearance are much altered. The urine is voided often, with pain, and in small quantities; and is remarkably turbid.§]

[The bowels are, in general, very much disturbed; and, in some

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 473 and 474.

† From *παθος, a disease*; and *γινωσκω, to know*.

‡ From *κεφαλη, the head*; and *αλγος, pain*.

§ Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Page 474.

cases, diarrhœa takes place immediately upon the accession of the fever; in other cases, three or four days after, or not until the last stage of the disease. But it very seldom fails to attend; nor can it be removed without the greatest difficulty as well as danger, before the disease is terminated. The stools, towards the close, often come away involuntarily;—being always preceded by an increase of pain; and every evacuation gives momentary relief. They are uncommonly fetid, of a green or dark-brown colour, and working like yeast. It is also remarkable that, after the long continuance of the looseness,—when the patient has taken little or no solid nourishment,—there will sometimes be discharged large and hard lumps of excrement; which one might suspect to have been confined in the bowels for a long time before delivery. With regard to this symptom, however, it is very necessary to observe that, in delicate constitutions great disturbances of the bowels are frequently occasioned by mere irritation; which is soon removed by the well-timed exhibition and repetition of some cordial opiate.*]

[Puerperal inflammation within the abdomen, is marked by an expression of extreme pain and anxiety in the countenance. The brow is contracted; and the upper lip is drawn upwards, in a peculiar and characteristic manner; and is bound round the teeth, or rather the gums. These appearances are increased on pressing the abdomen; or they are observed at that moment, if they had not been manifest before. The countenance is generally pale, and rather sunk; but with partial heats.

The manner of the patient is much changed; and becomes expressive of suffering and anxiety. The movements of the body are attended with pain; and are, therefore, suppressed; or, if performed at all, it is with an expression of suffering in the countenance, and of caution in the manner; and there is an appearance as if the body had become heavy and helpless.

The respiration becomes hurried and anxious; and is performed principally by movements of the thorax; those of the diaphragm and abdomen being more or less suppressed, sometimes completely. This is a circumstance which gives great peculiarity to the appearance of the breathing. Sometimes there is considerable heaving of the chest; with some hurry, some noise from the ingress and egress of the air, and sometimes with a sort of blowing sound. This state of the respiration is attended by the utmost danger; being frequently one of the first symptoms of the sinking state.†]

[The progress of this disease is sometimes extremely rapid; especially in unfavourable seasons, and hot climates. Instances have occurred, in which women have died within twenty-four hours of the first attack; and I have seen a few who never grew warm after the rigor, which then resembled a convulsion. In some, death has followed quite unexpectedly;—either from inattention, or from the

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Page 475.

† Dr. Marshall Hall, on some of the Diseases of Women; Pages 179 and 180.

scarcely perceptible but insidious progress of the disease; the indications not having been at all proportionate to the danger. In other cases, the shivering-fit is succeeded by heat, thirst, and other symptoms;—according to the course observed in other fevers; but the pain which originated in the abdomen, joined with these, is to be esteemed the pathognomonic or chief sign of this disease. It seems necessary to enumerate all the symptoms, which commonly though not exclusively attend this fever, and not peculiarities arising in any individual patient; yet cases will occur in practice, in which there will be much variation;—depending on the degree of disease, the part affected, the constitution of the patient, and the period after delivery when the fever makes its appearance.*]

Duration of the Disease.—Like some other diseases, the puerperal fever is somewhat unfixed in its duration. It may last,—especially if we comprise the cachexia which follows it,—for many days; or where no bleeding, or other active remedy has been employed, it may destroy the patient (which it has done under my own observation) within twenty-four hours from the commencement of the disease;—the plague itself being scarcely more rapid, or more fatal in its progress. Three or four days,—not to say five or six,—may be the average duration of this affection. I speak here of the epidemic.

Modes of Termination.—The disease may be brought to its close in different modes. Sometimes we have the great satisfaction of seeing it terminate in a resolution of the inflammation; under which reaction, after symptoms the most frightful and alarming, danger generally vanishes; and the pulse sinks steadily to one-hundred-and-forty, one-hundred-and-thirty, one-hundred-and-twenty, or one-hundred-and-ten in the minute. The other symptoms give way, in like manner; and the patient, a few hours before on the verge of dissolution, is now brought into a state of comparative security. Too frequently, however, it happens,—and I regret to add, too, under the best average treatment,—that the disease terminates in a very different manner. The extremities become cool; the pains in a great measure cease; the mind remains tranquil; hopes of recovery flatter; the patient, perhaps, talks of the little schemes in which she is to be engaged on her re-establishment; and every thing, in short, is promising to our wishes, except the pulse; and there you find the token of death! Whenever, in conjunction with these insidious and adulatory symptoms, you perceive a pulse of one-hundred-and-fifty, or one-hundred-and-sixty, in a minute, the worst consequences are, I conceive, to be apprehended. This termination, under symptoms so flattering, is by no means very uncommon; and I dwell on it the more, because I am anxious that it should not be forgotten; for it has now and then happened with physicians of eminence,—men who, whether they have reflected much or not, must certainly have

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Page 474.

seen much of practice;—that, notwithstanding all their experience, they have been deceived by these symptoms; and have pronounced the patient secure from danger; although, perhaps, she has died in the course of one or two hours afterwards. Nor have pomp and ambition of manner always been wanting to give magnificence to the error; which, after all, may well be pardoned in those who have seen but little of this dreadful disease. It must be acknowledged, however, that the lofty neglect of "*the vocation*" may expose professional dignity to rude assaults; and, on hearing some of these tales narrated by my younger friends, I have now and then been forcibly reminded of the fate of other arrogant personages of days gone by:—

"Vellunt tibi barbam
Lascivi pueri; quos tu nisi fuste coerces
Urgeris turbâ circum te stante, miserque
Rumperis, et latras, magnorum maxime regum."*

There is yet a third mode in which the puerperal fever may terminate; and that is by a sort of cachexia. In this termination, the patient becomes liberated from her more pressing symptoms; and the pulse gets down to one-hundred-and-thirty, one-hundred-and-twenty, or one-hundred-and-fifteen, in the minute. There is a disposition to vomiting, to purging, to colliquative sweating, and to alternate exacerbations and remissions of the feverish symptoms. After these symptoms have continued for several days, the patient recovers under a gradual cessation of them; or the strength, notwithstanding some gleaming amendments, declines daily; and, at the end of a week or two, the patient sinks. In these cases, whether the patient sink or recover under cachexia, I always suspect that the inflammation of the peritoneum has given rise to disorganization, and adhesion of certain folds of the intestines; and that the cause of the disease is the inflammation and irritation that are going on in those parts;—the original parts also being slightly affected, perhaps; but, still, not in the same violent manner as where the patient labours under the dangerous and violent attack of the puerperal fever. Thus much, then, respecting the characteristics of this formidable disease. Let us now consider its management.

SECTION 3.—TREATMENT OF PUERPERAL FEVER, BY VENESECTION, CALOMEL, AND OPIUM.

Under the best method of treatment, puerperal fever too often proves fatal. A variety of means have been proposed and tried in combating this malady; but when we get to the bed-side, we too

* "The waggish boys make sport of thy beard; and, unless thou drive them away with thy staff, thou will be pressed upon by the surrounding mob; and will be worn out with vociferations, O greatest of the great kings."—*Horace's* "*Satires*"; *Book* 1; *Satire* 3; *Lines* 133 *to* 136.—The beard was the distinguishing mark of philosophers; who, though pretending to be of equal estimation with kings, were liable to be insulted by the rabble with impunity.

often find our master. In puerperal fever, we have been advised to commit the result to tonics,—to purging,—to mercury,—to turpentine,—to emetics,—and to blood-letting, conjoined with calomel*, and copious doses of opium. In the malignant form of the disease, I fear, your patient will die under the best known treatment; so that there seems to be but little room for choice; but, in the milder or inflammatory varieties of the epidemic, I think, on the whole, your most effectual remedies will be venesection, calomel, and opium. After all I have seen, I speak with hesitation.

[When inflammation of the peritoneal coat of the uterus† is fully developed, and where the affection occurs in a severe sporadic or epidemic form, the soothing plan of treatment will prove wholly insufficient to arrest its course; and, unless blood-letting (general and local) and other antiphlogistic remedies be early and vigorously employed, it will in most cases proceed to a fatal termination. In the treatment of puerperal fever, the following are the principal objects we should keep in view:—First, to subdue the local inflammation of the uterine organs; and, secondly, to moderate the constitutional disturbance which the local inflammation invariably produces. In fulfilling these indications, no exclusive plan of treatment should be adopted; but we ought,—according to the peculiarities of each case and stage of the disease,—to employ blood-letting, mercury, opium, cathartics, diaphoretics, blisters, and whatever other means we can discover to possess any influence in controlling the disease.

Blood-letting.—In no inflammatory affection of the internal organs, are the good effects of blood-letting (general and local) more strikingly displayed, than in the first variety of uterine inflammation,—peritonitis. But the results of my experience do not confirm the accuracy of the conclusions drawn by some authors;—that in all cases, by the early employment of these means, we can succeed in curing the disease. It is always an affection attended with great danger; and it not unfrequently runs its course rapidly to a fatal termination, in spite of the most prompt application of remedies.‡]

Venesection to be employed Early.—In employing venesection,—whether in the milder or severer forms of the disease,—it is of the greatest importance to commence the bleeding as early as may be. I have laid it down as a sort of rule in my own practice, that if, in the less vehement attacks, the bleeding be commenced within *six* hours after the chill, your patient will be saved *often*; and if within *twelve* hours, *not unfrequently*; but that if you do not begin till twenty-four hours are passed away, in epidemic cases, the patient

* The "Hydrargyri Chloridum" of the New London Pharpmacopœia. The change of names, in this and other instances, has given rise to much disapprobation; and it is certainly an additional call in the careful attention both of the prescriber and the dispenser. We think it of great advantage, however, when the name of a medicine correctly indicates its composition; and we regard every approach of medicine to an exact science, as of great permanent advantage, though attended with temporary inconvenience.—*Dr. Rogers.*

† One of the forms of puerperal fever.

‡ Dr. Robert Lee's "Researches"; Page 112.

will usually *die*. With regard to the quantity of blood you are to abstract, it must of necessity vary somewhat with the condition of the patient, and the vehemence of the disease; yet it is well to have an average; and this average may, I think, range between twenty-five and thirty-five ounces. In taking away this blood, you will sometimes find your patient becomes faint, even before many ounces have been drawn. If the faintness be permanent,—lasting for four or five hours (which in general it does not),—it may be considered to be of great benefit to the patient; but if, on the other hand, it be merely temporary, I believe it has often occasioned women to lose their lives;—by intimidating the operator; and preventing him, when bleeding, from abstracting the necessary quantity. Be it remembered, then, in puerperal fever, that if venesection be begun, you must not act with irresolution. In cases like these, when syncope occurs, I would recommend you to remain with the patient until you have ascertained whether the fainting be for a short time only, or permanent; and if the circulation return after a short interval, should the original source fail, you may open the vein afresh.

[Blood-letting should, in this disease, always be performed while the patient is in the erect posture; and then it may, in general, be carried to deliquium. I do not recommend this mode of proceeding, merely with the intention of producing deliquium; but also, that this deliquium may serve us as a guide, in judging of the extent to which we may carry depletion. If the patient be sitting upright, and faint from the loss of blood, we have a security and a remedy against any danger from this event, in laying the patient low. But if deliquium be induced by a bleeding the patient in the recumbent posture, I cannot think that it will be always without danger.*]

Propriety of a Second Venesection.—From four to eight hours after you have bled the patient the first time, you will, I think, generally be able to determine whether the bleeding, in conjunction with the other practices, may or may not be sufficient to subdue the disease; and, therefore, I should lay it down as a general rule, in a disease which proceeds with such rapidity, that within six or seven hours after the *first* venesection, you ought to come to your determination whether you will have recourse to a *second*; and an anxious and a nice point it may be to decide! If you are placed in the midst of a large circle of obstetric friends, endeavour, by all means, to have another opinion; as the decision may be delicate, and a divided responsibility may not be undesirable; but if your excellencies, or more pardonable defects †, have made that circle small, you may find it necessary to decide on your own judgment only; and my own method of determining the point is the following:—Counting round the second-circle ‡, if I find that the pulse (which after the bleeding sunk, perhaps, to one-hundred-and-twenty or one-

* Dr. Marshall Hall, on some of the Diseases of Women. Page 188.

† Meaning that the "defects" of the accoucheur will be more readily pardoned by rival practitioners than his "excellencies".

‡ The circle appropriated to that hand of the watch which indicates *seconds*.

hundred-and-fifteen) has mounted again to one-hundred-and-thirty, one-hundred-and-forty, or one-hundred-and-fifty in the minute, or perhaps to the same number as before the operation,—though not alone decisive, yet, as far as it goes, this symptom appears to me to indicate that further depletion will be required; and, on the other hand, if the pulse has sunk to one-hundred-and-ten, and remain there, I feel unwilling to have recourse to the lancet. It is wise to let well alone. After solicitously counting the pulse, I should proceed to a careful examination of the abdomen; and if I found that the abdomen was painful and tender,—even though the pain and the tenderness were somewhat obscure,—I should look upon these symptoms as an argument for the lancet; and, on the other hand, I should reject the use of this instrument, if tenderness and soreness of the abdomen, had wholly or in great measure subsided. If you have prudently refrained, during the first few hours, from the application of a blister, the abdomen may be easily examined, by laying your hand above the symphysis pubis, and pressing there; and by directing the patient to draw her knees towards the bosom, or to attempt a turn in the bed, or to assume the sedentary posture; when, if tenderness exist, it may be easily detected;—provided the examination be conducted with patience and attention. Mere tenderness or pain of the abdomen, without frequency of the pulse, is no valid reason for the further abstraction of blood from the arm; nor is mere frequency of the pulse, without pain or tenderness of the abdomen, a satisfactory warrant for this use of the lancet. It is only where those two symptoms are met with in conjunction, that I feel satisfied that inflammation is proceeding within the peritoneum, and that I am justified in acting;—when, for example, there is tenderness and pain of the abdomen; and when, in conjunction with this, the pulse is one-hundred-and-twenty-five, one-hundred-and-thirty, one-hundred-and-thirty-five, or more, in the minute. Perhaps you will ask me, here, whether it will not be proper to inspect the blood you have already taken away. This is certainly proper; and should you find it cupped and buffy, that will be a collateral argument in favour of further bleeding; but the absence of this inflammatory appearance of the blood, if you have bled early, is no certain reason why you should not bleed a second time;—provided you find all the other inflammatory symptoms are present; for I have myself, in some two or three cases, on bleeding early, detected no buffy or cupped appearance on the first blood; although the blood afterwards drawn, has appeared inflammatory in a high degree. It is better, at each bleeding, to receive the blood in at least two or three different cups.

[There are few cases in which it is necessary to have recourse to a second bleeding from the arm. Where the propriety of this is indicated by a recurrence of the acute pain, the quantity of blood taken away should not exceed twelve or fourteen ounces. However much the patient may complain of uterine pain, if the pulse exceed one-hundred-and-twenty, and is feeble, and if the powers of the constitution have been much reduced by the previous treatment, blood

should not be taken a second time from the arm. Should the pain continue undiminished six or eight hours after the first bleeding, or even later, and the pulse be full and not very rapid, and the strength of the patient little impaired, a second venesection (to the extent above stated) may be employed, not only with safety, but with decided benefit. It ought, however, to be remembered, that much greater caution is required in having recourse to the *second* than the *first* bleeding, in puerperal peritonitis; and where we are not convinced that it is absolutely necessary again to abstract blood from the arm, it is better to repeat the leeching.*]

Propriety of a Third Venesection.—In about six or eight hours after the second abstraction of blood, you must come to a determination whether you will or not bleed a third time;—deciding the point sooner or later, according to the symptoms. Here let me observe, that your decision respecting the *third* bleeding, is more important and more difficult than your determination respecting the *second*; for where women sink under puerperal fever, it is commonly under the third bleeding that they appear to succumb. Now if you are resolved on depletion, in a case of puerperal fever, you ought not to wait for one minute for the advice of another respecting the *first* bleeding. Moments are precious; and, in the uncertainty of medicine, there is not such risk from a first bleeding, as can make it your duty to pause; but in coming to a determination whether you shall or shall not bleed a *third* time, unless your experience is large, another opinion is desirable (provided an opinion of value can be obtained); for if patients really sink from over-bleeding, it is, I suspect, this *third* venesection which destroys them. Whether, as a general practice, it be wise to bleed a third time at all, may, I think, be disputed; for if our first two bleedings fail, we may reasonably be discouraged; and doubt the efficacy of a third. I think, however, that I have sometimes seen the third bleeding put a close to the inflammation; and as I cannot deny its occasional necessity, I proceed to prescribe rules for its management.

In determining, then, whether we ought to bleed a *third* time, we must be guided, in great measure, by the same indications as in the determination respecting the *second* bleeding. If the pulse is not above one-hundred-and-fifteen, or if the abdomen is not tender, or if symptoms of collapse are beginning to appear, you must abstain from the lancet. But if there are no symptoms of collapse, and the abdomen is tender, and the pulse is one-hundred-and-twenty, one-hundred-and-thirty, one-hundred-and-forty, one-hundred-and-fifty, or more, in the minute, you may bleed; though much benefit, I fear, is not to be expected from venesection. Beware of bleeding if collapse has begun;—which, in epidemic cases, is not improbable. Beware of rash bleeding, if the two first bleedings have, together, exceeded fifty ounces. Before you take more blood, pause, think, and act;—*cogli occhia perti*,—"with your eyes wide open"! Tenderness of the abdomen *alone*, without a frequent pulse. and (perhaps)

* Dr. Robert Lee's "Researches"; Page 104.

a frequent pulse *alone*, without tenderness of the abdomen,—will not justify bleeding. An average quantity, for a third bleeding, may be ten or twelve ounces. Ten or twelve leeches may be substituted for venesection, in the more doubtful cases. If the *pour* and the *contre*, —the arguments *for* and *against* bleeding a third time, are found nearly to countervail each other, perhaps it is better to decide against it. I have more than once seen patients apparently sinking from the application of twenty or thirty leeches, after one or two great bleedings had been premised. Again, therefore, I say—beware!

[In no case of peritonitis which has fallen under my care, has it appeared necessary or safe to bleed from the arm a third time; and in a very large proportion of cases, only one bleeding has been had recourse to.*]

To these special remarks, let me add one or two of a general kind. It is highly desirable that the whole quantity of blood drawn in this disease, should be abstracted within the first twenty-four hours after the chill; and as to the whole quantity which, in all the bleedings, it may be necessary to withdraw, I think it may average between forty and fifty ounces. Sixty or more ounces have been sometimes taken with apparent benefit; but, hearing of these anomalous successes, I am sometimes reminded of the sneer of the Grecian sceptic; who, on being shown the votive representation of an escape from shipwreck, with a remark from the priest on the efficacy of Pagan supplication, exclaimed,—not without a scandalous and irreligious levity,—"Who paints for those who sink?"

Opium.—In puerperal fever, we have been recommended to make trial of calomel and opium, in conjunction with venesection; and I have myself, in treating this disease, made use of opium in the larger doses, without observing any resulting ill consequences; and it seems not improbable, that it really does possess some efficacy in lowering the irritability of the vascular system, and in extinguishing the inflammation. As opium, then, does no obvious injury, and may perhaps be of service, it deserves a fair trial; and it may be better, when giving it, to administer the larger doses;—say five or ten grains in the course of the twenty-four hours;—provided you carefully watch the patient. I have given larger quantities than this, and apparently without mischief; but it is to be remembered, that there are idiosyncrasies which may render these larger doses peculiarly dangerous. In large flooding-cases, where opium is given, we find that the patients are not affected by given quantities of this anodyne, in the same manner as they would be if they were in a state of florid health, and in a full and lively condition. Now it is, in a measure, to this state of inanition that patients are reduced by the bleeding; and this may be a reason why the larger doses of opium may not so much affect them. Understand, then, that where the case is highly dangerous, so as to justify an active remedy, and where you are watching your patient sedulously,—perhaps passing a great part of the day in the bed-room, or near the bed-side,—that you may ven-

* Dr. Robert Lee's "Researches"; Page 104.

ture to give the opium in the larger quantities;—say five or ten grains of the extract of opium*, in divided doses, in the course of twenty-four hours;—the remedy being administered not so much by weight, as according to the effect produced. There are two modes in which opium may be employed in this fever. You may begin the administration of it directly after the first bleeding;—so that the venesection and the use of opium proceed hand-in-hand; or, if you bleed a third time, you may wait till your third bleeding, which will be about sixteen hours from the chill; and then commence with your anodyne. I have not seen enough of the opium-practice to decide, peremptorily, which of these two methods is to be considered the best; but certainly, when trying the remedies myself, I should give the preference to the first.

[In cases of pure inflammation, I do not think the use of opium desirable. The pain must be subdued by blood-letting; and every thing that, by masking the pain, can divert our minds from the use of this remedy, involves danger to the patient. Those symptoms of constitutional irritation which require the use of opium, seldom appear until the inflammation has subsided. In mixed cases, I think the use of opium, especially after blood-letting, may be necessary to subdue constitutional irritation; as well as beneficial in the cure of the disease.†]

Calomel.—With respect to calomel, I may remark, that this also may be given in two ways. Guarded with opium, ten grains, or more, may be administered every six hours, till the mouth is affected;—a bold practice, which I have myself seen tried without obvious ill consequences. In one case, forty ounces of blood had been abstracted; and when forty grains of calomel had been administered, the mouth became sore. The inflammation, however, continued; and ultimately destroyed the patient. But a gentler, and perhaps safer practice, consists in the administration of a grain of calomel every three or four hours, in conjunction with the opium; which may be conveniently taken at the same time.

[At the same time, eight or ten grains of calomel, in combination with five grains of antimonial powder‡, and a grain and a half, or two grains of opium; or with ten grains of Dover's Powder"§, should be administered; and this should be repeated every three or or four hours, until the symptoms begin to subside. Upwards of

* The "Extractum Opii Purificatum" of the New Pharmacopœia. "While some consider this extract to be stronger than crude opium, others prefer the latter, as more certain."—*Dr. Collier.*

† Dr. Marshall Hall on some of the Diseases of Women.

‡ The "Pulvis Antimonii Compositus" of the Pharmacopœia; an imitation of the celebrated "James's Powder." We take this opportunity of recommending Mr. Whitaker's very useful work,—"Diagrams explanatory of the Chemical Decompositions of the London Pharmacopœia." The feature in this work which renders it peculiarly valuable, is the adoption of Dr. Boswell Reid's mode of indicating chemical changes; a mode which, for perspicuity, far surpasses any other. —*Dr. Rogers.*

§ The "Pulvis Ipecacuanhæ Compositus" of the London Pharmacopœia.

fifty grains of calomel have been given, in many cases, with decided benefit; and in two only out of one-hundred-and-seventy-cases, has the mouth been severely affected. I have never seen the mercury, in such large doses, produce those symptoms of alarming weakness, and that tympanitic state of the abdomen, with vomiting and great irritability of stomach, which some have represented. After the second dose of the calomel, I have often exhibited, with advantage, a strong purgative enema*; or a cathartic draught of senna-and-salts;—repeating them according to their effect. After the operation of the medicine, in some cases, the pain of the uterus, which had only been relieved, has completely subsided.†]

Here, then, is one principal method of treating this most fatal disease;—by venesection, calomel, and opium combined. While, however, you rely on these remedies as the principal, there are others not to be forgotten, and to be looked on as a sort of auxiliaries in the contest. It may be proper to purge the patient five or six times;—especially during the first day‡. It may be proper enough, likewise, to give digitalis. In one pressing case, within forty-eight hours from the chill, I brought a patient so completely under the operation of the digitalis, that I was alarmed for the consequences; yet, notwithstanding this, the fever ran its course, and the patient sunk in the ordinary manner. Leeches to the abdomen may be proper; and more especially when you dare not further bleed from the arm. Beware of applying too large a number of leeches, if you have bled twice from the arm; but if you bleed but little from the arm, and no dangerous symptoms appear, you may then apply leeches with more freedom. The flow from the leech-bites may be supported by sponging, or (commodiously enough) by three large successive poultices; applied, each of them, for two hours§. There is one objection to a blister; which is, that it creates a difficulty in deciding that most important question, whether abdominal tenderness exist; but, after the second or third bleeding, this objection may be set aside. The milder varieties of the disease are best adapted for blisters; including, perhaps, those severer cases in which the abdominal tenderness has become, in great measure, local; and where, perhaps, the pulse is not above one-hundred-and-ten or one-hundred-and-fifteen. An excellent rubefacient is the hot oil of turpentine;—care being taken that you do not fire the house when you are heating the oil. By

* From *ενημι, to inject.* † Dr. Robert Lee's "Researches"; Page 104.

‡ There is good reason to believe, that some cases have been subdued by purgative medicines alone; and the efficacy of purging, in conjunction with blood-letting, is quite undoubted. Indeed, a constant catharsis should be kept up until the disease is completely subdued.—*Dr. M. Hall on some of the Diseases of Women.*

§ When the attack of inflammation is violent, and when the pain is but slightly relieved, the venesection should be followed (without loss of time) by the application to the hypogastrium, of one, two, or three dozen of leeches;—proportioning their number to the urgency of the symptoms. When the leeches have come off, the bleeding should be promoted by warm fomentations; or by a thin warm linseed-meal poultice, applied to the hypogastrium. Poultices, if properly prepared, never occasion uneasiness, or an aggravation of the symptoms by their weight; but care should be taken to have them frequently renewed.—*Dr. R. Lee's "Researches."*

means of tow, the oil may be applied to the abdominal surface; and it may be kept there till the skin becomes red.

[Where the symptoms do not indicate an attack of a formidable nature, depletion ought not to be carried so far; nor should mercury and opium be employed in the large doses I have now recommended. In many of the cases, one general bleeding has proved sufficient to overcome the disease; and in many, the application of leeches alone, with five grains of submuriate of mercury*, and an equal quantity of "Dover's Powder", with cathartics, have subdued the complaint.†]

I cannot dismiss the consideration of this method of treating puerperal fever, without candidly declaring that, under the best management, and even under favourable circumstances, this treatment will sometimes, nay (perhaps) not unfrequently, fail altogether; though, with all its defects about it, it must (I presume) be considered one of the best methods of combating the disease, of which we are at present in possession.

Fatal Effects of Large Blood-Lettings.—Let me add, moreover, another remark. It frequently happens, where depletion has been employed,—especially large bleedings,—that friends persuade themselves that the patient is sinking from the *venesection*; when, in reality, she collapses from the effects of the *disease*. I once saw a robust Irishwoman,—who, in the commencement of her attack, had been bled to eight or ten ounces only,—dying, a few hours afterwards, under the collapse of the fever; with symptoms very like those to which a fatal flooding might give rise. Making due allowance, however, for these deceptions, there can (I think) be no doubt, that women do occasionally sink,—perhaps not very rarely,—from excess in the best-intentioned bleedings; but, really, the collapse of the disease, and the collapse from the depletion, may be so similar, that in any given case the wisest may have their doubts. I fear there is a disposition abroad to abstract blood from the arm too largely. In over-bleedings, however, I trust that transfusion may now prove a remedy‡.

[Although blood-letting is so valuable a remedy in puerperal inflammatory affections, it nevertheless becomes necessary to caution the young practitioner against the fatal effects of inconsiderate blood-letting, in these cases. Dr. Marshall Hall brings forward several cases of great practical importance; illustrating, first, the danger of repeating blood-letting, as a preventive merely, in cases which had been relieved by previous remedies; secondly, the danger of an unguarded use of the lancet in cases which are not inflammatory in their character; and, lastly, the evil effects arising from a reckless use of the lancet, in cases where its judicious employment might have been attended with success.—A. L.]

Case 1.—Mrs. ——, aged thirty, was attacked with rigors, about fifteen hours prior to delivery; which was followed by much fever, a flushed countenance, frequent pulse, difficult breathing, and inces-

* Now called *Chloride* of Mercury. † Dr. R. Lee's "Researches"; Page 105.

‡ See Pages 209 to 248.

sant cough. These symptoms continuing to increase, forty ounces of blood were abstracted, at two blood-lettings; and twelve leeches were applied to the chest, next morning, with great relief. In the evening a blister was applied. The night was passed more comfortably; she dozed a little; was cheerful; and continued relieved in the morning. As a preventive against relapse, however, three tea-cupfuls of blood were taken. The patient became faint during the flow of the blood; sank from that time; and never again rallied.

Case .2—Mrs. ——, of a pale sallow complexion, was attacked, on the second day after delivery (September 3, 1817), with severe circumscribed pain of the head. The skin was hot; the pulse frequent and strong. Sixteen ounces of blood were taken from the arm; leeches were applied to the temples; and an enema and purgative medicine were prescribed. In three hours, six or eight ounces more of blood were taken. Faintness was induced; and the symptoms were little abated. On the succeeding day (September 4), the symptoms still remained the same. The surface was hot; the bowels had been purged; and the evacuations were natural. Saline mixture and a blister were ordered; and, in the evening, a draught containing thirty drops of tinctura opii was administered, to allay a teasing, irritative cough, and restlessness, which harassed her. The next day (September 5), she expressed herself as being much better, from having enjoyed a comfortable sleep. In the evening, however, there was a degree of tenderness in the region of the uterus. The surface was still hot, and the head affected as before. On the morning of the sixth, the pain in the region of the uterus was relieved; but the head was still affected, and she complained of being faint and low. A mixture, containing camphor and sulphuric æther, was prescribed; and the window was kept open. On the seventh, the irritative cough again occurred; the pulse was one-hundred-and-twenty, or one-hundred-and-thirty; and the other symptoms remained unabated. Sixteen ounces of blood were taken away; and a grain of calomel every three hours, and the effervescing medicine, were prescribed. On the morning of the eighth, she being in every respect much better, four tea-cupfuls of blood were abstracted. Dreadful fainting followed; with gasping, open mouth, a convulsive action of the diaphragm, and death within two hours.

Case 3.—Mrs. ——, aged thirty-three, of a weakly habit, was seized, on the evening of the second day after delivery, with severe rigor, followed by great heat of the skin, wakefulness, restlessness, anxiety, sighing, and moaning. On the following morning, four tea-cupfuls of blood were taken from her, without any relief; at seven in the evening, three more tea-cupfuls of blood were taken away, and repeated at eleven; when twenty leeches were applied to the region of the uterus. The symptoms, however, increased;—with faintness, and apprehension of impending dissolution. About three o'clock next morning, three tea-cupfuls of blood were again taken from the arm; leeches again applied to the abdomen; and an enema was administered; which evacuated a quantity of fæces, quite

unexpectedly. The surface of the body became cold and clammy; there were fainting, gasping respiration, &c. Every possible means for the restoration of warmth were tried; but in vain. All the symptoms, except the pain, were aggravated. There were gasping; a slight convulsive struggle; another; and the patient expired.

In this case, it will be observed, the pain remained unabated; even after the last fatal blood-letting. It is therefore not unreasonable to regard this as denoting, not an inflammatory origin of the pain, but the presence of morbid matters in the alvine* canal.

Case 4.—Mrs. ———, aged thirty-five, was attacked, on the morning of the second day after delivery, with nausea, rigors, and (subsequently) pain in the region of the uterus. In the evening, seven tea-cupfuls of blood were taken, at two bleedings, from the arm; and fomentations were applied. During the night, she was extremely restless, and slightly delirious. There were dimness of sight; cold clammy perspirations; coldness of the feet; sighing respiration; fainting; and a necessity of being fanned. There were ten motions during the night. The next morning, she was again bled to three tea-cupfuls. This was followed by paleness, coldness, cold clammy perspiration, gasping, sighing respiration, and restlessness. The pain and tenderness had subsided. In the night, she dozed, and awoke alarmed. All at once, the eyes became fixed, with gasping and sighing; and she expired. No comment can add force to the plain and simple details of this melancholy case.†]

SECTION 4.—VARIOUS PLANS OF TREATMENT RECOMMENDED BY OTHER AUTHORS.

Tonics.—In the more formidable forms of puerperal fever, it was, some years ago, proposed by the late Dr. Clarke, that we should attempt the cure by tonics‡; and, under his direction,—as I have been informed,—bark has been very largely administered; together with other tonics less powerful. The method, however, of treating this disease by tonic remedies, is, I fear, not to be relied upon; nor have I been able to learn that, even in the hands of Clarke himself,—a practitioner of acknowledged talent,—the use of cinchona, in puerperal fever, was attended with any very encouraging success.

* From *alvus*, "the abdomen," or its contents.

† Dr. Marshall Hall on some of the Diseases of Women; Part III; Chapter 8.

‡ Dr. Duncan's list of tonics is the following:—I. Vegetable.—1. Menispermum Palmatum (Columba-Root). 2. Quassia Excelsa (Quassia-Bark). 3. Quassia Simaruba (Mountain-Damson). 4. Bonplandia Trifoliata (Angustura-Bark). 5. Cinchona Officinalis (Peruvian Bark). 6. Anthemis Nobilis (Chamomile-Flowers). 7. Artemisia Absinthium (Wormwood). 8. Artemisia Santonica (Wormseed). 9. Tanacetum Vulgare (Tansy). 10. Cnicus Benedictus (Blessed-Thistle). 11. Gentiana Lutea (Gentian-Root). 12. Menyanthes Trifoliata (Buckbean). 13. Spigelia Marilandica (Carolina-Pink). 14. Chironia Centaurium (Smaller Centaury).——II. Saline Mineral.—1. Murias Sodæ (Common Salt). 2. Murias Calcis (Muriate of Lime). 3. Murias Barytæ (Muriate of Baryta).——III. Metallic Mineral.—1. Arsenicum (Arsenic). 2. Ferrum (Iron). 3. Zincum (Zinc). 4. Cuprum (Copper). 5. Argentum (Silver). 6. Stannum (Tin). 7. Bismuthum (Bismuth).

[During the first stage of puerperal peritonitis, cinchona, camphor, and stimulants are injurious; but when the inflammatory symptoms have been subdued, and the patient is in a state of great exhaustion, quinine, ammonia, wine, and other stimulants, sometimes produce the happiest effects. I cannot too strongly urge the necessity of continuing to employ these remedies, while the slightest hope of recovery is entertained. I have seen several patients restored to health, where the pulse had risen to one-hundred-and-sixty; and was so feeble, as scarcely to be felt at the wrist; where there was constant delirium; and the most alarming prostration of strength. Recovery has taken place, in some cases which I have observed, even where the abdomen has become tympanitic; and where effusion, to a considerable extent, has taken place into the abdominal cavity. In no acute disease is it of greater consequence than in this now under consideration, that the patient should be visited by the medical attendant at short intervals; and that the effects of the remedies he prescribes should be narrowly watched.*]

Emetics.—By Dr. Denman†, and others, we were advised, many

* Dr. Robert Lee's "Researches on the Pathology and Treatment of some of the most important Diseases of Women"; Pages 111 and 112.

† Many years ago, after much embarrassment and repeated disappointments in the treatment of this fever in the customary way, I gave the powder which was recommended by, and acquired much reputation under the sanction of the late Dr. James*; and sometimes the following medicine; and I was soon sensible of their good effects.

R Antimonii Tartarizati, gr. ij.
Chelarum Cancrorum Præparatarum, ℈ ii.
Intimè misceantur.

Of a powder thus prepared,—after bleeding, and (if thought necessary) the exhibition of a clyster,—I have given from three to ten grains; repeating it as circumstances required.

Should the first dose produce no sensible evacuations,—for on these only we are to rely,—an increased quantity must be given at the end of two hours; and we must proceed in this manner, till the end we wish is obtained.

If the first dose should occasion vomiting, purging, or profuse perspiration, we must wait for the good effect of these operations; and we shall then be able to judge of the propriety of repeating the powder.

But when the evacuations are concluded, if any alarming symptoms should remain, we need not hesitate to give the powder in the same quantity as was first used; though an equal quantity is not often necessary, if the first dose have operated properly. We cannot reasonably expect, that a disease which exhibits such evident marks of danger should instantly cease; even if the principal part of the cause should be removed; or the effect be abated. Yet we must be careful not to rely so far upon an abatement of the symptoms, as wholly to desist from pursuing the method which produced the abatement; for no disease is more liable to returns; which are generally more violent than the first attack, and with accumulated danger. It must also be observed that, as the certainty of the cure often depends upon the due repetition of the powder, the custom of giving this or any other medicine at *stated hours*, is never eligible, and sometimes improper.—*Dr. Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 485 and 486.*

* Imitated by the "Pulvis Antimonii Compositus" of the Phamacopœia.

years ago, to have recourse in puerperal fever to emetics;—more especially the tartarized antimony.* M. Doulcet, who had formerly under his direction the obstetric department of the Hotel Dieu, thought he observed, when puerperal fever was raging in the hospital, that where patients spontaneously vomited (as they frequently do in the beginning of the disease), the disease became ameliorated. He was led, by this circumstance, to make use of emetics. These emetics (consisting of ipecacuanha) were distributed among the nurses; with directions, that as soon as puerperal symptoms began to manifest themselves, the emetic should be immediately administered;—without waiting for the visit of the physician. The report of the French practitioner is highly favourable. Those, he says, who took the emetic, soon recovered; and those died to whom the emetic was not given promptly. On a report of this kind, we cannot rely with any confidence. You will perceive that the report itself is but vaguely given; and it is to be recollected that the nurses were to be judges whether the disease was puerperal or not; whence it is highly probable that the emetic, in many cases, got the credit of subduing this formidable affection, when, in reality, puerperal fever did not exist. After every allowance is made, however, I cannot help thinking that,—assuming Doulcet to be veracious,—the report deserves attention. With respect to Denman†, I have to observe that, in perusing the last edition of his very excellent work on midwifery, you will find that he became, in his old age, a proselyte to depletion; so that it is evident enough that he had found emetics fail. On the whole, then, I conceive that these remedies deserve but little reliance in this disease; but should you chance to enter the chamber when the patient is just recovered from her chill, you may give an emetic with propriety; because, if it fail to subdue the complaint, it will, at least, do no harm; and, further, in those cases where you do not think it proper to have recourse to the lancet, it may be worth your while to consider whether the tartar-emetic, or ipecacuanha, may not be given with advantage.

[From the intense pain of the abdomen, aggravated by the slightest

* Now called, in the Pharmacopœia, the Potassio-Tartrate of Antimony ("Antimonii Potassio-Tartras").

† The event of this case, and of some others which occurred to me about the same time, was very flattering. I presumed, that I had at length discovered a method of treating this fever, and a medicine, which would seldom fail to answer the most sanguine expectations. But further experience has convinced me that, without previous or even repeated bleeding in some cases, when the inflammatory symptoms are violent, this medicine will often fail to subdue the fever; and that it is sometimes uncertain in its operation. It is perhaps to be reckoned among the signs of an unfavourable termination of the disease, when the medicine, in proper quantities, produces no sensible effects. I am persuaded, however, that if we have an opportunity of giving it soon after the accession of the disease, even without previous bleeding, it will often do the most essential service; and that too much cannot well be said in favour of this method.—*Dr. Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Page* 487.

pressure, or by the action of the abdominal muscles, and from the early occurrence of nausea* and vomiting, in the worst cases of the disease, emetics obviously appear to be little calculated for the relief of the symptoms; and few enlightened practitioners have employed them, in this country, for the last forty years. Some have gone so far, indeed, as to declare, that they are sufficient to produce inflammation where it does not already exist; and that their employment is not only useless, but dangerous and absurd.†]

Mercury.—In croup, we know that calomel is sometimes found to be a very efficient remedy. A very esteemed acquaintance of mine,—a man of large observation and close induction,—Dr. Farre, tells me that, in iritis‡, if the system can be brought under the influence of calomel-and-opium, within a given time, the cessation of the inflammation is, in a manner, certain. Hence it has been supposed that, in puerperal fever, if we could only promptly bring the system under the influence of mercury,—whether by inunction or internal administration,—much consequent benefit might be expected. Not, of course, feeling myself justified in making experiments on my patients, I have not, as yet, had an opportunity of giving mercury a fair trial. In one case only, and that of the middle kind,—where the patient was bled with little benefit, and where I saw no other hope of saving life,—at the suggestion of the late Mr. Ledger, I administered mercury; but although it brought the system completely under its influence, the disease ran its course in the usual manner; and the patient died, as if no calomel had been given. To this woman I was called about twenty-two hours after the chill; her pulse being one-hundred-and-twenty, or one-hundred-and-thirty, and the other symptoms mild in proportion. More blood than I directed was taken away; namely, forty ounces. A buffy coat was formed; a degree of faintness was produced; and, for a time, the pulse was lowered. Thirty-five hours after the rigor,—as the disease was proceeding, and there seemed to be no chance of curing by depletion,—I resolved to make use of calomel. Ten grains were taken every six hours; as in the case of the croup. In forty hours, thirty-eight grains had been taken; and the system was fairly under its influence; —the bowels acting twice or three times only; so that the greater part of the calomel was retained. Notwithstanding all this, however, and though the case was favourable,—being one of the milder kind, —and though the calomel was given till eighty grains had been administered, the fever proceeded; and the patient died, in the usual manner. We must not draw general conclusions from one

* From *νανς, a ship*;—the sensation being similar to that experienced on shipboard, by persons unaccustomed to the motion of a vessel.

† Dr. Robert Lee's "Researches on the Pathology and Treatment of some of the most important Diseases of Women." Page 108.

‡ From "iris", the moveable curtain which surrounds the pupil of the eye; and "itis", *inflammation*. The part is called "iris", in allusion to the rainbow (*iris*); on account of the different colour it presents in different persons.

solitary case; but the result of the trial was very discouraging; and I have never had occasion to use this practice again.*

[Great improvement, I conceive, 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‡; and by Musgrave, in the fevers of the West Indies§. Dr. Musgrave's plan is more applicable to the rapidly fatal disease under consideration. This plan is the exhibition of calomel, in the following doses, every three or four hours, until some effect is produced. He divides two scruples of calomel, and one scruple of camphor, into twelve papers. 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.‖]

Turpentine.—By the practitioners of Dublin, and more especially by Mr. Brenan, we have been strongly recommended, in cases of puerperal fever, to make trial of the oil-of-turpentine; and it has been asserted, that if half-an-ounce or an ounce of the oil be given twice a-day, in the worst forms of puerperal fever, in their worst condition, the symptoms will be found to give way under it. The oil-of-turpentine I have not hitherto tried on the large scale; having a want of confidence in those reports, which I could not overcome, and not feeling myself justified in acting experimentally. In some few cases, however,—where I have had no other hope,—the oil-of-turpentine has been tried by me; and the result has been to convince me that the oil-of-turpentine does not do any marked mischief; —that it does not clearly aggravate the disease;—not to add that a sort of persuasion has been left in my mind, that now and then, perhaps, it may relieve.

Case 5.—I was once called to a patient seized with puerperal fever of the milder form; with a pulse about one-hundred-and-twenty in the minute; the pain not widely diffused over the abdomen; and the other symptoms proportionally mild. After the woman had been ill about ten hours, eight ounces of blood were taken from the arm, and with little benefit. Taking into consideration all the cir-

* Ptyalism deserves a trial; it is one of those measures which are most powerful; and yet, generally, unattended with risk; and it would by no means preclude the adoption of every other more prompt and efficient mode of treatment. If adopted early, it might prevent some of those protracted states of the disease, which occasionally occur and wear out the patient.—*Dr. Marshall Hall, on some of the Diseases of Women; Page* 192.

† From "Syphilis", the name of an ancient shepherd; who, it is fabled, was first affected with this disease.

‡ "Medico-Chirurgical Review"; 1826; Page 339.

§ "Edinburgh Medical and Surgical Journal"; 1827; Volume 28.

‖ Dr. Ryan's "Manual of Midwifery"; Page 331.

cumstances of the case, I thought there was little hope of curing the disease by means of the lancet;—for I did not see her till twenty-one hours after the chill. An ounce of the oil-of-turpentine was given immediately; a second in twenty-seven hours from the rigor; a third in the course of the night; and a fourth next morning;—fifty hours from the first attack. No less than four ounces of the oil-of-turpentine were taken in seventeen hours. Three of the doses, I am sure, were swallowed; because a young gentleman, who attended himself, administered them; and they were not rejected from the stomach. The first dose was followed by some remission of pains; but whether from the oil-of-turpentine, or from three or four operations of the bowels, did not appear. The other three doses did not produce much effect. The pulse, on the following day, remained much the same; and the patient ultimately died. The failure of cure, in this case, was very striking; because the attack was not in its character very formidable; and, certainly, by no means unfavourable to the success of the oil. The woman, too, was Hibernian.

Case 6.—I was called in this neighbourhood to a woman labouring under puerperal fever in the most malignant form. She had been ill for two or three days; the pain was diffused over the greater part of the abdomen; and the pulse was clearly ascertained to be one-hundred-and-seventy in the minute. In this case, there was clearly no hope of saving the woman by the use of the lancet. Two or three ounces of the oil-of-turpentine were administered, in the course of the next twelve hours. Some little remission of the tenderness and pain was, I think, observed after the first dose; but no marked or permanent benefit was produced by it; and the woman died;—the failure being the less discouraging, because, I believe, the disease had gone so far, and the inflammation was spread so widely over the peritoneum, that no human aid could avail.

Case 7.—In the autumn of 1824, when puerperal fever was not so prevalent as it had previously been, I was requested, by Mr. Edwards, of Queen-Street, to see a woman who had a good deal of inflammatory tenderness and pain about the abdomen. Her pulse was about one-hundred-and-thirty; and the blood that had been taken away was somewhat buffed. She had laboured under the disease for two-days-and-a-half before I saw her; and it was not till the fourth day after delivery that disease began. This is a highly-favourable circumstance; for when the attack commences, the disease is to be considered much more favourable for cure when a patient is attacked on the fourth day, than on the second or third. This woman had all the usual marks of puerperal fever; and about sixty-four ounces of blood had been taken away before I saw her.

In this case, considering that little benefit was to be derived from the further use of the lancet, I thought it proper to make trial of the oil-of-turpentine; and, in the course of twenty-four hours, an-ounce and-a-half of the oil were given;—a less copious quantity than in the former cases. Within the next twenty-four hours, she took another

ounce; and, under this treatment, the symptoms were gradually subdued;—whether from the use of the oil of turpentine or not, remains uncertain; but the recovery was unlooked for.

Deductions.—From the few facts that have fallen under my own observation, therefore, I am inclined to think that, in puerperal fever, the oil-of-turpentine does not, in any obvious manner, aggravate the symptoms; and I am not prepared to deny that it may, in some cases, be useful in curing the disease; though it is my decided opinion that, in London, this remedy is by no means so powerful in subduing the fever, as the Dublin practitioners have supposed. Why the oil should be more successful in curing this fever on *one* side of the water, than on the *other*, I do not pretend to explain. Should you, hereafter, deem it right to use the turpentine, in cases of puerperal fever, it may be well not only to administer it internally, but to apply it also to the abdominal surface,—in the way of a rubefacient.*

CHAPTER II.

VARIETIES AND CAUSES OF PUERPERAL FEVER.

[I now propose succinctly to describe the various changes produced by inflammation in the uterine organs, subsequently to parturition; to point out the local and constitutional symptoms by which these morbid conditions are characterized during life, and distinguished from some other affections to which they bear a resemblance; and, lastly, to investigate the causes and nature of this disease.

The following are the principal varieties of inflammation of the uterus and its appendages, in puerperal women.

1. Inflammation of the peritoneal covering of the uterus, and of the peritoneal sac.

2. Inflammation of the uterine appendages; namely, the ovaria, fallopian tubes, and broad ligaments.

3. Inflammation of the mucous and of the muscular (or proper) tissue of the uterus.

4. Inflammation and suppuration of the absorbent vessels, and veins of the uterine organs.

These varieties of uterine inflammation may take place independently of each other; though they are most frequently met with in combination. Peritonitis seldom occurs without some inflammation of the uterine appendages; but I have found both these textures severely affected, while the muscular coat of the uterus, and the

* Of Emetics, but especially of the Spiritus Terebinthinæ, I would observe that, like purgative medicines, they have doubtless been used successfully in many cases; but I much suspect that many of these were not inflammation, but intestinal irritation.—*Dr. Marshall Hall, on some of the Diseases of Women; Page* 192.

veins, were wholly exempt from disease. The venous and muscular tissues of the uterus, are also liable to attacks of severe inflammation, without any corresponding affection of the peritoneal covering; though it most frequently happens that inflammation, when excited, —either in the veins or muscular coat of the uterus,—involves also the peritoneum. In the organs of respiration, similar varieties of inflammation are observed; and the pleura, pulmonary texture, and mucous membrane lining the air passages, may all be (separately or simultaneously) involved in the same attack. A similar observation may be extended to the brain and its membranes, and to the whole of the digestive organs; and the symptoms which characterize the inflammation of the different tissues of which these organs are composed, have been more accurately determined than formerly, by the recent discoveries of pathologists.

Inflammation of the uterine organs, like inflammation of the lungs and other affections of a similar character which assume an epidemic form, occurs more frequently at one season than another. At one period, the peritoneum is the tissue most commonly affected; while, at other seasons, the more deeply-seated tissues are almost always found affected by the inflammation. That there is no essential difference between these varieties of uterine inflammation, is proved by the circumstance that, in the course of a few days, in the same ward of the British Lying-in Hospital, and in patients who were placed in contiguous beds during the prevalence of the epidemic,—when the disease appeared to be communicated from person to person,—peritoneal inflammation, uterine phlebitis, and the other varieties enumerated, all occurred in their most characteristic form. In some patients, the local and constitutional symptoms indicated the presence of acute inflammation of the serous covering of the uterus; and in those cases where active depletion was employed at the commencement of the attack, most frequently a speedy recovery took place. In other examples, at the onset of the disease, there was comparatively little pain in the region of the uterus; the pulse was from the beginning rapid and feeble; and the symptoms were such as to contra-indicate the use of blood-letting and cathartics. Such cases usually terminated fatally;—in defiance of local bleeding, the exhibition of mercury and opium, and other remedies. On examination after death, either the veins, the muscular structure, or the appendages of the uterus, were found to be the textures most frequently inflamed.*]

SECTION 1.—INFLAMMATION OF THE PERITONEAL COVERING OF THE UTERUS, AND OF THE PERITONEAL SAC.

Symptoms.—[Great tenderness of the hypogastrium, increased by pressure, with pyrexia, are the characteristic symptoms of the dis-

* Dr. Robert Lee's "Researches on the Pathology and Treatment of some of the most important Diseases of Women." Pages 19 and 20.

ease. In every instance which has fallen under my observation, I have found the uterine region more or less painful on pressure; and there has been febrile disturbance.

When the attack is violent, the patient generally lies upon the back; with the knees drawn up to the trunk of the body. The abdomen at first is soft and flaccid; and, except in the region of the uterus, is frequently not affected by pressure. Though an enlarged and painful state of the uterus is never altogether wanting, yet the pain often undergoes exacerbations similar to after-pains; and is frequently mistaken for these by careless observers;—the true character of the disease being overlooked, until a great part of the peritoneal sac is inflamed. The whole abdomen then becomes swollen and tympanitic; and the pain either wholly subsides, or becomes still more intense than at the commencement. Diarrhœa, and vomiting of black or dark-green-coloured fluids follow; as in other fatal inflammatory diseases of the abdominal viscera. The pulse becomes extremely rapid and feeble; the tongue dry and brown; the lips and teeth are covered with sordes*; and death follows, at no very remote period.

The manner in which the disease commences, varies considerably in different individuals. The attack of pain is sometimes sudden; at other times the ordinary increased sensibility of the uterus, remaining after natural labour, passes insensibly into the acute pain increased by pressure;—the chief pathognomonic symptom of this affection. Most frequently the accession of the disease is marked by rigors, partial or general; sometimes so slight as almost to escape notice; at other times so violent as to produce severe shivering of the whole body. The cold stage, after a longer or shorter duration, passes away; and is succeeded by heat of skin, suffusion of the countenance, acceleration of the pulse, quick respiration, thirst, frequently nausea or vomiting, and vertigo† or intense pain across the forehead. Cough is also a common symptom of the disease. The rigors precede, accompany, or follow the increased sensibility of the uterus. In some of the most severe cases there has been no distinct rigor; but a quick pulse, hot skin, and hurried respiration, have rapidly succeeded to the uterine pain. In most of the fatal cases, the countenance has, from the commencement, been anxious and pallid; and the extremities have been cold.

There is no uniformity observable in the appearance of the tongue, in puerperal peritonitis. It is sometimes entirely covered with a thin, moist, white, or cream-like film. At other times, it is of a deep red, or brown colour, in the centre; with a thick yellow or white fur on the edges. The lochia are often entirely suppressed; in other cases, only diminished in quantity. In some instances, they have an offensive odour. The mammæ usually become flaccid; yet, in some fatal cases, the milk has been secreted until a short

* *Sordes*, "filth."

† From *verto*, "to turn."

period before death. The urine is often passed with pain and difficulty.

Diagnosis.—This variety of uterine inflammation, is frequently confounded with disordered states of the intestinal canal; with the irregular spasmodic contractions of the uterus, which constitute after-pains; with hysteralgia*; and with simple suppression of the lochial discharge.

In cases of intestinal irritation, or disordered states of the stomach or bowels, after delivery,—which are not of such frequent occurrence as some writers have represented,—the pain is, from the commencement of the attack, diffused over the whole abdomen. It is rather a *griping* than an *acute* pain; does not commence in the region of the uterus; and is but little, if at all, aggravated by pressure. The abdomen is generally soft, puffy, and distended. The tongue is loaded; there is thirst and headach; and neither the lochia, nor the secretion of milk, are suppressed. The febrile attack is usually preceded by evident signs of derangement of the bowels; such as flatulence, nausea, vomiting, constipation†, or diarrhœa. Puerperal peritonitis is developed, in a large proportion of cases, before the end of the fourth day after delivery, sometimes even within twenty-four hours; whereas this affection rarely appears until the termination of the first week.

It is sometimes difficult to distinguish inflammation of the peritoneum from after-pains and hysteralgia. Where the pulse is accelerated, the remissions of pain incomplete, the lochia scanty or suppressed, and the hypogastrium tender on pressure, we shall arrive at a correct diagnosis by considering the peritoneal coat of the uterus to be in a state of congestion and inflammation, and employing antiphlogistic treatment. There are few puerperal women,—except those of a feeble and irritable constitution, or who have been previously exhausted by profuse hæmorrhage, or some chronic disease,—who are seriously injured by cautious depletion, local or general; and where death has followed the abstraction of sixteen or twenty ounces of blood from the arm, the fatal result may fairly be attributed to disease, and to the *neglect* of the remedy rather than to its *abuse*. In cases of intestinal irritation, I have often found the local abstraction of blood followed by decided relief; and the same holds true with respect to the severe irregular pains, without inflammation, which often occur subsequently to delivery, and do not yield to the ordinary means of treatment.

Morbid Appearances.—The peritoneum, where inflamed, becomes vascular, red, and apparently thickened; and the abdominal viscera adhere to one another by an effusion of lymph; or there is an effusion into the cavity of the peritoneum of a turbid, yellowish-white, serous fluid; mixed with shreds of albumen, or pus; sometimes

* From ὑστερα, *the womb*; and αλγος, *pain*.
† From *constipo*, "to crowd together."

tinged with blood, in greater or smaller quantity. In some cases the exudation which agglutinates the viscera, consists almost entirely of solid lymph; in others, there are only shreds of lymph, mixed with a large quantity of thin serous fluid. The omentum is often of a deep red colour; highly vascular; and closely adherent to the intestines, and sometimes to the fundus of the uterus, by lymph. The omentum, in some cases, is only a little red; and, in others, it is not at all affected. The intestinal canal is frequently found much distended with air; at other times, the sac of the peritoneum.

Puerperal peritonitis commences in the peritoneal covering of the uterus; and extends thence,—with greater or less rapidity, according to the severity of the attack,—to the whole peritoneum. In some cases the inflammation is confined to the uterus; and it is generally most severe in that situation, or in the parts immediately surrounding that organ. Even when it has extended to the other viscera, and affected them most severely, the peritoneum of the uterus invariably exhibits signs of recent inflammation. The lymph is, for the most part, thrown out upon the uterus in thicker masses than in any other situation; and this viscus seems always to suffer in the greatest degree. In the cellular membrane under the peritoneum, serum and pus are also not unfrequently found deposited. The cellular tissue which surrounds the vessels of the uterus, where they enter or quit the organ, not unfrequently contains some serous or purulent fluid; and the same appearance has been observed in the cellular membrane connecting the muscular fibres.*]

SECTION 2.—INFLAMMATION OF THE OVARIA, FALLOPIAN TUBES, AND BROAD LIGAMENTS.

[In one case only where the peritoneal covering of the uterus has been inflamed, have I found the uterine appendages free from disease; but frequently the peritoneum has been observed slightly affected, when the appendages of the uterus have been extensively disorganized. The surface of the broad ligaments, ovaria, and fallopian tubes, when inflamed, have in some cases been found red and vascular; and either partially or completely imbedded in lymph and pus. The loose extremities of the fallopian tubes have also been found of a deep-red colour, and softened; with deposits of pus, in a diffused or circumscribed form, within their cavities, or in their subperitoneal tissues. Between the folds of the broad ligaments, I have also observed effusions of serous or purulent fluids. Numerous important changes, likewise, have been seen in the structure of the ovaria. Their peritoneal surface has been red, vascular, and imbedded in lymph; without any visible alteration of their parenchymatous structure; or their whole volume has been greatly enlarged, swollen, red, and pulpy. Blood has been effused into the vesicles of De Graaf, or around them; and circumscribed collections of pus

* Dr. Robert Lee's "Researches on the Pathology and Treatment of some of the most important Diseases of Women." Pages 20 to 24.

have been found dispersed throughout the substance of the enlarged ovaria. In several cases which have come under my own observation, the entire structure of the ovaria has been reduced to a vascular pulp;—all traces of their natural organization being imperceptible. In one instance which came under my care, the ovarium appeared to be converted into a large cyst containing pus; which cyst had contracted adhesions with the abdominal parietes, and discharged its contents externally, through an ulcerated opening. In another case, which proved fatal, the inflamed uterine appendages, agglutinated together, had contracted adhesions with the peritoneum at the brim of the pelvis; the inflammation having extended to the cellular membrane exterior to the peritoneum, and occasioned an extensive collection of pus, in the course of the "psoas" and "iliacus internus" muscles;—a collection similar to that which takes place in lumbar abscess.

In three other individuals under my care, who ultimately recovered, the purulent matter formed along the brim of the pelvis; made its way, under Poupart's ligament, to the upper part of the thigh; and escaped through an opening formed in that region. In all these cases, contraction of the thigh on the pelvis took place; and remained for several months.

Symptoms.—Inflammation of the uterine appendages being generally combined with peritonitis; to a greater or less extent, it is often difficult to establish a diagnosis between these varieties of uterine inflammation. The pain is generally less acute than in peritonitis; and is principally seated in one or other of the iliac fossæ; extending from them to the loins, anus, and thighs. On pressure, the morbid sensibility will be found to exist chiefly in the lateral parts of the hypogastrium. The constitutional symptoms at the commencement of the attack, do not materially differ from those which mark the accession of peritonitis, being often accompanied with strong febrile action, which speedily subsides, and is suddenly followed by prostration of strength, and other changes which characterize inflammation of the muscular and mucous tissues of the uterus.*]

SECTION 2.—INFLAMMATION AND SOFTENING OF THE PROPER OR MUSCULAR TISSUE OF THE UTERUS.

Appearance of the Lining Membrane of the Uterus after Delivery.—[For several days after delivery, where no disease of the uterus has supervened, its lining membrane is coated with a yellowish-brown, dark-red, or ash-grey coloured layer, of no great thickness; and which seems to be formed chiefly of the fibrin of the blood, with small portions of deciduous membrane. The os and cervix uteri are, at this time, of a deep-red colour;—from blood extravasated under the lining membrane. Where the placenta adhered, numerous dark-coloured coagula of blood are found to seal up the orifices of the

* Dr. Robert Lee's "Researches on the Pathology and Treatment of some of the most important Diseases of Women"; Pages 24 to 28.

uterine sinuses, in the inner membrane; and frequently to extend a considerable distance into these veins. The clots of blood, one extremity of which hangs loose within the cavity of the uterus, are often connected with a large fibrinous coagulum; which entirely fills the fundus uteri, and everywhere firmly adheres to the inner surface of the organ. The dark-coloured layer, which usually coats the inner surface of the uterus after delivery, has been supposed to be the result of gangrenous inflammation; and has been described as such by some pathologists.

Changes in its Structure from Inflammation.—This ought not, however, to be confounded with the changes produced by inflammation of the inner membrane of the uterus, when it becomes softened or wholly disorganized;—like the mucous linings of the stomach and intestines, in certain inflammatory affections. In two cases I have met with, the internal membrane was soft and flocculent; and had undergone changes similar in appearance to those which are produced in it by maceration*. In other cases, not only has the internal coat been disorganized, but the muscular tissue (to a considerable depth, or even through its entire substance to the peritoneum) has been of a dark-purple, greyish, or yellowish hue; and so softened in texture, as to be torn by the gentlest efforts made in removing the parts from the body. The peritoneum covering the inflamed portion of the muscular coat of the uterus, has also been affected; and lymph has been thrown out over its surface, as in simple peritonitis; or the peritoneum has become of a yellow, red, or livid colour, where no albumen has been deposited on its surface. The peritoneum has also been softened, where the subjacent muscular tissue has been little affected; though more frequently there has been extensive disorganization of this latter tissue, without a corresponding lesion of the peritoneum. In some cases, the inflammation has affected the greater part of the muscular structure of the organ; in others, it has affected only the cervix of the uterus, or the part where the placenta had adhered; and the natural appearance of the muscular fibre has been lost. In other instances, depositions of pus have been observed;—either immediately under the peritoneum, or between the fibres of the proper tissue of the uterus.

History of the Disease.—In the different works on puerperal fever which have been published in this country, this rapid and fatal variety of uterine inflammation has scarcely been noticed; though it has been accurately described by several German and French pathologists. Astruc, Vigarou, and Primrose, state, that the uterus is liable to be attacked with gangrene† and sphacelus‡; and other authors, particularly Pouteau and Gastellier, have recorded cases where gangrene of the uterus followed acute inflammation of the organ.

In the year 1750, many puerperal women were attacked by an epidemic, which was characterized by severe abdominal pain and

* From *macero*, "to soften by water."

† From γραω, *to feed upon*;—the flesh being, as it were, eaten away.

‡ From σφακω, *to destroy*.

tumefaction of the hypogastrium. Pouteau states that, on examining the bodies of two of these women, the uterus was found very large; the internal membrane was soft and black; and the substance of the parietes was of a livid red colour, and in a gangrenous state. Boer has described this affection under the term "putrescence* of the uterus"; and has observed its frequent occurrence in particular epidemics†. Luroth‡ and Danyau§ have more recently published detailed accounts of this destructive disease. Among the two-hundred-and-twenty-two fatal cases of puerperal fever observed by M. Tonellé, in the Maternité at Paris, in 1829, there were forty-nine in which the muscular tissue of the uterus was found softened. M. Tonellé states, that "softening of the uterus", after shewing itself frequently in the first half of the year 1829, and particularly about January, disappeared entirely in the months of July and August; which were characterized, in a remarkable manner, by the frequency of inflammation of the veins. Afterwards it began to rage anew, with great violence, in September and October; and again disappeared in the last two months of the year; during which time the mortality was inconsiderable.

Boer and Luroth have erroneously described the different degrees of this affection, as constituting two essentially distinct diseases. M. Tonellé also states, that the disorder at Paris assumed two different forms;—the *softening* of the uterus (properly so called), and the *putrescence*. In one form, the softening affected only the internal surface of the uterus; and presented itself under the appearance of irregular superficial patches, of a red or brown colour, occupying almost all the points of that surface. Its limits were not determined;—the diseased tissue passing into the healthy tissue, by insensible gradations or shades. In the second species, the softening extended deeply into the substance of the uterus. It sometimes occupied the whole thickness of the body and cervix of the uterus. The tissue of this organ was so softened, that the fingers could not seize it without passing through it in all parts. The superficial softening was combined, almost constantly, with some alteration of structure; or with peritonitis, metritis‖, or uterine phlebitis; and it did not appear to M. Tonellé, that the existence of these had a very sensible influence on the progress of the symptoms. The softening in the second degree was also sometimes combined with other disorders; but it usually formed the principal alteration;—often the only one;—and invariably impressed upon the disease the most decided typhoid character¶.

Causes.—That the destruction of the healthy organization of the proper and internal tissues of the uterus, which has now been described, is the consequence of an inflammatory process, and not of

* From *putresco*, "to become rotten."
† "Naturæ Medicin. Obstet."; Liber VIII. Vienna, 1812.
‡ "Repertoire Generale d'Anatomie"; Volume V; Page 1.
§ "Essai sur la Metrite Gangreneuse; par A. Danyau."
‖ From μητρα, *the womb*; and ιτις, *inflammation*.
¶ "Archives Generales de Medicine"; Tome XXII.

any peculiar specific action of the parts, or an altered state of the blood,—as some German and French pathologists have maintained,—may, I think, safely be inferred;—not only from the symptoms which accompany the disease, and from the usual effects of inflammation on the muscular tissue in other parts of the body; but also from the frequent occurrence of this affection in combination with peritonitis, and the other varieties of uterine inflammation. The same causes as those which produce inflammation of the *other* tissues of the uterus, also give rise to inflammation of the *muscular* structure of the organ;—such as violence inflicted on the abdomen during pregnancy; protracted labour; the incautious introduction of the hand within the uterus; and the application of cold, and exposure to an impure atmosphere*, subsequently to delivery.

Symptoms.—Pain of the hypogastrium, diminution or suppression of the lochial discharge, rigors, and a rapid feeble pulse, are the most frequent symptoms of the disease. The countenance becomes pallid, with an expression of great anxiety and distress. There are often present severe headach and delirium; together with other symptoms of cerebral disturbance. The skin is hot and dry, at first; but is afterwards cold; and sometimes of a peculiar blue or sallow tinge. The respiration is hurried; and there is great prostration of strength. The tongue soon becomes foul; and the lips covered with dark sordes. There are also occasional nausea, vomiting, and diarrhœa. The disease sometimes runs its course with great rapidity: but, at other times, it does not terminate fatally before the end of the second week after delivery.

Diagnosis.—The diagnosis of this variety of uterine inflammation,—particularly where it is complicated with peritonitis or phlebitis (which is frequently the case),—is extremely difficult. The prostration of strength, and the alteration of the features,—which often exist from the commencement,—the feebleness and rapidity of the pulse, and the irregular and fetid state of the lochia, are not such constant symptoms as to be considered pathognomonic; and they may arise from other causes. The most attentive consideration of the phenomena, will only lead to a probability as to the nature of the affection; and sometimes its existence cannot be determined during life. In all the cases of this affection which I have observed, the resources of nature and of art have proved equally unavailing, in arresting its fatal course. The active inflammatory symptoms which have usually manifested themselves at the commencement of the attack, have passed speedily away;—whatever plan of treatment has been adopted; and have been rapidly succeeded by symptoms of exhaustion. When the disease has not been complicated with inflammation of the other tissues of the uterus, the symptoms have not been such as to indicate the necessity for venesection; and, in one case, where a considerable quantity of blood was abstracted from the system, death soon followed. In other cases, where an opposite

* From ατμος, *vapour*; and σφαιρα, *a globe*.

plan of treatment was had recourse to, the fatal termination seemed to be less speedy, though equally certain.

A case of spontaneous rupture of the uterus came under my observation in July, 1828; and, on dissection, the posterior part of the cervix and body of the organ was found converted into a soft gelatinous pulp. Another case was related, by Dr. Merriman, to the Medical and Chirurgical Society, on the tenth of March, 1829; in which case the same cause appeared to have given rise to a similar result; and here not only had the parietes of the uterus undergone this morbid softening, but the spleen, liver, and other viscera, were found peculiarly soft in their texture; so that the finger could scarcely be put upon the parts without tearing them.

On the fifth of November, 1832, I examined (with Dr. H. Davies and Dr. Edwards) the body of a woman who had died, the preceding day, in the British Lying-in Hospital, about half an hour after delivery. The uterus lay in the hypogastrium, like a large flaccid bag, of a dark livid colour; and it was with some difficulty that it could be removed without laceration;—in consequence of the soft, shreddy state of the uterine parietes. When cut into, the muscular tissue of the uterus presented a blackish hue;—apparently from blood extravasated between the fibres. The whole of the fundus and body of the uterus, was in this peculiar condition; except a small portion at the posterior and inferior part, where the placenta had not been attached. Here the healthy structure remained. The uterine appendages, on both sides, were likewise of a dark livid colour; and the ovaria were broken down by the application of the slightest force.

This patient, for six weeks before delivery, had suffered so much uneasiness in the region of the uterus, that she could not lie down in bed during the whole of this time. The abdomen was also greatly distended before labour came on; and it is probable she would have died undelivered, but for the artificial assistance which was promptly afforded. The symptoms clearly proved the existence of some serious disease in the uterus, before parturition commenced.

These facts, with those related by Boer, render it probable that the occurrence of softening of the uterine parietes, may occasionally take place during utero-gestation, as well as subsequently to delivery.*]

SECTION 4.—INFLAMMATION OF THE VEINS OF THE UTERUS (UTERINE PHLEBITIS).

Symptoms.—[In women who have enjoyed good health during pregnancy, and in whom the process of parturition has been easily accomplished, uterine phlebitis occasionally commences within twenty-four hours after delivery;—with pain, more or less acute, in the region of the uterus; accompanied or followed by a severe rigor, or a succession of rigors, suppression of the milk and lochial discharge, acceler-

* Dr. Robert Lee's "Researches on the Pathology and Treatment of some of the most important Diseases of Women"; Pages 36 to 42.

ation of the pulse, cephalalgia or slight mental incoherence; together with a most distressing sensation of general uneasiness; and sometimes nausea, vomiting, and diarrhœa. These symptoms, after a short duration, are succeeded by increased heat, tremors of the muscles of the face and extremities, a rapid feeble pulse, anxious and hurried respiration, great thirst, a brown dry tongue, and frequent vomiting of green-coloured matters. The sensorial functions usually become much affected; and there is a state of drowsy insensibility, or violent delirium and agitation; soon followed by symptoms of extreme exhaustion. The whole surface of the body, not unfrequently, assumes a deep and peculiar sallow or yellow colour; or a petechial* or vesicular eruption appears on different parts of the body. The abdomen sometimes becomes swollen and tympanitic; and some of the remote organs of the body; such as the lungs, heart, brain, liver, and spleen; or the articulations, cellular membrane, and muscles of the extremities, suffer disorganization; —from a rapid and destructive congestion and inflammation.

Remote Effects.—There is scarcely an organ which has not been observed to become secondarily affected, from inflammation and suppuration of the uterine veins. The vessels of the brain sometimes become greatly congested; and lymph is effused upon the surface of the pia mater; or serum into the ventricles. Portions of the cerebral pulp have become softened and disorganized; or purulent infiltrations have taken place into the cerebral substance.

In other individuals, whose lungs had previously been healthy, a rapid and destructive inflammation of the pleura has taken place; or portions of the pulmonary texture have become condensed, of a dark-red colour, or infiltrated with pus. In four cases which have fallen under my observation,—where there had been only obscure pain during life, with slight cough and dyspnœa,—a copious effusion of lymph and serum was found within the cavities of the thorax; the pleura was covered with false membranes; and portions of the lung had fallen into a state of complete gangrene. In one individual the pleura had given way by sloughing; and the right side of the chest was found distended with air. Gangrene sometimes takes place rapidly, in those parts of the body on which the patient rests; and the same process is established in other soft parts, where no pressure has been made. In a case related by Cruveilhier, which did not prove fatal, the *nose* became black and gangrenous.

In uterine phlebitis, the mucous membrane lining the stomach, has also been observed to be reduced to a pulpy state; and the substance of the spleen has been softened and disorganized. The eyes have also become suddenly affected with a destructive inflammation; and vision has been entirely lost, many days before the termination of life. In two cases which came under my care, the conjunctiva† of both eyes, without much pain, suddenly became intensely red;—

* From the Italian *petechio*, "a flea-bite".
† From *con*, "together"; and *jungo*, "to join".

the cornea* opaque, and the eyelids much swollen; and under their lining membrane a large serous deposition took place. Lymph and pus were also effused into the anterior chamber of the eye; and, in one, the cornea ultimately burst.

Deposits or infiltrations of pus, of enormous extent, also take place into the cellular membrane, in the neighbourhood of the large joints, and between the muscles of the extremities. The cartilages of the joints themselves become ulcerated; and pus is formed within their capsular† ligaments. In a recent case of uterine phlebitis, the cartilage at the symphysis pubis had been removed by ulceration, and a quantity of purulent fluid deposited within the capsular ligaments, between the naked extremities of the bones.

In other puerperal women, who have never been subject to attacks of rheumatism, severe pain is experienced in various parts of the body;—more particularly in the joints and extremities; together with an exhausting fever. M. Tonellé states, that the integuments covering the deep abscesses resulting from uterine phlebitis, are always of a violet colour; or present a peculiar characteristic tension, and shining appearance. The inflammation is not confined to certain defined limits, so as to form circumscribed abscesses; but the pus is diffused; and disappears by an insensible transition into the surrounding parts. Where pus is deposited in the muscles, the fibres become of a grey colour, and softened. M. Tonellé also states, that he has frequently seen the pus in little abscesses among the muscles; where their fibres were not altered in appearance.

Causes.—All these affections have a common origin; and cannot be referred to any other cause, than to the morbid condition of the veins of the uterus. The purulent, or other secretions, formed by inflammation within the cavities of these vessels, probably produce the whole of the injurious effects now described, by entering the system and contaminating the mass of blood;—in the same manner as poisons, when absorbed into the body. It may be true, as some have supposed,—though it cannot be demonstrated,—that a certain number of the purulent particles fix themselves in the muscles and other parts, like globules‡ of mercury injected into the veins; and that they become the focus, or centre, of an inflammation exactly circumscribed; which speedily runs on to suppuration.

In some cases, uterine phlebitis commences at a later period after delivery than above described; and in a much more obscure and insidious form;—without pain or sense of uneasiness in the region of the uterus; or any other local symptom by which the affection can be recognised. The uterus may return to the reduced volume it usually assumes after delivery; the lochial discharge may continue; and the inflammation and suppuration of the veins, which have caused the whole of the violent constitutional disturbance, and de-

* From *cornu*, "a horn";—so called on account of its horny consistence.
† From *capsula*, the diminutive of *capsa*, "a bag".
‡ From *globus*, "a ball".

structive lesions in distant parts of the body, may have been wholly overlooked.

Inflammation of veins rarely takes place, in any part of the body, where it cannot be referred to a wound, or to some specific cause externally applied to the coats of the vessels. In uterine phlebitis, the inflammation cannot, it is true, be traced in all cases to the semilunar-shaped orifices in the lining membrane of the uterus which communicate with the sinuses, where the placenta has adhered; yet, it scarcely admits of a doubt, that the frequent occurrence of the disease arises from the orifices of these veins in the lining membrane of the uterus, being left open after the separation of the placenta; by which a direct communication is established between the cavities of these veins and the atmospheric air;—in a manner somewhat analogous to what takes place in amputation, and other extensive wounds. Such a condition of the uterine veins, in consequence of the separation of the placenta, must be favourable to the production of inflammation; and inflammation, once excited, is seldom limited to these veins; but extends, with greater or less rapidity, along the continuous membrane of the uterine veins, to the spermatic or hypogastric; and from thence to the vena cava and its principal branches, which return the blood from the lower extremities.*

Uterine phlebitis appears to result from the mechanical injury inflicted upon the uterus, by protracted labour; from the force required for the extraction of placenta, in uterine hæmorrhage; from retained portions of the placenta undergoing decomposition in the uterus; from the application of cold, and perhaps of contagion; or from any of the causes which produce the other varieties of uterine inflammation. M. Dance considers deranged states of the lochia to be a frequent cause of the disease; but these are *consequences*, and not *causes* of uterine phlebitis.

Morbid Appearances.—Various alterations of structure are produced by inflammation in the veins of the uterus. Their coats usually become thickened and contracted; and their inner surface is sometimes lined with lymph, in the form of a perfect tube. Depositions of coagula of lymph and fibrin of the blood, mixed with purulent matter, are also frequently formed within their cavities; which become completely obliterated. Coagula of the fibrin of the blood, which often extend a considerable distance into the uterine sinuses, are formed in their orifices after every labour; and are the principal means employed by nature, along with uterine contractions, for the permanent suppression of hæmorrhage. These coagula may be distinctly perceived for several weeks after delivery; and, both in their form and colour, they differ from those produced by inflammation. In opening the body of a woman, who died four weeks after confinement, I observed distinct traces of these partially absorbed coagula

* See a paper by the Author (Dr. Robert Lee), in the "Philosophical Transactions" for 1832, on the Structure of the Human Placenta, and its Connexion with the Uterus.

in the muscular substance of the uterus, at that part where the placenta had adhered.

The inflammation may be limited to the veins of the uterus; but, not unfrequently, the contiguous muscular tissue participates in the inflammation; and becomes of a dark-red, or blackish-brown colour, and of an unusually soft consistence. The peritoneal covering may also be affected; and the usual consequences of puerperal peritonitis then ensue.

The veins which return the blood from the uterus and its appendages, may be inflamed, either wholly or in part. Generally, however, the inflammation attacks the spermatic veins alone; and, for the most part, the one only on that side of the uterus to which the placenta has been attached; and it may either confine itself to a small portion of the vessel, or extend throughout its whole course, from the uterus to the vena cava. The usual consequences of inflammation of veins are then apparent; namely, injection and condensation of the cellular membrane in which they are imbedded; thickening, induration, and contraction of their coats; and the deposition of lymph, mixed with pus and coagula of blood, within their cavities.

The same is the case with regard to the hypogastric veins;—one only being generally affected. These veins are, however, rarely inflamed in comparison with the spermatic; and this would seem to depend on the latter veins being invariably connected with the placenta;—to whatever part of the uterus it may happen to be attached.

But, inflammation having once begun, it is liable, as I have before stated, to spread continuously to the veins of the whole uterine system;—to those of the ovaria, of the fallopian tubes, and of the broad ligaments. The vena cava itself does not always escape;—the inflammation spreading to it from the iliac veins, or from the spermatic. This occurrence seldom takes place, to any great extent, through the medium of the spermatic; the inflammation usually terminating abruptly at the opening of the spermatic into the vena cava, on the right side, or of the renal on the left. If it pursue, as it sometimes does, the direction of the kidneys, the substance of these organs, as well as their veins, may be involved in the disease.

Period of its Duration.—It is impossible, perhaps, for the most part, to determine the precise period of its invasion;—owing to the total absence of local pain, and of other symptoms; but it is probable that it most frequently begins soon after delivery; and remains stationary, for a time, around the orifices of the uterine veins;—as phlebitis has been observed to do where it occurs after venesection. Of this, however, we can have no certain proof; nor can it be admitted to be a general occurrence;—considering the rapidity with which the inflammation has been found to attack the uterine, spermatic, and renal veins. In one case, the disease proved fatal on the evening of the fifth day after labour; and, on dissection, all these veins were found disorganized.

Diagnosis—Where the veins alone are inflamed,—the peritoneal and muscular tissues remaining unaffected,—there is often either no pain, or only a dull pain, with a sense of weight, in the region of the uterus; and no other local symptom by which the disease can be recognised. The uterus, too, may return to its usual reduced volume, or nearly so; and it is only on the accession of the constitutional symptoms,—namely, rigors, prostration of strength, a rapid feeble pulse, low wandering delirium, attacks of vomiting and diarrhœa, with a brown parched tongue, and ultimately rapid and destructive inflammation of the eyes, and purulent deposits in the substance of the lungs,—that the existence of this insidious and dangerous affection can be determined. If the substance of the uterus be affected, this organ remains above the brim of the pelvis; —large, hard, and painful on pressure; as in puerperal peritonitis.

With regard to the lochial discharge, it has sometimes been observed to be fetid and puriform; and, at other times, in a perfectly natural state. Where the lochia have been offensive, in every case it appeared to be a *consequence*, and not a *cause*, of the disease of the uterus.

Prognosis.—Inflammation of the veins of the uterus, though a dangerous disease when pus is formed within the vessels, is not invariably fatal. That it often occurs in puerperal women, where it is not suspected to exist during life, and where the symptoms are referred to other causes, is clearly demonstrated by the fact that, in the spermatic and hypogastric veins of females advanced in years, calcareous concretions, and various other proofs of disorganization, have frequently been observed; which must have been produced by attacks of acute inflammation at some remote period. In many cases where the existence of uterine phlebitis was proved by the extension of the disease to the iliac and femoral veins, complete recovery took place.

Inflammation of the Absorbents.—In the extensive collection of pathological drawings made by Dr. Carswell for the London University, there are several in which the appearances observed in cases of inflammation and suppuration of the absorbents in the vicinity of the uterus, of the receptaculum chyli, and of the thoracic duct, have been accurately represented. These beautiful drawings were made by him in Paris; and it has been proved, by the researches of Tonellé and Dupley, that inflammation of the absorbents of the uterus, of the receptaculum chyli, and of the thoracic duct, not unfrequently occurs in puerperal women; and that it gives rise to the same constitutional disturbance as uterine phlebitis. It appears, indeed, that these varieties of uterine inflammation are frequently combined; and it is probable that, in both, the purulent fluid is conveyed by the absorbents and veins into the mass of circulating blood. The local symptoms of this affection are often so obscure, as to escape detection during life; while the constitutional symptoms (which sometimes resemble, in a striking manner, the effects produced by specific poisons) are so virulent, as not to yield to any remedies, however early and vigorously employed.*]

* Dr. Robert Lee's Researches; Pages 47 to 55.

SECTION 5.—VARIETIES OF PUERPERAL FEVER.

I am accustomed to divide this disease into three varieties; and not without the belief that there is some advantage in so doing. I divide it into the "*mild* epidemic", the "*malignant* epidemic", and the "spasmodic."

First Variety.—When puerperal fever is prevalent, the epidemic is often mild;—the pulse, perhaps, not rising above one hundred-and-twenty, or one-hundred-and-thirty, in a minute. These cases are known by the pain and tenderness being confined to a portion of the abdomen, not broader than the two hands; by the exhaustion coming on less rapidly;—so that the woman may continue ill for three or four days; then recovering, or sinking collapsed; and by the mild character of the epidemic, at the time the case occurs.

It is in this variety,—the milder and inflammatory form of the disease,—that we have the fairest chance of subduing it; and many cases of this type are completely cured by the method of depletion I have before mentioned.

Venesection, calomel, opium, perhaps turpentine, and (in the beginning of the disease) an emetic, are the remedies which I should recommend in these cases. Whatever be your measures, begin your operations as soon after the chill as possible.

Second Variety.—When puerperal fever is diffused all over the district, we sometimes find that almost all the cases are of the malignant kind;—not to be subdued by the most active remedies; and speedily running their course, to the destruction of the patient. In this form of the disease, we sometimes observe a certain hurry of the nervous system; which leads the patient to speak with a rapid utterance; and in a sharpened, and somewhat reedy tone of voice. If you ask her how she is, she replies, perhaps, in a hurried, dramatical manner,—"I am very well!—There is nothing the matter with me!"—a mode of speech which, in me, always excites the most gloomy apprehensions. Under these malignant attacks, moreover, the pulse rises to a high degree of frequency;—mounting sometimes to one-hundred-and-fifty, one-hundred-and-sixty, or even one-hundred-and-seventy in the minute; tenderness diffuses itself over the whole abdomen; coughing may occur; and pains may be felt in the loins; as if the peritoneum covering the lumbar surface, and that of the diaphragm, were affected. Very rapid exhaustion ensues. When the sun rises, the patient is well; before it sets a second time, she is dead. In extreme cases, she may sink within twenty-four hours after the chill. Add to these characteristics of the disease, a prevalence of the malignant type in other cases occurring at the time; and thus,—by the prevalence of the malignant variety of the disease at the time, by the speedy exhaustion of the patient, by the extensive diffusion of the pain and tenderness over the abdomen, by the great frequency of the pulse, and by the hurry of the nervous system (a less constant, but very important symptom),—this malig-

nant variety of the disease may be readily recognised. In the worst cases of the malignant epidemic, do what you will, in the present state of knowledge, the patient (I fear) must sink; and therefore, in these cases, it is better, perhaps, to refrain from the use of free venesection; as, by having recourse to it, you may bring the practice into disgrace; for, the patient perishing under a collapse similar to that arising from inanition, it may seem, to the inexperienced, that she dies through depletion. In this state of the disease, therefore, other remedies may be recommended in preference;—calomel and opium, for example; emetics, turpentine, and small bleedings. But when the disease, though malignant, is in its milder form, it may be proper to attempt a cure by the bold use of the lancet, aided by calomel and opium (as before explained); and, if you will, by turpentine. Immediately after the chill, an emetic may be administered. Whatever is done, must be done with promptitude. After the chill, the sooner you commence your operations the better;—provided there be, in the system, sufficient re-action to sustain them. Would this re-action be accelerated by wrapping the patient in blankets, wrung out of water warmed to the temperature of ninety-eight degrees of Farenheit's thermometer?

[Both general and local warm-baths have been highly recommended by foreign practitioners. Where the skin was hot, the pain moderate, the strength of the patient not much depressed, immersion of the whole body in warm water was often followed by general perspiration, and relief of all the symptoms. On the other hand, they state, that when the pains were excessive, when there was great anxiety, a profuse, general, or partial perspiration, the strength much reduced, the respiration hurried and anxious, the face red, and intense headach, the patient could not support the warm-bath, and derived no benefit whatever from it. The hip-bath was found more generally useful; and was employed almost indiscriminately by M. Desormeaux, in all the different varieties of the disease.

Racolin, Dance, and Fonellé, highly recommend the injection of warm water into the vagina, and cavity of the uterus. These injections were repeated by them three or four times in the course of the day; and they state that they not only washed away the putrid matters adhering to the internal surface of the organ, but appeared to relieve the irritation and inflammation of the organ itself. This practice appears to me to merit more attention than it has hitherto received in this country. I have tried it, on several occasions, with decided advantage.*]

[This appears to be the variety to which the term "puerperal fever" is specially applied, by those writers who still employ that unsatisfactory appellation. Thus Burns, after describing the various forms of inflammation that attack the uterus and its appendages, proceeds to describe a form of disease, under the name of "malignant puerperal fever", which agrees, in its essential characteristic (that of rapid exhaustion) with this second variety, described

* Dr. Robert Lee's "Researches"; Page 110.

by Dr. Blundell. Waller, also, in the last edition of Denman's "Midwifery", has described a form of disease, under the name of "puerperal fever", having for its type "action without power"; in contradistinction to another form of disease, which used formerly to be, and is even now by many, included under the general term "puerperal fever"; but which he has described under the name of "peritonitis." He, therefore, breaks up puerperal fever (commonly so called) into *peritonitis*, as typified by "action *with* power"; and *puerperal fever*, in its restricted sense, as "action *without* power"; and points out the following distinctions between them:—

PERITONITIS.	PUERPERAL FEVER.
Pulse small and hard, or full and round; seldom exceeding 100 at the onset.	Pulse soft and undulating; frequently from 140 to 150, soon after the chill.
Head not much affected.	Intense headach, or great confusion.
Tongue dry and white.	Tongue at first natural, becoming afterwards glassy, or dark-brown.
Secretions checked, or entirely suspended.	Secretions frequently healthy at first; in many cases altering afterwards, in quality and quantity.
Pain superficial.	Pain, at first, deep-seated; and decidedly uterine.
Skin hot and dry.	Skin variable; not unfrequently moist and perspiring.

To a certain extent, this accords with Dr. Robert Lee; who characterizes these affections as "inflammatory", "congestive", and "typhoid";—according as the *serous*, the *muscular*, or the *vascular* issues are affected; but he objects to the application of the term "puerperal fever" to either of them; because he regards them as local affections *giving rise* to constitutional disturbance; and not fevers of the typhoid or adynamic* type, *accompanied by local* effects.—A. L.]

Third Variety.—A third variety of puerperal fever sometimes presents itself. This species is the *sporadic*. Perhaps the disease has not prevailed in the district for years; perhaps a solitary case has not been observed for a length of time; but, at last you meet with a case in which the patient has chills, heats, headachs, abdominal tenderness, and a pulse at one-hundred-and-thirty or more in the minute;—all these symptoms commencing on the second, third, or fourth day; and at a time when the fever shows no disposition to spread among puerperal women in the district. This solitary case it is which constitutes the sporadic variety of the disease. If sporadic puerperal fever be very severe, it should be treated exactly in the same way as you would treat the malignant form of the endemic;—by venesection, calomel, opium, emetics, and the like; but if (which is more probable) the attack be milder, you may then, perhaps, subdue it by applying thirty or forty leeches to the abdomen†; by lay-

* From *a*, *without*; and *δυναμις*, *power*.

† The application of numerous leeches to the abdomen, and the subsequent application of a warm poultice, is more useful than a repetition of venesection; and in some cases is safer, and more to be depended on, even from the first.—*Dr. Burns's "Principles of Midwifery"; Ninth Edition; Page* 606.

ing a large blister over the abdominal surface; by purging, digitalis, diaphoretics, small abstractions of blood from the arm; and, in short, by all those ordinary remedies which are found to succeed in case of inflammation. These sporadic cases being rare, I would give an opinion with caution; but I think you will seldom find the pulse above one-hundred-and-twenty, one-hundred-and-twenty-five, one-hundred-and-thirty, or one-hundred-and-thirty-five in the minute.

Causes of the Difference between the Varieties.—The cause of the difference between the three varieties of puerperal fever, I do not profess to explain; but a plausible opinion is the following:—In the malignant form of the disease, I suspect that the epidemic disposition to peritonitis is strong, and that the diffusion of the inflammation is great;—whence the difficulty of the cure, and the rapidity of the collapse. In the milder form of the disease, I conceive that the peritonitic propensities are weaker, and that the inflammation is of small extent;—whence the strength gives way more slowly, and the peritonitis is more readily subdued. In the sporadic cases, the epidemic constitution is wanting altogether; and the extent of the tender part may, I believe, usually be covered with one or two hands. This, in a general way, may explain to us why this attack is of small danger. I may observe, that it is not so much the *intensity* as the *extent* of the inflammation which constitutes the risk; and we may reasonably expect the *milder* symptoms, when the inflammation is confined to a few square inches; and the *severer*, when it extends over two or three square feet.

[The cause of this distinction between the different varieties of the disease, seems rather to depend on the susceptibility, which particular structures display, of assuming the inflammatory action at one time rather than another. Obstetric violence, therefore, intestinal irritation, cold, and various other causes, may at one time produce peritonitis; at another time, hysteritis; at another, uterine phlebitis; or, in other words, *inflammatory*, *congestive*, or *typhoid* affections. But of these, peritonitis, while it forms the large proportion of all the cases, seems, almost exclusively to form the sporadic* variety of this disease; while hysteritis, and phlebitis, though they may occasionally occur among the sporadic cases, much more frequently present themselves in the form of an epidemic. Analogous cases present themselves in the instance of erysipelas; which, occasionally occurring as an epidemic, is met with much more frequently as a sporadic disease; and typhus fever, which happens most frequently as an epidemic or endemic†, seldom as a sporadic disease. These, however, are only the prominent features of an epidemic. A great number of different puerperal diseases have been blended together among the real cases of epidemic puerperal fever;—such, for instance, as sporadic cases of peritonitis, intestinal irritation, and loss of blood. All of these affections, however, would necessarily be more or less obscured and complicated by the prevailing epidemic.—A. L.]

* From σπειρω, *to sow*;—affecting but few persons at a time.

† From εν, *in*; and δημος, *people*;—peculiar to certain classes of persons.

SECTION 6.—CAUSES OF PUERPERAL FEVER.

[The causes of inflammation in the uterine organs of puerperal women, are often involved in great obscurity. In some cases, the inflammation is distinctly referrible to the injury inflicted upon the uterus by severe, protracted, and instrumental labour; to the forcible introduction of the hand into the uterus, in order to rectify the position of the child; to exposure to cold and moisture; and to various irregularities of diet soon after delivery. But it frequently arises, in the most malignant form, where none of these causes have been applied; and where we are compelled to refer it to some peculiar noxious constitution of the atmosphere, or to the communication of contagious miasmata.*]

A case is related by Denman, in which symptoms very similar to those of puerperal fever, supervened in a woman who had never been impregnated. This woman laboured under obstruction of the vagina; in consequence of which the uterus enlarged greatly, from catamenial accumulation. When the hymen was divided, the contents of the womb were expelled with efforts like those of parturition; and, no long time afterwards, abdominal inflammation supervened. A case very similar occurred at one of our hospitals; and for the knowledge of it I am indebted to a gentleman, who paid no small attention to midwifery, and who is now established at Kennington. In this case it was necessary to take away a considerable quantity of blood from the arm, before the symptoms could be subdued. Abdominal inflammation, therefore, like puerperal fever, now and then happens independently of pregnancy; where the womb, being dilated from internal accumulation, becomes suddenly emptied and contracted. With these few exceptions, however,—if, indeed, they be exceptions,—it holds true, as a general principle, that puerperal fever never attacks women but where they are prepared for it;—either by the birth of the ovum; or perhaps, now and then, by a near approximation to its birth; and hence we may enumerate, generally, among the great causes of this disease, such a condition of the abdomen as is produced by delivery, or its near approach. I add here the alternative,—"or the near *approach* of delivery"; for there is reason to believe, if our records may be relied on, that the fever sometimes commences before the child is expelled.

Frequently Epidemic in its Nature.—This disease, again, is found to rage much more fiercely sometimes than at others; so that, after remaining quiet for fifteen or twenty years together, it suddenly becomes epidemic; and fills our families with mourning, and our printing-presses with dissertations. Among the causes of puerperal fever, therefore, set down a sort of epidemic constitution among women;—a most unfortunate coincident with the first establishment of the young accoucheur in practice! The disease getting into his connexion, may, in its malignancy, baffle all his efforts; and, destroying his patients, may blight his reputation in the bud. Indeed, should

* Dr. Robert Lee's "Researches on the Diseases of Women"; Page 91.

you think of commencing at a time when puerperal fever prevails, I conceive it may be well worth considering, whether procrastination be not desirable; for in the end, perhaps, you may find, that to wait for one or two years, is wiser than rashly so begin your obstetric career with all these dangers about you.

Is it Infectious?—It is much disputed, by some, whether this disease is infectious; and this doubt furnishes an agreeable topic of conversation over a warm cup of tea. But, however this point may be decided, or unsettled, remember that the facts affirmative of infection are so strong, that on this affirmative it becomes our duty to act. Nor ought your faith in the possible infection of this disease, to be hastily shaken by contrary opinions; even when advanced by the most experienced. There are some men who entertain a lurking belief of the infection of this fever; notwithstanding all their intrepid declarations to the contrary. Not that, in these declarations, it is their intention to deceive; but there is a curious phenomenon of the human mind,—well known to those who have studied it,—which consists in fancying we believe that to which we give no credence, and the contrary;—a state of mind which is soon discovered to ourselves and others, by placing ourselves in a position which calls for the operation of the faith or belief; when infidelity becomes manifest. Conversing with an obstetric friend, who contended that puerperal fever was not infectious, I heard him (for he was my elder) with respectful attention; till, at length, after he had delivered his sentiments somewhat at large, I said,—"Notwithstanding all this, my dear Sir, I cannot help thinking that the fever may be infectious; and, pardon the freedom, but I fancy *you* think so too." "I," said he, in an accent of surprise,—"I think so? Why I have just been telling you to the contrary!"—"Well," said I, "will you allow me to bring your belief to the test?" He nodded assent. It so happened that this gentleman had a favourite niece, recently confined;—the only immediate representative of his very respectable family. "Come, then," I proceeded; "you tell me your niece has just been confined, and I offer my congratulations; but permit me to ask, if you had been to see one or two patients labouring under this terrible disease, would you like to take her by the hand, and to sit down upon the bed?" He started gently, and hesitated; then, in a subdued tone of voice, said,—"Why, really, I should not like to do that!" And thus, it seems, even in the midst of denials, there may be on the mind a suspicion of infection; and on this suspicion, of course, it becomes our duty to act.

I will not weary you with anecdotes. Those who have never made the experiment, can have but a faint conception how difficult it is to obtain the exact truth, respecting any occurrence in which feelings and interests are concerned. Omitting particulars, then, I content myself with remarking generally, that from more than one district I have received accounts of the prevalence of puerperal fever, in the practice of some individuals; while its occurrence in that of others, in the same neighbourhood, was not observed. Some, as I have

been told, have lost ten, twelve, or a greater number of patients, in scarcely broken succession. .Like their evil genius, puerperal fever has seemed to stalk behind them, wherever they went. Some have deemed it prudent to retire, for a time, from practice. I admit that this fever may occur spontaneously; I do not deny that its infectious nature may be plausibly disputed; but I add, considerately, that in my family, I had rather that those I esteemed the most should be delivered, unaided, in a stable,—by the manger-side, than that they should receive the best help in the fairest apartment, but exposed to the vapours of this pitiless disease! Gossiping friends, wet-nurses, monthly-nurses, the practitioner himself,—these are the channels by which, as I suspect, the infection is principally conveyed.

Prophylactic Treatment.—I know of no certain preventive of puerperal fever. Is bracing the abdomen of importance? Moderate purging after delivery can do no injury. As flooding, during delivery, seems to dispose to the fever, I think it very doubtful whether venesection possesses any preventive power. To guard solicitously against the infection is, of course, of the first importance.

[Admitting, as we must do, that the greater number of cases of inflammation of the veins, and other deep-seated structures of the uterus, in puerperal women, prove fatal in spite of all the remedies we can employ, it becomes a most important object to prevent, altogether, the occurrence of this destructive disease. A puerperal woman ought to be as careful of herself for nine days after delivery, as an individual who is recovering from an attack of continued fever, or inflammation of some important viscus. While the uterus can be felt above the brim of the pelvis, and the lochial discharge continues to flow, the most fatal consequences may result from exposure to fatigue or cold, and the slightest imprudence in diet. The administration of acrid cathartics soon after delivery, should always be avoided; and no unnecessary pressure of the abdomen should be made. The greatest, care, also, should be taken in performing the operations of midwifery, in order to avoid inflicting an injury on the soft parts of the mother. The hand ought not to be passed into the cavity of the uterus; except (with the greatest gentleness) when the introduction of it is required to alter the position of the fœtus, or to withdraw the placenta; and portions of placenta should he prevented from remaining to become decomposed within the uterus. It is impossible to condemn too strongly the practice recently recommended by Dr. Gooch, in cases of flooding after the expulsion of the placenta;—that of passing the hand into the uterus, for the purpose of compressing (as with a tourniquet) the part where the placenta was attached, and from which the blood is flowing. The placenta is most frequently attached to the *posterior* part of the fundus and body of the uterus. It is impossible, therefore, even if the hand were fully as large and broad as the placenta, that the orifices of the uterine sinuses from which the blood is escaping, can be compressed between a hand placed over the hypogastrium, and another introduced within the cavity of the uterus. The tourniquet recommended

by Dr. Gooch, will be applied over the *anterior* part of the uterus, where there is no blood-vessel to compress; and the bleeding orifices in the *posterior* surface, will be left exposed.*]

Morbid Appearances.—After the more malignant attacks of puerperal fever,—as, for example, when the patient has died within a day or two after the child,—on opening the abdomen, scarcely a trace of inflammation has been observed. A little bloody serum; a few dubious adhesions; a difference of opinion respecting the state of the capillaries;—and that is all. But in the milder and more inflammatory varieties of the disease,—where the patient lives for four or five days, and then dies,—the changes become more conspicuous. A bloody serum is observed, as in the former case; and coagulable lymph is effused into the abdomen;—perhaps somewhat copiously, though not (under my own observation) in those large quantities remarked by the late Dr. Clark. The different folds of the intestines mutually adhere; as well as to the omentum and the abdominal coverings; and, in one instance, I had occasion to see a suppuration under the ovary;—in the cellular web, which is somewhat abundant there, externally to the peritoneum.†

The Nature of the Disease.—With regard to the nature of the disease, to me it appears to turn upon a general disposition in women to an inflammatory action; which may sometimes attack other parts (the head, for example); but which, in the great majority of cases, fixes on the peritoneum. That peritonitis usually occurs in this disease, is (I think) now so generally admitted, that it is not necessary to argue upon it; though the pains and tenderness of the abdomen, the buff on the blood, the frequency of the pulse, and the appearances on dissection, may all be produced as so many proofs of the truth of the assertion. Why it is that this inflammation of the peritoneum should sink the strength so rapidly,—especially where it does not appear to have been extensively diffused,—I am totally unable to explain; and this effect appears to be the more surprising, because the peritoneum, though of wide extent, does not appear to be an organ of much functional importance to the system. In the operation of this inflammation, there seems to be something analagous to that of extensive burns. Whether any new principles of treatment may be deduced from this consideration, I am not prepared to decide.

Diagnosis.—When you are nervously apprehensive, in consequence of ill success with this disease, you are liable, without good reason, to believe that your patient is the subject of puerperal fever; and hence the need of a just diagnosis. If the bladder be loaded after delivery, it may produce symptoms exceedingly similar to puerperal fever; and hence the importance of introducing the catheter, in all dubious cases; for this diagnostic can alone be relied on.

* Dr. Robert Lee's "Researches on the Diseases of Women"; Pages 113 and 114.

† The morbid appearances have been already more fully described at Pages 507 to 509.

Care, too, must be taken to put the catheter into the bladder; and pressure ought to be made above the symphysis pubis, to aid the flow; for some paralysis of the organ is not impossible.

Accumulation and irritation in the bowels, may give rise to symptoms like puerperal fever;—the pulse rising to one-hundred-and-ten, one-hundred-and-twenty, or more; and the abdomen becoming tender. A prompt purgation is the best diagnostic; and, in very dubious cases, you may bleed once; after which you may, I conceive, generally make your diagnosis, before a second bleeding can be necessary. There may be time, previously, for the action of cathartics. Senna*-and-salts, aided by injections, are of prompt operation.

If women have merely spasmodic pains of the abdomen,—whether of the gall-ducts, intestines, ureters, or womb (the last being most liable to such attack),—these are easily discriminated by the absence of fever, during the epidemic; but it sometimes happens, when the after-pains are severer, that a small fever attends;—the pulse rising to one-hundred-and-ten in the minute; and the hardened uterus, when compressed, becoming acutely painful. This case appears to consist in puerperal fever in a subdued form; and it may, perhaps, be most safely treated in the same manner as the sporadic variety of the disease before mentioned. So long as the pulse remains below one-hundred-and-twenty, little danger need be apprehended.

Enteritis may, I suppose, be distinguished from puerperal fever, by its producing constipation; and an inflamed uterus may be easily recognised; because, by a competent examiner, it may be subjected to examination, almost with the same nicety as an inflamed finger. If, however, puerperal fever is to be treated like other inflammatory diseases, this diagnosis becomes less important.

I cannot dismiss the consideration of puerperal fever, without mentioning, with acknowledgment, the names of Gordon, Hay, Armstrong, and Marshall Hall†; and it is my sincere hope that Brenan may be found deserving of the applauses of posterity. To names of acknowledged merit, it would be superfluous to add an encomium. On the tomb of the French marshal, the only inscription is—TURENNE!

[This disease has been known from the earliest ages; and has been described under various names. Some persons call every disease which occurs after delivery, by the name of "puerperal fever";—whether it be tympanitis, phrenitis, or the weakness produced by hæmorrhage. But the true disease is peritonitis occurring in the puerperal state. Opposite opinions have prevailed, as to its nature, seat, and treatment. Some consider it to be a disease of inflammation; others of debility. The former deplete; the latter stimulate. Some observers have been led by symptoms alone; but these symptoms have a wide range in every disease. Some people look

* From the Arabian word *senna*, "acute";—alluding to its sharp-pointed leaves.

† See Pages 506, 510, 511, 513, 517, 521, 522, 523, 524, 525, 529, and 531.

only to pain and fever; but there may be great mischief going on, with but little complaint.

In the congestive form of puerperal fever, you have fits of chilliness, alternating with flushes of heat; but the cold predominates. The patient is lethargic; and does not complain of pain, except when the abdomen is touched. There is tympanitic distention of the latter; with a discharge of wind in moving, or when a stool is passed. At last the brain becomes embarrassed, and the mind confused. The patient moans, and wishes to sleep; but it is a *pathological*, and not a *physiological* sleep. Dr. Armstrong described this form, as occurring in poor people, or in *rich* people previously worn out by disease or child-bearing. The patient dies without reaction taking place. On dissection, you find the marks of subacute inflammation of the peritoneum;—turbid serum, with flocculi * of lymph diffused through it. All the internal vessels are congested; and the lungs sink (or nearly so) in water. If called early, bleed and leech; after which you must foment the abdomen, and open the bowels. The patient here struggles through with difficulty. If called later, you have less chance. Here you must precede depletion by giving stimulants.

The inflammatory kind, which comes on with violent pain in the abdomen, is easily treated. This, and the congestive forms, are the two extremes. The middle one is the most common. It comes on with rigors, or with a feeling of chilliness, spreading from the spine to the abdomen and chest. Then succeed flushes of heat, and pain in the abdomen; but you are not to look for violent torment; as some symptomatical physicians expect. The pulse, and the heat of skin, are not so much increased as in fever. The tongue, in the congestive species, is like that of cholera; which disease, in many respects, this species of puerperal fever resembles. In the inflammatory kind, the tongue is hot and dry; and in the middle species, it may be either dry, or furred, or glazed. A dry state is unfavourable; even though it is clean. The urine is suppressed; the breasts, if they contain milk, become flaccid; but the most dangerous form of the disease, is that which occurs before the milk is formed; for the earlier it appears, the worse it is. The pain is not tormina; but a tenderness; sometimes acute. The position in which the patient lies (on the back, with her knees drawn up), and her inability to cough, indicate inflammation of the peritoneum. When she can turn from her back to her side, and can turn to speak to you, it is a good sign.

I † was very unsuccessful while I held Dr. Hamilton's views;—so much so, that I lost every case. But I saw a man die of peritonitis; and found the same appearances as in women who had died of puerperal fever; which convinced me that they were the same disease. Since that time I have had many severe cases; but have lost only one. In many diseases there is an expression of suffering in the

* From *flocculus*, the diminutive of *floccus*, "a lock of wool."

† Dr. Mackintosh.

face, without pain; and it is often so in puerperal fever. I can tell by the countenance whether the patient will live or die. There is sometimes no pain in the abdomen, unless it be pressed; but remember, that some people can bear much more pressure and pain, without complaining, than others. I like to see a young man take fright about a case he is attending; but I often find there is no real danger. A cold-hearted medical man is fit for nothing! You must act as if you were a relation of the patient; and if you do so, I have no fear of you! Some patients, out of a little ailment, make a great work. They want sympathy; and sympathy is the best means of securing their favourable opinion.

Patients in the beginning of puerperal fever, sometimes feel as if a stream of cold water were running down the spine; besides which they have horripilation*, and the cutis anserina†. In some cases the skin is warm, or even covered with perspiration, throughout the disease; and this is what the symptomatical pothologists cannot understand. The pulse is very various; but it becomes weaker as the strength declines. Percuss the abdomen, to see whether it is tympanitic; for the swelling, in the early stage of the disease, is caused by the secretion of air, and not of serum. The pain is not continuous; but comes on in paroxysms;—as in colic. If pain of this kind is felt the first day after delivery, it may, perhaps, be only the after-pains; but this will be less likely on the second day, and still less on the third. The thirst is sometimes very urgent; and so are the nausea and vomiting; especially after taking cold water, which is vehemently desired. It is a bad sign when there is much "dry baulking", or attempts to vomit air. The more congestive the form of disease, the more shrunk, cold, and moist is the tongue; as in the cold stage of all diseases. It is owing to the want of blood in the tongue. The stools have a bad, yeasty appearance, and a disagreeable smell. Often a great quantity is passed, after it was thought the bowels were well opened; which is either from an accumulation, or from a quick secretion. Dr. Hamilton‡ thought that fæces collected in the bowels for two or three years; and that he brought them away by means of aloetic pills. If there be any eruption out on the patient, it often recedes when she is attacked by puerperal fever; and this is a bad sign. Dr. Hamilton§ gives many pathognomonic symptoms; but no disease has a pathognomonic symptom to a *symptomatical* man. Such symptoms are recognised by *pathologists*; as rigidity of the extremities, for instance, which indicates inflammation of the brain; and the various stethoscopic signs which point out diseases of the lungs and the heart. Dr. Hamilton says, that pain across the eyes is a pathognomonic symptom. He also says, that the lochia flow naturally in this disease; and Burns and

* From *horror* "shuddering," and *pilus*, "a hair";—a cold, creeping sensation over the surface of the body.

† "Goose's-skin";—a rough state of the skin, produced by cold or the first stage of fever.

‡ The author of the celebrated work on Purgative Medicines.

§ Professor of Midwifery in the University of Edinburgh.

he endeavour to establish a difference between puerperal *fever*, and puerperal *peritonitis*; but the only way in which they can do so is by carrying the symptoms to a greater extent in the fever, than in peritonitis. Sometimes the lochia *do* flow naturally; but it is not natural for an organ, when inflamed, to go on secreting as usual; and therefore it makes against their theory of the uterus being inflamed. When the investing membranes of the brain, lungs, or liver are inflamed, the functions of these organs are disturbed, as though their structure itself were diseased.

I have the notes I took, when a student, of Dr. Hamilton's lecture on this subject. I lost them in England, with a desk in which they were contained, in 1816; but while writing my book on puerperal fever, in 1820, somebody put the desk into my house. The regaining of these notes was very fortunate. When I wrote that book*, I knew well what persecution I should have to encounter; and if I had more of the bump of caution, and less of that of conscientiousness†, I should not have published it. I wished not to have published it till eighteen months after the epidemic; but I was obliged to hasten its appearance, on account of the improper conduct of another writer; who heard what I wrote every night, and then published a book on the subject. Dr. Hamilton maintains that the disease described by Armstrong, Key, and Gordon, was not true puerperal fever; because the lochia were not suppressed. Professor Burns says the lochia flow in some cases, and not in others. Gordon says they generally continued to flow, sometimes in less quantity; but that in few cases or none were they entirely suppressed. In some rare cases, no doubt, the lochia do continue to flow till near the time of death. Mr. Key, at first, lost ten cases out of thirteen; but afterwards only two out of thirty-six. Dr. Armstrong set out pathologically; and lost only five out of forty-three. Dr. Torrance gives an account of the morbid appearances found in the patients who died in Dr. Hamilton's Hospital‡; and they are similar to those described by the authors I have mentioned, and by all other writers on the subject.

If you neglect your patient for six hours, she will die. I do not remember, just now, any case which recovered after being twelve hours before remedies were adopted. You must bleed well in congestive cases. In an ordinary case, if called early, you open a vein; and let the blood flow till some effect is produced. Sometimes the

* "A Treatise on the Disease termed 'Puerperal Fever'; illustrated by numerous Cases and Dissections. By John Mackintosh, M.D."

† Dr. Mackintosh alludes to the phrenological organs so named. The following is Mr. Combe's complete list of those organs:—1. Amativeness. 2. Philoprogenitiveness. 3. Concentrativeness. 4. Adhesiveness. 5. Combativeness. 6. Destructiveness. 7. Secretiveness. 8. Acquisitiveness. 9. Constructiveness. 10. Self-Esteem. 11. Love of Approbation. 12. Cautiousness. 13. Benevolence. 14. Veneration. 15. Firmness. 16. Conscientiousness. 17. Hope. 18. Wonder. 19. Ideality. 20. Wit. 21. Imitation. 22. Individuality. 23. Form. 24. Size. 25. Weight. 26. Colouring. 27. Locality. 28. Number. 29. Order. 30. Eventuality. 31. Time. 32. Tune. 33. Language. 34. Comparison. 35. Causality. To these he adds Alimentiveness, as probable.

‡ The Lying-in Hospital at Edinburgh.

blood merely trickles at first; but afterwards springs out well. This shows that the determination of blood is taken off from the diseased part; and, accordingly, the patient feels relieved. You should bleed till syncope is near at hand; and, in an hour, you may take away blood from the same orifice. You must never keep away from such a patient for more than an hour or two. If you cannot bleed, put thirty or forty leeches on the abdomen. In many cases of puerperal fever, I do not bleed; for if doubtful of its propriety, I put on forty or fifty leeches.

After bleeding or leeching, you should keep the bowels open; but not with drastic purgatives. As to fomentations, I do not much like them;—on account of their wetting the bed. If you find they sooth the pain, you may repeat them; and if not, leave them alone. You may apply hot cloths. Ice wets the patient very much; and if put into a bladder, the abdomen is too tender to bear its weight. I would not trust to digitalis. Dr. Davies gives two grains of Battley's powder of digitalis, every five hours; but it takes two hours to affect the patient; and she may be beyond your reach before that. I never find occasion to give it. You may try opium; but watch its effects, lest it should give rise to coma. When I resort to a blister, in puerperal fever, I apply a very large one. There is generally flatulence; which much aggravates the pain. Turpentine is an excellent remedy for it. Congestive cases are the most severe; and should be met by copious bleeding at first.*]

CHAPTER III.

PHLEGMASIA DOLENS†.

Phlegmasia Dolens,—an untractable and distressing disease,—is, on the whole, not of very frequent occurrence. Though it has been my lot to see several specimens of it, yet, having met with it in my own practice less frequently than puerperal fever, I have enjoyed but few opportunities of making personal observations on its treatment; and therefore I shall enlarge on it the less. Meeting with this disease, in the course of your future practice, you will find it divides itself into two varieties;—the acute and the chronic; and, treating of these in order, we will, if you please, commence with some observations upon the disease in its acuter form.

* Dr. Mackintosh's unpublished Lectures on Midwifery.

† As the swelling of the affected limbs, in phlegmasia dolens, and all the other local and constitutional symptoms of this affection, invariably depend upon inflammation of the iliac and femoral veins, I propose to substitute the term "crural phlebitis", in place of "phlegmasia dolens", "œdema lacteum"*, "depôts laiteux"†, and the other hypothetical names which, up to the present time, have been employed by authors to designate this disease.—*Dr. Robert Lee's "Researches on some of the Diseases of Women." Page* 116.

* From *lacteus*, "milky".

† "Milky deposits".

SECTION 1.—ACUTE PHLEGMASIA DOLENS.

In some rare instances, I believe, phlegmasia dolens makes its appearance even months after delivery; and Levret, the French surgeon,—who, however, had (I believe) a theory to serve by the assertion,—states, that he has known an attack to occur on weaning the child, perhaps a year or more after delivery. In general, however, the commencement of the disease is of earlier date;—occurring, according to Burns, in the second, third, or fourth week;—usually not far from the *second*.

[This disease happens at no precise time after delivery; for it has come on at any period;—from the fifth or sixth day, to the third or even fourth week; but most commonly, I think, between the fifth and twelfth day. Whenever it does appear, the whole constitution is speedily and greatly affected by it. The pulse is extremely quick, and generally feeble; the heat of the body is much increased; the tongue is white and clammy; and the countenance pale and dejected. The urine, which is voided in small quantities, is thick and of a muddy colour, unlike what I have observed in any other disease;—the muddiness gradually lessening as the disease abates. The patient is costive; the fæces are of a pale colour, and clayey consistence; and the uterine discharges, whatever their quantity may be, have an offensive smell, and unnatural appearance. It is to be observed, however, that this smell and appearance do not always continue through the course of the disease; but, on inquiry, will be found to have existed at, or some days before, its commencement.*]

[In seven of the twenty-two cases of puerperal crural phlebitis which I have observed, the disease has commenced between the fourth and twelfth days after delivery; and in the remaining fifteen, it appeared subsequently to the end of the second week after parturition. In most of the patients, there was either an attack of uterine inflammation in the interval between delivery and the commencement of the swelling in the lower extremity; or there were present certain symptoms, which I have before described as characteristic of venous inflammation; namely, rigors, headach, prostration of strength, a small rapid pulse, nausea, loaded tongue, and thirst.†]

Symptoms.—It would be too much, perhaps, to assert, that the disease never commences without abdominal symptoms. In general, however, and more or less conspicuously, those symptoms are observable. The patient feels a degree of pain, and tenderness, and stiffness, and induration, in front of the pelvis; more so on one side than the other; and, perhaps, more frequently on the left side than the right; because, for a reason not understood, the left side is more frequently attacked with phlegmasia dolens. After these symptoms have continued for a few hours, more or less, the woman may be seized with a severe pain in the middle of the lower limb;—the region

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Page 507.

† Dr. Robert Lee's "Researches on some of the Diseases of Women"; Page 117.

of the knee, for example; and this may be accompanied, sooner or later, with swelling, firmness, whiteness, heat, and tenderness on pressure, or when the limb is moved;—all the symptoms varying a good deal in degree, in different cases. In other instances, instead of commencing in the middle of the limb,—an accident, according to my own observations, by no means uncommon,—the attack opens with a swelling of the upper part of the member;—the intumescence spreading downwards along the thigh, the knee, the calf, and the foot, successively; till the whole limb becomes twice as large as its fellow; and is, at the same time, glossy, elastic, tense, painful, hot, tender, and of a white complexion; and this enlargement of the limb, with the changes which I have enumerated, may all of them be accomplished within four-and-twenty or eight-and-forty hours, sooner or later;—the rapidity being different in different cases.

Loss of Power.—Under the slighter effects of the disease, the mobility of the limb is not always much impaired;—except as regards that impediment to its movement, which results from pain and swelling; but, in the severer attacks, together with that stiffness of the limb which results from the swelling, there is a want of moving power, allied in its nature to paralytic debility; so that, if you ask the patient to move the leg, she performs the action with difficulty; and if you ask her, further, whether the difficulty arises entirely from the pain, she tells you it does not; but that she feels as if incapable of moving it. Together with these symptoms about the limbs and pelvis, certain constitutional symptoms, not to be overlooked, also arise. You have shiverings, heat, paleness, and cutaneous warmth; the tongue is milky; the pulse is one-hundred-and-thirty or more in the minute; and the lochia may be suspended, or they may continue to flow in the natural way;—a fact respecting the pathology of the disease, well worth your notice. Sometimes the discharge is very offensive; and the urine turbid. The perspiration may be copious, but not critical; the patient is very weak; and there is a good deal of nocturnal restlessness.

Mode of Termination.—After the disease has continued for a longer or shorter time, it usually terminates by a gradual extinction of the inflammation. In the more successful cases, we find that all the symptoms entirely disappear;—the limb being reduced, or nearly so, to its original dimensions; so that the patient can walk about with facility; while, in other cases, when the inflammation has subsided, the limb remains hard, firm, and of great bulk;—the disease degenerating into the chronic form; in which condition it may remain for months, perhaps for years. When the inflammation yields, topical indurations are sometimes observed in different parts of the limb. They are not of a glandular nature; for they do not generally hold the place of the conglobate structures of the lymphatic system.

Phlegmasia Dolens varies much in its intensity. Mortification is certainly uncommon; abdominal suppurations are now and then observed. A succession of abscesses may form in the limb; as was observed by Dr. Haighton. The arms may, I believe, swell as well

as the legs; and occasionally the disease is itinerant;—travelling metastatically* from limb to limb. Puncture, I am told, gives passage to a little gelatinous matter,—say a few drops. Of course it does not, as in anasarca†, reduce the bulk of the limb. The disease may last for weeks, or for days only; for its duration is very various. A fortnight approaches the average term.

Phlegmasia Dolens is not, in general, a dangerous disease; yet patients, now and then, perish under it. More especially if women are much reduced in flesh, and strength, and energy of nerve, they are liable to sudden dissolution; when, perhaps, nothing of the kind was apprehended. They attempt, perhaps, to turn in bed, or to rise into the sedentary posture; syncope supervenes; and they die. Denman has animadverted on this kind of danger; and instances of it I have seen in my own practice. Beware, therefore, of reducing the strength too much; and, in a proper manner, mention this risk to the friends.

Treatment.—On the treatment of phlegmasia dolens I shall enlarge but little; for all that is of value may, I conceive, be comprised in a few words. In its first commencement, leeches may be laid above the fold of the thigh; in the region of those pelvic and abdominal symptoms before mentioned. Blisters and sinapisms‡ may be afterwards applied to the same parts; and the bowels may be cleared. If a woman were robust, I might feel disposed to bleed to the amount of sixteen ounces, provided I saw the disease in its commencement; but, in the present state of our knowledge with respect to phlegmasia, it is, in general, I believe, unwise to have recourse to much venesection; as we only weaken the system without subduing the disease; which more frequently seizes the debilitated than the vigorous; and can rarely, if ever, be arrested at once.

When the disease is fully developed in the leg, the principal palliatives deserving a trial are leeches on the limb; fomentations; evaporating lotions; poultices; such laxatives as will keep the bowels in action; and, when the pains and restlessness are distressing, anodynes. If the inflammatory symptoms are very lively and vigorous, then six or eight leeches may be applied to the inflamed limb once a week. A large number of leeches, however, I should not apply;—for the reason already assigned; for I should not expect to extinguish the disease by using them; and it is to be remembered, that the weakly irritable constitutions most obnoxious to phlegmasia, do not, in general, bear bleeding well. If the crural attack (the attack in the limb, I mean) be less violent, and the patient (as is frequently the case) be weakly and irritable, the leeches may be laid aside; and the leg may be wrapped up in light poultices of linseed-meal or bread;—to be frequently changed in the course of the twenty-four hours.

* From *μεθιστημι, to change.*

† From *ανα, through*; and *σαρξ, flesh*;—the serum being diffused among the flesh.

‡ From *sinapis*, "mustard";—alluding to the material with which it is made. Mustard is called "sinapis" because *σινει ωπας, it hurts the eyes.*

We have little encouragement to puncture, in these cases, notwithstanding the œdematous appearances. In some cases, perhaps, a little fluid might issue; but we have reason to believe, that what accumulates in the cellular texture is, in its consistency, gelatinous. On lowering the foot, should the intumescence increase there, the collection under the skin may be suspected to be of watery consistency. Perhaps this test may be of service in some few cases.

In treating phlegmasia dolens, too, you must not neglect the state of the constitution; which, indeed, sometimes requires a good deal of attention from us. In the commencement ef the attack, when the symptoms are most inflammatory, antiphlogistic means, laxatives, diaphoretics, and perhaps digitalis, may be employed;—laxatives being used as sparingly as may be; for movement, when the bowels are opened, often occasions a great deal of distress.

When the patient has been labouring under the disease for some few days, aud more especially if she be weakly and irritable, a treatment somewhat different from the preceding becomes requisite. Nourishment, gentle aperients, opiates, and anodynes may be given; and, if the symptoms are subsiding, bark, sulphuric acid, and mild tonic remedies in general, may be recommended.

SECTION 1.—CHRONIC PHLEGMASIA DOLENS.

I have, now and then, met with cases in which the patient has been labouring under the chronic form of the disease; either of original occurrence, or (which more frequently happens) as a consequence of the previous acute attack. Under this variety of the disease, for weeks or months together, the limb remains twice as large as its fellow, firm, hard, stiff, cold, and free from inflammation; though now and then, perhaps, incidental attacks of inflammation may occur. In cases of this kind, of course, it is our grand object to excite such an action of the absorbents, as may reduce the limb to its original dimensions. For this purpose, gastric medicines are, I fear, of little advantage; but something may be done topically;—and not without effect. Friction with the hand, friction combined with mercurial ointment, and a well-adjusted roller, may be of considerable service. In applying the mercurial ointment, the operator should be protected with one or two pair of oil-silk gloves. Burns says that advantage may be derived from the liberal use of cream of tartar, in solution, taken into the stomach. Of all those remedies, the one I principally recommend to you, is compression by the roller. Young advised compression in order to dissipate scirrhous tumours of the breast. Dr. Hull has strongly recommended the roller, in these cases of phlegmasia dolens; and I have employed it in some two or three cases, with very obvious advantage. The great object of our bandaging, is to produce such a firm and steady pressure, as may excite the action of the absorbents, without dangerously interrupting the circulation. For this purpose, a roller many yards in length should be procured; and this, as recommended by Hull, may be spread with some mild adhesive plaster;—so as to give

it a firmer seat upon the limb. Beginning at the foot, you may then bandage upwards to the knee; afterwards applying a second roller on the thigh, so as to leave the knee unbound;—in order that the patient may have a less embarrassed use of the limb. If the pressure of a single roller be inadequate, a second may be laid over the first; and thus, by multiplying bandages, we may augment the compression, in any degree which may be deemed necessary. If, as advised, the knee-joint be left unbandaged, the patient may often be able to attend to her domestic concerns. By bandaging for a few weeks, I have seen a case more benefitted, than by a previous course of medicines continued for several months.

In this disease, especially its acuter form, dissections are much wanted. Zinn, one of Haller's favourite pupils, found an enlargement of the inguinal* glands, near the large vessels. Dr. Davis† has detected inflammation in the large blood-vessels of the limb. Gaspar, as cited by Burns, discovered much inflammation about the neck of the womb and the vagina; but the vessels of the limb were without obvious disease. The nature of this malady is still dubious. Levret, Puzos, White, Frye, Hull, and Davis, have all advanced plausible opinions. Burns has written excellently well on phlegmasia dolens; and to him I am indebted for many observations.

[Twenty-two examples of this disease, in puerperal women, have come under my immediate observation; and, in all of these, the great venous trunks which return the blood from the lower extremities, have been inflamed and obstructed.‡]

[This disease often occurs after puerperal fever; and if the patient recovers from the immediate attack, she has often a swelled leg for life. Whenever I§ see a woman with one leg thicker than the other, I conclude she has had phlegmasia dolens. It does not occur often, however. It is caused by inflammation of the veins; and comes on with shivering and a sensation of coldness at the spine. The patient feels a stiffness in the groin, succeeded by pain; and hard knots form in the course of the blood-vessels. The part affected is hot, tense, swollen, and painful; but is not red, as in erysipelas; for the skin is white and shining. There is a feeling of weight in the leg, and of inability to move it. It occurs a few days after delivery;—certainly within the month; and the nearer it is to the time of delivery, the more dangerous is it.

This disease has enlightened surgeons, by showing them the effects of inflammation on the veins. Puzos and Levret thought there was a translation of milk from the breasts to the leg; but they bled largely, and with success. White thought there was a bursting of the lymphatics, from their being pressed by the head of the child against the brim of the pelvis, and followed by extravasation of their contents into the subcutaneous cellular tissue of the limb. Another writer ascribed it to enlargement of the lymphatic glands at Poupart's ligament; preventing the transmission of the fluids contained in the

* From *inguen*, "the groin." † Of University College, London.
‡ Dr. Robert Lee's "Researches"; Page 116. § Dr. Mackintosh.

absorbents. Dr. D. D. Davis was not satisfied with these views. In 1807, he got Mr. Lawrence to open the body of the first patient that died of the disease under his care; and he found a large coagulum in the iliac veins; as he did also in a subsequent case. The same appearances were also found by others. It is now ascertained that males are subject to phlegmasia dolens, as well as females. Inflammation has taken place in veins which were tied after the amputation of a limb; has travelled up them, and descended the other limb;—causing phlegmasia dolens in it, and death. Dr. Dease said he had produced the disease by tying the vena saphena, for varicose veins; and never knew the reason, till he heard my lecture on the subject. I went to see a patient who had phlegmasia dolens, attended by palpitation of the heart, &c. She was bled a great many times; and when she died, four years afterwards, with hectic fever, all the veins of the leg were found blocked up with coagula. This woman was unmarried, and strictly virtuous; so that it is not always connected with delivery. I do not say there is inflammation of the veins in all cases; but in very many there is. This inflammation does not seem to extend so far, or so rapidly, as in ordinary phlebitis;—owing, perhaps, to its being of a subacute nature. In a woman affected with *hard* œdema, the anterior wall of the abdomen, in a fit of coughing, split down to the peritoneum. On dissection, we found the iliac veins half obstructed.

Unpathological men, in treating disease, are like people in a boat in foggy weather. They go round and round, without getting to the harbour. Bleeding is the chief remedy for phlegmasia dolens, when circumstances will allow it; but if it comes after another disease, we cannot bleed so largely; and then we must employ leeches, of which we should put on a great number. The best counter-stimulant is antimony. Great advantage is said to arise from calomel-and-opium; of which, if it were resorted to, I would give a dose every two hours.*]

[The following case, though not entirely bearing on the subject, is introduced in this place, for the purpose of showing that purulent matter formed in the veins, and mixing with the blood, is frequently the source of suppurations in various viscera:—

Inflammation of the Left Spermatic Vein, with Grangrene of the Lungs.—Ann Cromer, aged forty-two,—a patient of the St. James's Infirmary, and a healthy woman,—being taken in labour on the twenty-second of July, 1828, when eight months pregnant, was attacked with profuse uterine hæmorrhage. This was found to be occasioned by the placenta being attached over the os uteri; which rendered it necessary to introduce the hand, and deliver by turning. Notwithstanding, she lost a great quantity of blood; which occasioned alarming exhaustion. On the evening of the following day, her pulse rose to one-hundred-and-forty; with headach, heat of skin, and intolerance of light. On that of the twenty-fourth, she had a slight rigor; and on the twenty-fifth, another exacerbation of fever;

* Dr. Mackintosh's unpublished Lectures on Midwifery.

—the pulse being one-hundred-and-forty, and the breathing hurried. For some days subsequently, she had less fever, and no evening exacerbations. The pulse ranged from one-hundred to one-hundred-and-twenty. The last portion of urine (which it was necessary to draw off by the catheter), had a semi-purulent appearance, with a peculiar unpleasant smell. No pain was felt on pressure of the abdomen; although some mischief was evidently going on. On the second of August, her breathing had again become much oppressed; with slight cough and no expectoration. The next day, after close questioning, she admitted that she had some pain in the left side of the chest; aud sixteen ounces of blood were taken from the arm. On the fourth, the pain was relieved; and on the fifth, entirely removed; but the pulse remained at one-hundred-and-twenty; the skin was hot and dry; there was expectoration of a little frothy mucus; and a disagreeable smell about her. On the sixth there was less fever; she was excessively weak; the features were sharp and anxious; and the breath was very offensive. On the seventh, the expectoration was more free, thick, and purulent; and although the linen of her bed had been changed, the unpleasant smell was not diminished, and was evidently caused by her breath. Death took place on the ninth;—eighteen days after delivery.

I* examined the body with the late Mr. Baker; when the following appearances were observed:—

Dissection.—On opening the chest, an extremely fetid odour issued from its left cavity; in the lower part of which were contained between three and four pounds of a turbid serum, mixed with portions of coagulable lymph. Superiorly, the lung was glued to the parieties of the chest, by recent loose adhesions; inferiorly, the pleura pulmonalis and corresponding pleura costalis, were covered with a dense coating of coagulable lymph. In addition to this, there was, on part of the surface of the inferior lobe of the left lung, a quantity of the same substance in a loose flaky form; on removing which, there presented itself a portion of the lung, in a state of complete gangrene. This portion, about the size of a walnut, formed a black pulpy-looking mass, of insufferably fetid odour; and was contained, together with some dark-coloured fluid, in a sort of cavity formed by its separation from the sound lung. On making a section of the parts, passing through the gangrenous slough, one-half of the latter fell out of the cavity in which it was situated;—the other remaining attached to the parieties, by a few thread-like adhesions. The cavity itself was lined by a layer of coagulable lymph, having the appearance of a uniform membrane. Immediately beyond this, the substance of the lung was somewhat vivid in colour; but seemed to have undergone little change in its texture. Elsewhere, it was quite healthy. On cutting through the uterus, which was of the size usual at a month after delivery, a few drops of pus flowed from one of the divided sinuses; which, being traced, was found to communicate with an abscess in the left ovarium. The spermatic vein

* Dr. Robert Lee.

of this side was now observed to be diseased; and, on being cut open at its lower part, was found to contain pus. Its coats were much thickened; and its inner surface was lined with a layer of coagulable lymph, which nearly obliterated the cavity. These diseased changes occupied the whole course of the vein, as far as its junction with the emulgent; the coats of which were also thickened, and its cavity lined with lymph. The vena cava was perfectly healthy. No affection of the peritoneum, or effusion into its cavity, existed.

I was exceedingly struck with the appearances which the lungs presented, in the foregoing case; and felt greatly at a loss to account for the production of so acute and destructive an inflammation of these organs, in an individual who, previously to delivery, had never suffered from any affection of the chest. I was disposed to attribute the attack to the general shock communicated to the system, by the operation of turning, and the hæmorrhage which followed; and Dr. Allison, and other professional friends, to whom I related the case, considered this to be the most satisfactory explanation of the occurrence. The following observation of Laennec, which I accidentally met with at this time, proved that the foregoing explanation was not well founded; and that the inflammatory affection of the lungs, was excited by the purulent fluid formed in the uterine and spermatic veins; and not by any shock communicated to the system (as I had supposed):—"It is not uncommon to find the veins in the neighbourhood of a cancerous breast filled with pus, either pure or mixed with blood; sometimes fluid; at other times of the degree of consistence of an atheromatous* tumor. An additional consequence of the presence of too much pus in the blood, is the production of inflammation in different organs, and especially the lungs; which inflammation runs rapidly into suppuration. It is from this circumstance, that the subjects of surgical operations, and those labouring under extensive suppurations, are frequently cut off by peripneumonies†; which, according to the observations of M. Cruveilhier, are usually lobular; that is, commencing in several points at once. This, in my opinion, is the mode in which we must explain the occurrence of metastasis of pus;—at least, in the majority of cases"‡.

Being aware that Mr. Arnott was engaged in writing a paper on Venous Inflammation, I related to him the cases of Somerville and Cromer; and pointed out the preceding observations of Laennec, on the remote consequences of phlebitis. Mr. Arnott then informed me, that the great object of his paper was to establish this very point; that he had been upwards of two years engaged in the investigation; and had collected seventeen cases; which all went to prove, that the suppurations which take place in different viscera after external injuries, surgical operations, &c., depend, not upon any general shock communicated to the system, but upon the purulent

* From *αθηρωμα, pap.*

† From *περὶ, about*; and *πνευμων, a lung.* This term has, in medical language, been almost wholly replaced by "pneumonia".

‡ Laennec on Diseases of the Chest; translated by Dr. Forbes; 1827; Page 652.

matter (formed in the veins) mixing with the blood. Mr. Arnott stated to me, at the same time, that he considered this to be the true explanation of all Mr. Rose's cases; and of Dr. Marshall Hall's cases of suppuration of the eyes in puerperal women; and that the painful swellings in the joints and extremities of lying-in women, arose from inflammation and suppuration of the veins of the uterus. Before hearing these important facts from Mr. Arnott, I was entirely unacquainted with the true causes of several of the most severe constitutional symptoms of uterine phlebitis.*]

CHAPTER IV.

INTESTINAL IRRITATION.

SECTION 1.—SYMPTOMS AND VARIETIES OF INTESTINAL IRRITATION.

[Some of the effects of intestinal irritation may be observed before parturition; but it is far more usual to find them developed afterwards. They generally take place rather suddenly, about forty or fifty hours after delivery; but the puerperal state appears so to dispose to this affection, that the presence of any cause of gastric or intestinal irritation, cannot be borne many hours after delivery.

Varieties.—This affection may, for the sake of facility of description, be divided into the "acute" and the "insidious". Each of these forms manifests itself with general symptoms only; or with some predominant local affection.

Rigor.—The acute form of intestinal irritation, is generally ushered in by a violent rigor. This is an important fact; for rigor has been considered as directing puerperal inflammation; and, indeed, as essential to it. Neither of these suppositions is true; for puerperal fever may occur, in a severe and fatal form, without rigor; and the severest rigor may only portend an attack of intestinal irritation; and, in general, the latter disease is attended even with a severer rigor than the former.

Head of the Surface.—In the attack of intestinal irritation, there is usually, after the rigor, great heat of the surface. I † have already observed, that this is by no means an essential part of puerperal inflammation. Indeed, I do not think that it properly belongs to the latter disease; but that, when it does occur with an inflammation, it denotes a mixed case, and the co-existence of intestinal irritation.

State of the Pulse.—In an attack from the effects of intestinal irritation, there is usually earlier and even greater frequency of the pulse, than in cases of puerperal inflammation. The pulse is also, usually, fuller than in the latter disease.

* Dr. Robert Lee's "Researches on some of the Diseases of Women"; Pages 69 to 73.

† Dr. Marshall Hall.

Sometimes mistaken for Phrenitis or Peritonitis.—Intestinal irritation induces symptoms which are similar to those of the most acute phrenitis, or to those of the most acute peritonitis. This is a remark of the utmost practical importance; for the remedies, in these different cases, are totally different. I should say that, in the former, the freest blood-letting must be aided by purgative medicines; while, in the latter, the freest and fullest evacuation of the intestines must be aided by blood-letting. A mistake, in either case, would, in my opinion, endanger the life of the patient; and it is a foolish and idle remark, that it is better to mistake irritation for inflammation, than inflammation for irritation. It is of the utmost importance to attend to the distinctions which I have made between inflammation and intestinal irritation, with regard to the treatment; for, although both blood-letting and purging are to be used in every case, yet the former is the remedy in inflammation, and the latter in intestinal irritation. If the cure of inflammation be trusted, even chiefly, to purgative medicines, I think it will frequently proceed to the destruction of the patient; and if blood-letting should be chiefly employed, in like manner, in intestinal irritation, I believe it would leave the disease unsubdued; and eventually plunge the patient into a state of irremediable exhaustion.

Affection of the Head and of the Abdomen co-existent.—The affection of the head and the abdomen frequently co-exist, or alternate, in the same case; but sometimes one of them exists to the exclusion of the other, or supervenes upon the cessation of the other; and, in the latter case, the affection of the head usually succeeds that of the abdomen. The diagnosis is much confirmed by this conjunction of the two affections.

Diagnosis.—In the affection of the head from intestinal irritation, there is frequently the severest pain, and the utmost intolerance of noise, light, and disturbance of every kind. It is in these cases, principally, that the pavement is covered with straw, the knocker tied, and the patient's room kept dark and still; so that these very external circumstances speak a significant language to the physician.* To the symptoms which have been enumerated, are frequently added wakefulness and even delirium.

When the abdomen is affected from intestinal irritation, there is generally pain, tenderness upon pressure, and frequently timidity, combined with the general symptoms which I have already enumerated.

Much is effected and learned, in this case, by the exhibition of large injections of warm water, and of active and purgative medicines; a careful examination of the evacuations; and a studious observation of the effects produced upon the disease. The fæces will be found to be scybalous†; or, at least, offensive, dark-coloured, and in large quantity. The *relief* obtained, or the return of *pain*,

* The other cases in which these things are also observed, are phrenitis, the effects of loss of blood, and disease of the heart.

† From σκυβαλον, dry, hard, rounded excrement.

will be found to depend upon the *evacuated*, or upon the *neglected* state of the bowels.

Another point of great importance, is an attentive inquiry into the diet of the patient. This inquiry frequently reveals the mystery of an attack; and, of course, immediately leads to the adoption of an important remedy.

Prognosis.—With regard to the cases of intestinal irritation, I imagine that, under judicious treatment, they would always be cases of progressive recovery. When a contrary event occurs, I think it is to be attributed to the misuse of remedies, especially of blood-letting. In this manner, some of the symptoms which are detailed in the succeeding chapter*, are superinduced; and sometimes a sudden dissolution has overwhelmed the practitioner with consternation.

I have already noticed, that one of the characteristics of intestinal irritation, is the susceptibility to syncope upon blood-letting. This is, of course, much more remarkable upon a second or third blood-letting, than upon a first use of the lancet. I have now to add, that no dependence can be placed upon the blood drawn. This may be much buffed and cuffed, in the puerperal state, without the existence of inflammation; and in cases of the most decided inflammation, these appearances of the blood may be but little observed.

Post-Mortem Appearances.—I have scarcely had an opportunity of examining the state of the internal organs after death; for, in general, the patients affected by intestinal irritation have recovered. But I have no doubt that such an examination would illustrate the following important remark of the late Dr. Denman:—"We have been told that, in the dissection of some who are said to have died of puerperal fever, no appearances of inflammation have been discovered; but I should suspect that, in such cases, some important appearances had been overlooked; or that errors had been committed as to the nature of the disease, and probably its treatment."

A due consideration of the effects of intestinal irritation, will also serve to elucidate other cases of morbid affection, in which the appearances of inflammation were looked for on dissection, but were not found. This observation applies particularly to affections of the head, heart, and abdomen. In several cases of morbid affection, which I had the opportunity of examining many years ago, no morbid appearances were found on the most careful inspection.

Causes.—I have already sufficiently alluded to the causes of this affection. They are, for the most part, obvious sources of gastric or of intestinal irritation;—the former chiefly affecting the head; the latter, both the head and abdomen, either together or separately. This subject, as well as the symptoms and character of this morbid affection, will be aptly exemplified by the following case:—

Case.—Mrs. ——, aged 35, continued well for several days after delivery; until she partook of some ham; when she soon began to complain of pain of the head, and vertigo. On going to bed, the pain and vertigo increased; and she began to be affected with

* See Pages 572 to 575.

rambling and starting, with great intolerance of light; so that she complained bitterly on a candle being brought into the room; and had equal intolerance of noise and disturbance. The pain of the head principally occupied the occiput. There was also pain in the region of the stomach, and general soreness over the abdomen.

The intelligent surgeon who attended this patient, prescribed a purgative enema; followed by a pill (consisting of five grains of calomel and one of opium), and an active purgative mixture. He also directed the feet to be fomented. The following morning, every symptom had disappeared. The patient reported that the action of the purgative, and the fomentation, had promptly relieved her. She added an expression of surprise at having obtained such immediate relief; for, on a former occasion, she had experienced a similar attack, and been bled to no purpose; so that she had continued to suffer for many days.

SECTION 2.—TREATMENT.

In treating of the effects of intestinal irritation, I would by no means exclude the use of the lancet. Blood-letting may be useful in such a case; for the same reason that it is useful in simple fever. But I would repeat, that this remedy is only subsidiary to the full and free evacuation of the bowels; and, if necessary, of the stomach. If it were trusted to alone, or with only a moderate attention to the state of the alimentary canal, or if it were used in the manner which is required to be efficient in puerperal inflammation, I am persuaded that the patient would die of exhaustion, before the symptoms would yield.

Indications of Treatment.—The remedies of intestinal irritation and its effects, I would enumerate and arrange in the following order:—1. The full evacuation of the intestinal canal. 2. Blood-letting. 3. Some kindly anodyne. 4. Leeches, cupping, a lotion, a liniment, or a blister,—according to the circumstances of the case, —for the topical affection. 5. The mildest nutritious food. 6. The most absolute quiet; and the most perfect security from light, noise, disturbance, and every other source of excitation. 7. Every soothing plan. 8. Great coolness, and free ventilation of the sick room. 9. A constant watching over the patient during sleep; in order to avoid the injurious effects of turbulent dreams on the one hand, and of too long sleep and fasting on the other. Upon each of these points I proceed to make such observations as I have learned, from practice, to be of importance.

Relieve the Alimentary Canal.—With regard to the state of the alimentary canal, it is quite obvious that an emetic is the proper remedy when the symptoms can be attributed to any indigestible substance taken; and I would recommend this remedy, even although it might appear, from the lapse of time, unlikely that the injurious substance should still remain in the stomach.

When the case originates from intestinal irritation, I would earnestly recommend that the first remedy should be an enema, con-

sisting of three or four pints of warm water, very slowly and gently forced into the bowels. This should be followed by an active purge; and, in due time, by a repetition of the injection. I need scarcely observe, that the evacuations should be immediately examined with care, and the effects upon the symptoms of the disease watched.

Blood-letting.—To abate the general heat and excitement of the system, to relieve the head or the abdomen, and to ensure perfect safety, the patient should, in cases in which the strength is not particularly impaired, be raised into the erect posture, and be blooded until faintness is induced. This effect also should be carefully watched and observed. If it occur from the loss of a small quantity of blood, it confirms the diagnosis; if it do not occur until much blood has flowed, it should suggest the suspicion of more than mere intestinal irritation;—of one of those mixed cases which so frequently occur; and of which I propose to treat in a subsequent chapter.

I do not imagine that this decided use of the lancet can ever be attended with danger, if there have been no previous loss of blood, or other cause of exhaustion. But it could not be repeated with impunity. It would lead to exhaustion with the symptoms of reaction, to the state of sinking, or even sudden dissolution. And if the case be really one of intestinal irritation, and the other remedies have been duly applied, such repetition of blood-letting will not be required.

It is an observation of great importance, that, in inflammation, repeated blood-letting is required, and is borne with safety. In intestinal irritation, on the contrary, the repetition of blood-letting is neither necessary nor safe.

Anodynes.—This free evacuation of the bowels, and detraction of blood, are very apt to be followed by symptoms of hurry and alarm in the system. These effects are frequently prevented by the timely administration of an efficient and kindly anodyne; and I believe no anodyne is possessed of these qualities in a higher degree than the "liquor opii sedativus" of Battley. Of this excellent medicine, a full dose may be given; and, if necessary, repeated in five or six hours.

Topical Applications.—If this plan do not perfectly relieve the topical affection, some local remedy must be applied. In cases of cerebral affection, leeches may be applied to the temples; or cupping, or a blister, to the nape of the neck; with a cold lotion over the whole head; and fomentations to the feet. Leeches, a fomentation, a liniment, or a blister may be applied, if there be affection of the abdomen.

Mild Food.—Before the patient falls asleep, I would recommend some mild food to be taken;—such as gruel or panada.* This plan prevents exhaustion; and frequently relieves the local symptoms, by securing a more refreshing kind of sleep.

Quiet.—For the same reason the utmost quiet must be preserved in the patient's room. Every species of disturbance greatly agitates

* From the Italian *pane*, "bread."

the patient, and prevents the good effects of the remedies which have been employed.

There are some other circumstances which claim our attention in the treatment of this morbid affection; but, in order to prevent repetition, it is better to postpone our remarks upon these points, to the next chapter,—upon the effects of loss of blood; in which case an attention to them is, if possible, still more necessary than in that under our immediate consideration.*]

CHAPTER V.

EFFECTS OF THE LOSS OF BLOOD IN THE PUERPERAL STATE.

[The effects of loss of blood in the puerperal state, are either immediate or remote. The former have been already noticed in the chapter on *floodings* †; while the latter are those which will principally occupy our attention in the present chapter. These remote effects of loss of blood usually present themselves to our notice in rather an insidious manner. They are not generally introduced by rigor, heat, or any other acute symptom; though I‡ think there may be exceptions to the latter part of this rule. It is important to remark, that the remoter effects of loss of blood, are frequently developed in cases in which there is also intestinal irritation in a dormant form; but that they very rarely occur in conjunction with inflammation. The effects of loss of blood, when they do occur, generally denote that the inflammatory action has been subdued.

SECTION 1.—SIGNS OF THE REMOTE EFFECTS OF THE LOSS OF BLOOD.

I have already observed, that there is rarely either rigor or heat of surface. There may be transient chills and flushes, and slightly augmented temperature; but the countenance, and especially the lips, are generally pallid; and the skin is in a natural state.

The case is usually denoted by a throbbing fulness with moderate frequency of the pulse; throbbing pain of the head; and palpitation of the heart; which is apt to alternate with a state of syncope on slight exertion, or on assuming the erect posture. There is usually, also, a degree of panting. There is a characteristic susceptibility to fainting, on taking a very small quantity of blood.

I have respeatedly known the effects of the loss of blood to be mistaken for inflammation of the brain on the one hand, and disease of the heart on the other. I consider this an important remark; as suggesting, at once, two characteristics of this affection, and the necessary caution in the diagnosis of puerperal diseases.

* Dr. Marshall Hall's "Commentaries on some of the Diseases of Women." Part II; Chapter 6.

† The chapter on that subject in Dr. Marshall Hall's "Commentaries." See also Pages 169 to 176, and 264 to 278.

‡ Dr. Marshall Hall.

When the head is affected from loss of blood, there are much beating and throbbing of the temples; pain; a sense of pressure, or vertigo; with rushing or cracking noises.

When the heart is affected, there are great fluttering, beating, or palpitation; starting during sleep; hurry and alarm on awaking; sometimes faintishness, a feeling of sinking, or of impending dissolution, &c. With the palpitation, there are frequently beating and throbbing of the carotids, and sometimes of the abdominal aorta, perceptible to the touch or even the eye. These affections sometimes recur in the form of attacks, attended with much hurry and alarm. Besides these more marked affections of the head and heart, which render it so necessary to distinguish this affection from inflammation or disease of those organs respectively, there are many symptoms which occur in a less marked degree or form. There is frequently an inability to bear noise, or disturbance, or even the act of thinking with attention; but there is rarely intolerance of light; which is the last symptom usually denoting a state of intestinal irritation. There are frequently vertigo, or faintishness, on any exertion, or on assuming the erect posture; and when these two are combined, there has sometimes been a sudden and unexpected termination of the patients sufferings. In many cases there are great faintishness, and urgent demand for the smelling-bottle, fan, or fresh air; and for cold applications to the face or temples; and a sad feeling of impending dissolution. The respiration is affected, in different cases, with panting, hurry, sighing, heaving, blowing, moaning, gasping, catching, &c. There is, in some cases, an irritative cough; occurring in violent fits, or attended by a perpetual hacking; —apparently arising from an affection of the larynx or trachea. The stomach is liable to be affected with retching, vomiting, hiccup, and eructation; and the bowels, even in cases in which they were not formerly disordered, become variously deranged; with constipation, diarrhœa, and flatulence.

In severe cases, there are frequently urgent restlessness and jactitation. In some cases, there are various spasmodic affections. In other instances, there are catching pains; which are apt to be mistaken for inflammation. There are frequent changes, sudden attacks of alarming symptoms, a sense and fear of impending dissolution, urgent messages, &c.; which become sad characteristics of this affection.

Another characteristic consists in the faintishness, gasping, or feeling of dissolution, which sometimes follows even a slight blood-letting. An awfully sudden death has immediately ensued upon a full and mistaken blood-letting, at this period. Even the operation of purgative medicines, has sometimes induced a degree of faintishness. Every source of disturbance, anxiety, or alarm, and every kind of effort either of mind or body, is apt to be followed by a return or exasperation of the symptoms; and cannot be said to be free from danger.

I have already remarked, that an effort of the muscles, and an assumption of the erect posture, have proved suddenly fatal. This sad event occurred to a lady, who raised herself up in bed, in order to pass her urine. She fell back, and instantly expired.

But when the fatal event from loss of blood is not sudden, the state of re-action sometimes yields to one of fatal sinking. I have described this state in my "Medical Essays"*; from which I extract the following remarks;—referring my readers to that little work, for a further detail and exemplification of this condition of this system.

The symptoms of exhaustion with excessive re-action, may gradually subside, and leave the patient feeble, but with returning health; or they may yield to the state of sinking. This term is not adopted merely to express a state of negative weakness, which may continue long, and issue in eventual recovery; but to denote a state of positive and progressive failure in the vital powers, attended by no peculiar effects; and by a set of phenomena very different from those of exhaustion and re-action.

If, in the latter, the energies of the system are augmented, in the former the functions of the brain, the lungs, and the heart are singularly impaired. The sensibilities of the brain subside, and the patient is no longer affected by noises as before. There is, on the contrary, a tendency to dozing; and some of those effects on the muscular system, which denote a diminished sensibility of the brain, gradually supervene; such as snoring, stertor†, blowing up of the cheeks in breathing, &c. Instead of the hurry and alarm on awaking,—as observed in the case of excessive re-action,—the patient in the state of sinking requires a moment to recollect herself, and recover her consciousness; is perhaps affected with slight delirium; is apt to forget the circumstances of her situation; and, inattentive to the objects around her, to fall again into a state of dozing.

Not less remarkable is the effect of the state of exhaustion, with sinking, on the function of the lungs. Indeed, the very first sure indication of this state is, I believe, to be found in the supervention of a crepitus in the respiration; only to be heard, at first, on the most attentive listening. This crepitus gradually becomes more audible; and passes into slight rattling, heard in the situation of the bronchia and trachea. There is also a degree of labour or oppression, sighing, hurry, and blowing, in the breathing;—inducing acuteness in the nostrils; which, at each inspiration, are dilated below and drawn in above the lobes. In some cases there is, besides, a peculiar catching, laryngeal cough; which is especially apt to come on during sleep; and which awakes, or imperfectly awakes, the patient.

The heart has, at the same time, lost its violent beat or palpitation; and the pulse and arteries their bounding or throbbing.

* "Medical Essays on the Effects of Intestinal Irritation, Loss of Blood, &c."

† From *sterto*, "to snort."

The stomach and bowels become disordered, flatulent, and tympanitic; and the command over the sphincters is impaired.

The last stage of sinking is denoted by a pale and sunk countenance, inquietude, jactitation, delirium, and coldness of the extremities.

SECTION 2.—TREATMENT.

I now propose to detail the principles of the treatment, in cases of the effects of loss of blood in the puerperal state.

Local Bleeding, to relieve Congestion.—In the first place, the state of exhaustion from loss of blood, with or without re-action, by no means precludes the possibility of congestion within the head; and it is no less certain that the application of leeches to the temples, or of the cupping-glass to the back of the neck, relieves the symptoms of affection of the head, arising from loss of blood, in a remarkable manner. In a case given by Mr. Hey *,—which I regard as being of this character, and to which I shall have occasion to revert hereafter,—urgent symptoms of affection of the head were twice relieved by the abstraction of but three ounces of blood from the temporal artery. His mode of treatment must not therefore be neglected, except in the most extreme cases; in which the loss of even so small a quantity of blood, and that from the head, might precipitate the remaining powers of the patient.

Restore the Tone and Functions of the Alimentary Canal.—The next point of practice which requires to be mentioned, is the state of the stomach and bowels. If these were free from all disorder before the occurrence of loss of blood, yet the state of exhaustion ever induces a deranged state of the alimentary canal. The state of the bowels must, therefore, claim our attentive consideration, in every case of symptoms arising from loss of blood. Their functions and tone must be carefully restored by every means in our power; while we as carefully avoid any fresh source of exhaustion. The bowels must, in particular, be carefully evacuated daily. This may perhaps be best done by means of the warm-water injection, with or without the aid of a draught containing an ounce of the infusion, and two or three drachms of the compound tincture of rhubarb, and of manna.

By these means, the state of irritability which is so apt to affect the system, and especially the head and the heart, is greatly obviated.

Anodynes.—But for this affection, it is frequently also necessary to give some mild but efficient anodyne. The "tinctura opii"; the "tinctura hyoscyami", the "spiritus ammoniæ aromaticus", &c., are extremely useful remedies in this affection. But, perhaps, the best are Battley's "liquor opii sedativus", and the extract of poppy†, given in efficient doses.

When the head, the heart, and the alimentary canal have been

* "On the Puerperal Fever"; Page 86.

† The "Extractum Papaveris" of the Pharmacopœia." Five grains are said, by Dr. Collier, to be equal to one grain of opium.

thus relieved, and even during the exhibition of the medicines which have been enumerated, it is of the utmost importance to attend to all the following points;—nourishment, fresh air, quietness, soothing sleep, &c.

Nourishment.—It is difficult to give any rule for the administration of nourishment. But the first rule is to ascertain that the bowels have been properly evacuated; otherwise food will only oppress the stomach. The second rule is to give the nourishment itself in such forms as will prove light and easy of digestion: and the third is, that it should be taken, at first, very slowly and in small quantities. Arrow-root prepared with water, beef-tea, panada, sago, &c., may be given frequently.

Fresh Air.—The best restorative we possess, is, I believe, fresh air; but it is especially the best in the cases under consideration. The warmth and closeness of a lying-in-room, must therefore be forthwith exchanged for free ventilation;—only observing the due precautions against giving cold.

Quiet.—Nothing is more essential than quiet, both of body and mind. Bodily exertion leads us to still further exhaustion, and perhaps even to unexpected dissolution; and every kind of mental hurry or effort not only exhausts the patient's strength, but is extremely apt to lead to those attacks of symptoms of irritability, of which I* have given so full a description.

The patient should be soothed and lulled in every possible way; and it is of the utmost importance to procure sleep. But it should be observed, with regard to sleep, that too long a sleep is apt to exhaust or overwhelm the patient. This is especially true, if it be not preceded by nourishment. The sleep is also apt to be injurious by leading to turbulent dreams; which have the same bad effects as waking in a hurry of mind. The sleep, therefore, should be watched; and it should be interrupted if the patient is observed to suffer from agitation. This is best done, I think, by offering nourishment; for the patient is immediately collected, on awaking;—from knowing what is being done.

Impropriety of Suckling.—There is one point still to be mentioned. It is the efforts made by the mother to suckle her infant. Nothing is so injurious in *all* puerperal diseases. These morbid affections have often appeared to be first induced by the attempt to nurse; and they have still more frequently been exasperated by it. This attempt especially involves, within itself, almost every thing which can be injurious in a state of exhaustion; the drain The muscular effort, the mental excitement implied in the act of suckling, are all of the most injurious tendency in this affection.†]

* Dr. Marshall Hall, in his "Commentaries".

† Dr. Marshall Hall's "Commentaries on some of the Diseases of Woman"; Part II; Chapter V.

CHAPTER VI.

MIXED CASES; PUERPERAL MANIA; PHRENITIS

[Perhaps the cases which most frequently present themselves to our notice in practice, are of a character distinct from those which have been hitherto described;—differing from them, principally, in blending two or all three of those cases in an individual patient.

Our systems of nosology have, I am persuaded, greatly erred, in attempting to separate diseases from each other, and describe them as distinct; when they far more frequently occur in conjunction; so that the mind of the medical student is not at all prepared for the cases which most frequently occur to him, when he first enters upon practice. A little experience teaches him the difficulty, nay, the absurdity, of attempting to give each individual case a name, or to put it down in a list of diseases. Each patient, on the contrary, presents to him a new congeries of symptoms,—a new complication of diseases or disorders.

Puerperal cases are more complicated than any others. Some cases have the most decided symptoms of intestinal irritation, conjoined with those of inflammation; and, on proving fatal, have presented on examination all the traces of inflammatory action. It has been already shown that, in many cases of inflammation, there are none of the symptoms which denote intestinal irritation. There is an absence of rigor, of heat, of affection of the head, &c.; but the effects of inflammation are found on dissection. On the other hand, there have been all the symptoms of intestinal irritation (such as rigor, heat, and headach); together with pain, tenderness, and tension of the abdomen; without a trace of the effects of inflammatory action, on examination after death. The conclusion from these separate statements is obvious. Inflammation and intestinal irritation may exist separately; but they may also exist together.

The effects of loss of blood are frequently observed in cases of inflammation, when the primary disease has been perfectly subdued. But they are still more apt to concur and to assimilate themselves with those of intestinal irritation, when there has been much loss of blood by hæmorrhage or by blood-letting.

There is a mixed case which shows itself under a form still different from any which has hitherto been described. It is *puerperal mania*. I believe the disease to result, in general, from all the circumstances following parturition combined; but chiefly from the united influence of intestinal irritation and loss of blood. I am further persuaded that real puerperal phrenitis is comparatively a rare disease; that puerperal mania, on the contrary, is seldom of an inflammatory character; and that it is especially to be treated by those measures which are suited to the mixed case of intestinal irritation and exhaustion.*]

* Dr. Marshall Hall "Commentaries on some of the Diseases of Women"; Part II; Chapter 7.

Period of Attack.—[During that long process, or rather succession of processes, in which the sexual organs of the human female are employed in forming, lodging, expelling, and (lastly) feeding the offspring, there is no time at which the mind may not become disordered; but there are two periods at which this is chiefly liable to occur;—the one soon after delivery, when the body is sustaining the effects of labour; the other several months afterwards, when the body is sustaining the effects of nursing.

Symptoms.—I * shall not attempt to give an account of the symptoms and progress of mania and melancholia†, in women who are lying-in and nursing; partly because the cases which I have related ‡, and shall have occasion to relate in the progress of this paper, will give a more faithful picture of the aspect and symptoms of these diseases, than any vague general description; and partly because there is nothing peculiar in them. If a physician were taken into the chamber of a patient whose mind had become disordered from lying-in or nursing, he could not tell, by the mere condition of her mind, that the disease had originated in these causes. I do not mean to represent the disease as strictly uniform. Cases sometimes occur under a peculiar form; but these are not the *rule*, but the *exceptions*. Thus I have seen it strikingly similar to that form of disease called "delirium tremens."

Prognosis.—In giving an opinion about the probable result of any case, there are two questions to be considered;—one whether there is any danger to life; the other, if the patient lives, how long the disease is likely to continue; and what chance there is of its becoming permanent and incurable.

Is there any Danger to Life?—With regard to the first of these questions, I remember the time when it was the prevalent belief among medical men,—not, it is true, among those who had paid peculiar attention to the subject, but among men of great general eminence,—that they were diseases which were never fatal. While I was attending the near relation of one of the most eminent and experienced of the provincial practitioners of this island, a letter arrived from him, begging the family to have no fears; for he had seen many such cases during his long life, and never saw one die; and even the late Dr. Baillie, when consulted about a case, remarked,—"that the question was not *whether* she was to get well, but *when* she was to get well." The latter patient died within a week after this prognosis. There can be no doubt that a very large proportion of cases of disordered mind, in lying-in women and nurses, ultimately recover; but it is equally certain that some of them die; and there are two modes of calculating the probability of death in any individual case;—the one is to ascertain the proportion of deaths to

* Dr. Gooch.

† From μελας, *black*; and χολη, *bile*;—because the ancients attributed the disease to a redundance of black bile.

‡ See Dr. Gooch's "Account of some of the most important Diseases of Women"; Second Edition; Pages 106 to 152.

recoveries, in as large a number of cases as possible; the other is to endeavour to discover some symptoms, the absence or presence of which indicates safety or danger. As to the former of these modes, it is very difficult to procure trust-worthy information. M. Esquirol, of Paris, has given an account of ninety-two patients in the Salt-petrière, who had become deranged whilst lying-in or nursing. Of these, six died;—that is, one in fifteen; but this estimate must give the mortality in *chronic* cases, rather than in *recent* ones. Dr. Burrows has published a table of fifty-seven cases, of which ten died. This is a mortality of more than one in six. The best mode of forming an estimate of the mortality of this disease, would be to procure,—from a great number of practitioners extensively employed in the practice of midwifery,—statements of how many cases of puerperal insanity they had met with in their practice, and of these how many had died. This would be the best mode; although none but those who have tried to procure information in this way, can have a notion of the difficulty of procuring answers scrupulously accurate. But however accurate the estimate may be, it must afford a very loose prognosis for any particular case. To a question about the probable fate of a patient, it would be a vague answer to say that the mortality is as one in fifteen. It would be more like the opinion of the actuary of an insurance-office, than of a practical physician. The question would naturally occur,—"Are there no symptoms, in this as in other diseases, by which to judge whether or not the life of the patient is in danger?" On this question, there is a passage in the manuscript copies of Dr. William Hunter's lectures, so much more valuable than any remark in any printed book upon the subject, that I shall introduce it here.

"Mania", says Dr. Hunter, "is not an uncommon appearance in the course of the month; but it is mania of that species from which patients generally recover. When out of their senses, attended with fever like paraphrenitis*, they will in all probability die; but when *without* fever, the disease is not fatal, though it (that is, fever) generally takes place before they get well. I have had several private patients, and have been called in where a great number of stimulating medicines and blisters have been administered; but they have gone on as at another time;—talking nonsense till the disease has gone off, and they have become sensible. It is a species of madness they generally recover from; but I know of nothing of any singular service in it."

There are Two Forms of Puerperal Mania.—Making allowance for the loose language of extemporaneous lectures, and allowance also for some inaccuracy in the notes of these lectures, and putting together this statement of Dr. Hunter with my own experience, I extract from it the following meaning:—that there are two forms of puerperal mania; the one attended by fever, or (at least) the most important part of it,—a rapid pulse; the other accompanied by a very

* From παρα, *badly*; and "phrenitis", *inflammation of the brain*; which the disease resembles.

moderate disturbance of the circulation;—that the latter cases, which are by far the most numerous, recover; and that the former generally die. This agrees closely with my own experience. None of those patients who had a slow, or only moderately excited pulse, died. Some who had a quick pulse, recovered; but none of these were treated for paraphrenitis.

There are some other circumstances to be taken into account, in forming the prognosis;—the form of the derangement, and the period at which it occurs. Mania soon after delivery is more dangerous to life, than melancholia beginning several months afterwards. Nights passed in sleep, and a pulse slower and firmer,—even though the mind continues disordered,—promise safety to life. On the contrary, incessant sleeplessness, a quick, weak, fluttering pulse, and all the symptoms of increasing exhaustion, portend a fatal termination; even though the condition of mind may apparently be improved. In the cases which I have seen terminate fatally, the patient has died with symptoms of exhaustion,—and not with those of oppressed brain;—excepting only one case.

How long will the Disease last?—But supposing the patient to live; how long will the disease last; and what danger is there of its becoming permanent? Experience shows that mania is a less durable disease than melancholia. It is *more* dangerous to *life*; but *less* dangerous to *reason*. The best answers to these questions, however, would be a knowledge of the results of a vast number of cases. Unfortunately, we have no such documents taken in satisfactory circumstances. The records of hospitals contain an account of cases admitted only because they were unusually permanent. They are the picked obstinate cases; and can afford no notion of the average duration of the cases of all kinds. The cases of short duration, which last only a few days, or a few weeks,—which form a large proportion,—are totally lost in the estimate of a lunatic-hospital. Of the ninety-two cases mentioned by M. Esquirol, only fifty-five recovered, and six died;—leaving thirty-one as the number of incurables; that is, one in three. Of those which recovered, thirty-eight did so in less than six months. Dr. Haslam says, that of eighty-five admitted into Bedlam, only fifty recovered;—leaving thirty-five as the number of the incurable. Of Dr. Burrows's fifty-seven cases, only thirty-five recovered;—eleven remaining uncured. Of the thirty-five which recovered, twenty-eight did so in less than six months. I am persuaded, however, that these tables throw little light upon the question; and present a prospect unnecessarily gloomy and discouraging. Of the many patients about whom I have been consulted, I know only two who are still, after many years, disordered in mind; and of these one had already been so before her marriage.

Is the Disease likely to Recur?—Before leaving this part of the subject, there is still another question which requires to be thought of; and that is, whether a patient who has been disordered in mind after one lying-in, is likely to be so after another? I believe the chances are much against it. There is a sufficient *possibility* of such an

event, to call for the utmost degree of care;—not only in the next, but in all subsequent confinements; but this care being taken, the proportion of cases in which the disease occurs twice, is small. I have attended many patients who came to town to be confined, because they had been deranged after their former lying-in in the country; and, except one, these patients had no return of their disease.

Causes.—I come now to consider the *causes* of puerperal insanity; that is, what occasions it to arise; and when arisen, in what it consists, mentally and corporeally. Of the cases which I have seen, a large proportion have occurred in patients in whose families disordered mind had already appeared. The patients, too, were of susceptible, nervous dispositions;—remarkable for an unusual degree of that peculiarity of nerve and of mind, which distinguishes the *female* from the *male* constitution. In some instances, they had been long under the influence of depressing passions, or were suddenly assailed by some cause of mental agitation; but in many no such circumstances had occurred. They had lately been delivered, or they were nursing; and that was all. Scarcely any of them had ever been deranged before, or were ever deranged on any other occasion than this. There is, therefore, something in the state of the constitution induced by lying-in or nursing, capable of producing the disease in predisposed constitutions. What is this "something"? In a former paper on this subject, I endeavoured to express it by saying—"that peculiar state of the sexual system, which occurs after delivery." This has been noticed as an unsatisfactory explanation; and when I read it now, ten years after it was written, I am willing to confess that it was not sufficiently explicit. What I meant was this:—The sexual system, in women, is a set of organs which are in action only during half the natural life of the individual; and even during this half they are in action only at intervals. During these intervals of action, they diffuse an unusual excitement throughout the nervous system. Witness the hysteric affections of puberty; the nervous susceptibility which occurs during every menstrual period; the nervous affections of pregnancy; and the nervous susceptibility of lying-in-women. I do not mean that these appearances are to be observed in every instance of puberty, menstruation, pregnancy, and child-bed; but that they occur sufficiently often to show that these states are liable to produce these conditions of the nervous system. Dr. Marshall Hall thinks, that the susceptibility of the puerperal state is to be explained by mere exhaustion; and does not at all depend on the influence of any thing specific in the condition of the sexual organs at that time. But would an equal or a greater degree of exhaustion, at any other time, occasion the disease? This is a question of fact, which I should answer in the negative. I have seen patients who had been deranged in child-bed, and who had recovered, much more exhausted by illness, and much more agitated in mind, at a subsequent period, without the slightest appearance of mental derangement.

Among the causes of this disease, there are two others which require notice;—the one a disordered state of the organs of digestion, the other weaning. As to the first, it was very manifest in some cases, in others less so. Mental derangement is said to be often produced by weaning; that is, by the sudden suppression of the secretion of milk. I have no right to deny the experience of others; but my own would never have led me to such a conclusion. Among the fashionable women of this town*, nothing is so common as not to nurse their children. The milk begins to be secreted about one or two days after delivery, and the breasts become as hard as stones; but not a drop is extracted; and,—sometimes by cold spirit-lotions, constantly applied to the breasts; sometimes by embrocations of oil-and-brandy; sometimes by poultices (according to the whim of the nurse, the patient, or the medical attendant), with gentle aperients,—the milk is suppressed in a few days. I must have known this done, in more than a hundred instances, during the first week after delivery;—a time much more liable to disordered mind than a later period; and in not one did it occasion puerperal insanity. In all the cases which I have seen occur months after delivery, the *weaning* has been the consequence of the *disease*;—not the *disease* the consequence of the *weaning*. The patients had been reduced in health by nursing; their memories had become enfeebled, their spirits depressed, and their minds ultimately disordered; and they were directed to wean their children because they had neither milk nor strength to enable them to nurse.

On what Morbid State does Puerperal Insanity depend?—But whatever may be the causes which excite these diseases, the most important question still remains to be considered;—"What is that morbid state of organization on which the disorder of the mind depends?" This is the proper object of medical art. We have no power, by medicinal agents, to relieve a disordered mind; except indirectly, through the disorder of the body with which it is connected. It is impossible, therefore, to stir one step in the treatment of the disease, without first ascertaining what this disorder is; or, if different in different cases, what the disorders are; how to discriminate them; and whether experience shows that one form is more common than the other.

There is a strong disposition, not only popular but professional, to attribute raving of the mind to inflammation of the brain. Perhaps it originates in this;—that the disorder of the mind with which we are most familiar, is drunkenness; which is known to be caused by spirits, and to be cured by temperance. Mania is called "brain-fever"; and the sight of a raving patient instantly suggests the thought of cupping-glasses, iced-caps, low diet, and purgatives. This view of mania is, when it occurs in child-bed, still further corroborated by the popular notions about lying-in women. If a woman becomes deranged in child-bed, it is said not only that she has a

* London.

brain-fever, but that the milk has flown to her brain. Hence the term "mania lactea"*. Dr. Denman says that, in his time, this was a prevalent notion among the people, but an obsolete one in our profession; and formerly it was usual to attempt to relieve the disease by restoring the milk and the lochia. It would be as good pathology to attribute puerperal fever to a suppression of the milk; and as good practice to attempt to cure it by drawing the breasts, fomenting the pelvis, or using any other local means for restoring these secretions.

But experience and reflection lead to very different conclusions. They teach us that a disorder of the mind may be connected with very opposite states of the circulation;—sometimes with inflammation or active congestion, for which depletion is the shortest and surest remedy;—sometimes with an opposite condition of the circulation, which depletion will only aggravate.

Cerebral excitement does not necessarily depend on inflammation or congestion; nor is depletion, however moderate, necessarily the proper remedy. Cerebral excitement is often aggravated by depletion; and in some cases, as I shall have occasion to relate, is absolutely brought on by it. Now the question,—"What is the morbid state of organization on which puerperal insanity depends?"—must be determined in the usual way. There is only one safe mode of working the problem;—by observing the causes which brought on the disease; the bodily symptoms which accompany it; the way in which it is affected by remedies; and the morbid appearances discovered after death. These points can be learned only by an attentive and thoughtful observation of cases; and will be best communicated by the relation of them.

The result of various cases, which have come under my observation, leads me straight to the conclusion, that this disease is not one of congestion or inflammation; but one of excitement without power. I shall be asked,—"Are not these *picked* cases †; selected to prove a point; and forming a small proportion to those of another character?" Their very number gives the negative to this suspicion. Ten cases can never form a small proportion of the experience of one individual;—however extensive his opportunities of seeing the disease may be; for puerperal insanity is not like fever;—a disease in which an experienced physician counts his cases by hundreds. Dr. William Hunter said that, in the course of his practice, he had met with about twenty or thirty. There can be no mistake; unless, by some extraordinary accident, all my cases have been exceptions to the general rule;—an incredible supposition! It is true I have related those in which the nature of the disease was most distinctly marked, and in which the truths I am endeavouring to explain were most legible; but in most of the remainder there was nothing to contradict these

* From *lac, lactis*, "milk".

† Dr. Gooch here refers to his description of ten cases of puerperal mania, which he has given in his "Account of some of the most important Diseases of Women".—*Editors.*

conclusions. It was the same form of disease; only less marked and striking. They surely prove that those cases of puerperal mania which are attended by a very rapid pulse,—which Dr. William Hunter said generally die, and which he attributed to paraphrenitis,—do not depend on that state of the brain which requires depletion; but on a more exhausting excitation of the nervous system, which requires soothing and sustaining treatment. But I shall be told of the fluid under the tunica arachnoides*, and the unusual number of bloody points in the centrum ovale, in one of my cases. Are we, then, to shut our eyes to the symptoms during life, to the effect produced by remedies, to the mode in which death came on (that is, with symptoms of exhaustion), and to the remarkable emptiness of the veins throughout the body; and because there was a little serum under the tunica arachnoides, and more bloody points than usual in the medullary substance of the brain, are we to conclude that it was a disease of congestion or inflammation, and that perhaps the patient died because she was not blooded sufficiently? There will be some, perhaps many, who will draw this inference. To my mind, this is one of the cases in which observation of the disease throws more light on its morbid anatomy, than its morbid anatomy throws on the nature of the disease. The living symptoms illustrate the dead morbid appearances, better than the dead morbid appearances do the living symptoms. To make the examination of dead bodies conclusively instructive, it requires to be done by those who possess two requisites;—an eye familiar with the difference between natural and morbid appearances, and a mind capable of interpreting the hieroglyphic characters left by disease. These qualifications are never found, except in those who are, or at least have been, for a considerable portion of their lives, continually employed in these examinations. A man whose experience in morbid anatomy amounts to five or six examinations in the year, is neither a competent witness of appearances, nor a competent judge of their meaning. To understand what these appearances mean, it is necessary to know the history of the case during life, the symptoms by which it was attended, and the way in which it was affected by remedies. Those pathologists who consider increased vascularity of the brain, and an effusion of fluid, however slight, as infallible signs that congestion or inflammation existed during life, and that depletion was the essential remedy, will do well to read Dr. Kelly's paper on the Pathology of the Brain; and Dr. P. M. Latham's account of the Epidemic at the Milbank Penitentiary.

The Essay of Dr. Kelly, which describes the appearances discovered in dissecting animals bled to death, is well known. It proves that when the general circulation has been drained to death, the vessels of the brain are still full of blood. But a far more instructive experiment was made, a few years ago, at the Penitentiary at Mil-

* From *αραχνη, a spider*; and *ειδος, likeness*;—from the resemblance of the membrane in question (the middle coat of the brain) to a spider's web.

bank,—of course with no evil intentions, and no suspicion of danger,—not on sheep and dogs, but on men and women. The Penitentiary stands on a spot made for the production of malaria;—a swamp below the level of the river; which runs within a hundred yards of the prison. The prisoners were,—with what object and for what reason does not appear,—suddenly put upon a diet from which animal food was almost entirely excluded. An ox's head, which weighs about eight pounds, was made into pea-soup for one-hundred people; which allows an-ounce-and-a-quarter of meat to each person. After they had been living on this food for some time, they lost their colour, flesh, and strength; and could not do as much work as formerly. The men could not grind as much corn, or pump as much water as they once could; and the women fainted at their work in the laundry. At length, this simple debility of constitution was succeeded by various forms of disease;—they had scurvy, dysentery, diarrhœa, low fever, and (lastly) affections of the brain and nervous system. To show the causes and nature of these diseases, it is necessary only to mention the striking fact, that while the prisoners who fed on this diet were growing weak and falling into disease, the officers of the prison, with their families and servants,—who resided on the same spot, but lived well,—entirely escaped; and the still more striking fact, that about twenty of the prisoners, who were employed in the kitchen, and had an ample supply of meat and other food,—with two or three exceptions,—continued healthy. The affections of the brain and nervous system which came on during this faded, wasted, weakened state of body, were headach, vertigo, delirium, convulsions, apoplexy, and even mania. When bleeding was tried, the patients fainted after losing five, four, or even fewer ounces of blood; and "were not better, but perhaps worse." Leeches to the temples were equally useless. In some cases, these patients died very slowly; after the circulation had remained, for a day or two, almost though not quite extinct; yet, on examining their bodies after death, there was found increased vascularity of the brain; and sometimes fluid between its membranes, and in its ventricles.

Does Phrenitis ever occur?—But the reader will ask,—"Is there no such disease as phrenitis in lying-in women?" If I may judge from my own experience, phrenitis (that is, furious delirium from inflammation of the brain) is a rare disease in child-bed. It is true, inflammatory headachs are not uncommon; and these are occasionally attended by delirium; but these cases are very different, in their aspect and progress, to those which I have related in this paper. The patients have headach, vertigo, singing in the ears, a flushed cheek, and a quick pulse. In most of them there is no disorder of the mind whatever; when there is, it follows and is the effect of the inflammatory state of the brain; and it is never equal in degree, or similar in kind, to the disorder of the mind in mania and melancholia. It is pain of the head, with fever, followed by delirium.

These febrile headachs,—whether attended by delirium or not,—require great care, and prompt depletion carried as far as is necessary

to remove them. I have seen these symptoms,—when neglected, or treated inefficiently,— end in one case in hemiplegia, in another case in hydrocephalus, in a third in furious delirium, speedily followed by coma and death.

Disordered Alvine Secretions.—From this digression on the inflammatory affections of the brain in child-bed, I return to the proper subject of this paper;—puerperal insanity. The alimentary canal is generally disordered in its secretions. The symptoms which indicate this are a furred tongue, offensive breath, and (above all) dark and offensive stools. These symptoms exist in very different degrees in different cases. In some they are scarcely perceptible; in others they exist in a most remarkable degree. In these latter cases, they seem to be the link on which the disease hangs; for as soon as they are removed the patient is well.

Treatment.—It remains for me only to explain the method of treatment necessary for these diseases.

To be placed in the Care of Proper Nurses.—The constant attendants on the patient ought to be those who will control her effectually but mildly, will not irritate her, and will protect her from self-injury. These tasks are seldom well performed by her own servants and relatives.

If the disease last more than a few days, and threaten to be of considerable duration, her monthly-nurse and her own servants ought to be removed, and a nurse accustomed to the care of deranged persons placed in their stead. Such an attendant will have more control over the patient, and be more likely to protect her from self-injury. She should never be left alone; and every thing with which self-injury can be effected, should be carefully removed; such as cutting-instruments, garters, handkerchiefs, and towels. The windows of her chamber ought to be carefully secured. With regard to the removal of her husband and relations, this also will be a question, if the disease threatens to be lasting. It is generally right. Interviews with relations and friends, are commonly passed in increased emotion, remonstrance, and altercation; and obviously do harm. Large experience, also, is decidedly favourable to separation as a general rule; yet there may be exceptions, which the intelligent practitioner, will detect by observing the effect of intercourse. The husband ought never to be left alone with his deranged wife, for obvious reasons. More than once, I have known a neglect of this rule produce consequences, which left in the minds of those concerned a never-ending regret. On this subject, a serious appeal ought to be made to the sense and feeling of the husband.

Regulation of the Diet.—The next rule regards the diet of the patient. It ought never to be very low. The lowest ought to consist of nutritious and unheating fluids;—such as equal parts of gruel and milk, or gruel and good veal-broth, or milk alone; and of these a quart ought to be given in the twenty-four hours. If there is any heat or thirst, the broth had better be omitted; but the cases in which this diet requires to be reduced are few. It even sometimes

requires to be mended. If the patient is pale, and the temperature of the skin lower than natural, it is useful to add to the above diet two ounces of wine daily, mixed with gruel. When the patient is in such a state of mind as not to ask for support, and even objects to take any, a thoughtless nurse will allow hours, and even days, to pass with no other food than a cup of tea or water-gruel, at long intervals;—a neglect which I have known to be productive of serious consequences. But if the disease, after many days, continues unabated, a daily portion of solid meat may be necessary; and the rule for it is this:—If there be nothing in the bodily symptoms, separate from the disorder of the mind, which forbids it, this state of the mind is no objection to, but rather an argument for it. Hospital-patients are sometimes clearly benefited by a cup of caudle, several times a day; but to them diffusible stimulants are more safe and necessary, than to persons of temperate habits. After being long accustomed to a daily supply of gin, they come into a Lying-in Hospital, suffer pain, lose blood, live on water-gruel, and take purgative medicines. If mania attacks them in these circumstances, a moderate quantity of wine is sometimes strikingly beneficial. Thus I would manage the diet in mania which occurs soon after delivery; but when melancholia attacks a woman long after delivery, and after she has been drained and enfeebled by nursing, a nutritious, and even cordial diet is necessary, in all cases. She should take meat every day, with about four ounces of wine. Cupping, low diet, and purging, would confirm her disease; and perhaps convert it into idiotism. Lastly, if mania attack a woman after sudden weaning, so that there is reason to believe that the disorder of the mind has been caused by the sudden suppression of milk,—a case very different to that which I have last described, and one which I have not witnessed,—there would be reason to suspect an inflammatory affection of the brain; but this must be determined, and the treatment regulated, not by the disorder of the mind, but by the bodily symptoms which accompany it.

The Necessary Medicinal Agents.—The third rule relates to the medicinal agents necessary in the treatment of these diseases. These are;—1. Such as reduce the force of the circulation, especially blood-letting. 2. Such as evacuate gastric and intestinal impurities, and amend the secretions which flow into the alimentary canal; as emetics and purgatives. 3. Such as give sleep during the night, and calmness during the day. These are the various narcotics. 4. Such as sustain the vital powers; as tonics and stimulants. These are not all necessary in every case; but it is out of these a selection must be made, adapted to the circumstances of each case.

1. *Blood-letting.*—With regard to blood-letting (the chief means of reducing the force of the circulation), the result of my experience is that, in puerperal mania and melancholia, and also in those cases which more resemble delirium tremens, blood-letting is not only seldom or never necessary, but generally (almost always) pernicious. I do not say that cases never occur which require this remedy. No man's experience extends to all the possibilities of disease; but I

have never met with such cases; and I would lay down this rule for the employment of blood-letting;—never to use it as a remedy for disorder in the mind, unless that disorder be accompanied by symptoms of congestion or inflammation of the brain, such as would lead to its employment, although the mind were not disordered. Even here, however, great caution is necessary; and *local* is safer than *general* bleeding. In one of my cases the head was hot, and the face red; and the pulse was said to have become somewhat hard; yet a bleeding of eight ounces was followed by extinction of the pulse within three hours, and death in less than six. The only cases attended by a very quick pulse which I have seen recover, were those in which no blood was taken. In the really inflammatory diseases of the brain, blood-letting of course is essentially necessary; but these, I think, can never be mistaken for puerperal insanity. They are febrile headachs, more or less acute. Pain of the head, with fever, is a much better indication for blood-letting, than disorder of the mind without these symptoms.

2. *Purgatives.*—With regard to remedies which evacuate gastric and intestinal impurities, the activity with which these remedies are employed, must depend on the distinctness with which these states are present. If the powers of the constitution are not low, and the gastric symptoms are very marked,—namely, a foul tongue, offensive breath, and a yellow eye,—an emetic (not of antimony, but of ipecacuanha) may be given. Vomiting has sometimes been followed by such signal success, in the treatment of mania, that some eminent physicians have considered it the most efficient remedy; but where the face is pale, the skin cold, and the pulse quick and weak, I should fear the depressing influence of nausea and vomiting. When the stools are very unhealthy, in colour and odour, one or two active purges ought to be given; and a moderate action of the bowels. ought to be kept up, by such purges as empty the alimentary canal without drawing fluid from the circulation; such as the compound aloetic pill, or the compound decoction of aloes.* Where, however, the gastric symptoms are very slight, and the powers of the system much exhausted, active and prolonged purging is injurious. The utmost that is necessary and right, is a dose of the aloetic pill, or decoction, sufficient to move the bowels plentifully once a day.

3. *Narcotics.*—The most valuable medicines in the treatment of puerperal mania, are narcotics. If given at proper times and in proper doses, they often procure nights of better sleep, and days of greater tranquillity. This calmness is most likely to be followed by some clearing up of the disorder of the mind. These remedies produce their salutary effects much oftener in the mania of lying-in women, than in mania occurring in other circumstances; for it is more uniformly a disease of nervous excitement and debility. If the head is hot, the cheek flushed, and the patient thirsty, they ought to be postponed; but if these symptoms have been removed, or are not pre-

* The "Pilulæ Aloës Compositæ," and the "Decoctum Aloës Compositum," of the London Pharmacopœia.

sent, sedatives ought to be given, and the most efficient, first. After many days and nights passed in perpetual wakefulness, it is an urgent object to procure tranquil sleep. For this purpose, twenty minims of the sedative solution of opium may be given at once, and repeated in two hours, if the patient be not asleep. Even a third dose may be given in two hours more, if the two first doses have failed; but the cases in which opium has been most successful, have required at most two full doses. When sleep has once been procured, small doses (such as five or ten minims) should be given, at intervals of six hours. If these small doses procure sleep by night, it is unnecessary to return to the larger doses; but these may be used occasionally when the smaller doses fail. Constipation must be prevented by a daily dose of the compound aloetic pill or decoction; or, if these fail, by the compound extract of colocynth*; which is made more soluble and active by mixing it with one-third of soap. If the sedative solution of opium should produce any of the ill effects which that drug is known occasionally to produce,—such as headach, foul tongue, sickness, and heat of skin,—it should be discontinued, and the milder narcotics tried; of which the best is hyoscyamus mixed with camphor. Five grains of each may be given every six hours; but the night-dose should be doubled. It may be dissolved in an-ounce-and-a-half of camphor-mixture†. When once opiates have attained their object, they should be withdrawn; not suddenly, but gradually; —diminishing the dose; lengthening the interval; watching the effect of this abstraction of the remedy; mending the diet while withdrawing it; and returning to the old doses, if the diminution of them occasion any unfavourable symptom.

4 *Tonics and Stimulants.*—There are cases and times in which medicines which sustain the vital powers of the constitution, are necessary and useful. When there is a total absence of febrile or inflammatory symptoms,—when the face is pale, the skin cool or even cold, and the pulse very weak,—a scruple or half-a-drachm of the carbonate of ammonia, divided into four doses, may be given during the twenty-four hours. The time comes when opiates have been tried, and are no longer necessary, or have failed; the disease threatens to set in for a length of time; and the great object of the physician is to support the patient through a long, wearing, exhausting disease. This is best done by supporting her appetite for food; and in these cases the mineral acids‡ are of essential service. The English physicians most eminent for the treatment of insanity, employ these medicines much, in these circumstances. They may be given alone, or with a light bitter, or even with bark, three times a day.

* The "Extractum Colocynthidis Compositum," of the London Pharmacopœia.

† The "Mistura Camphoræ," of the London Pharmacopœia.

‡ The "mineral acids" are the sulphuric, the nitric, and the muriatic. The following is Dr. Duncan's list of Officinal Acids:—1. Sulphuric. 2. Nitric. 3. Muriatic. 4. Acetic. 5. Citric. 6. Tartaric. 7. Benzoic. 8. Succinic.

The Necessity of Seclusion and Control.—The last rule I have to mention relates to seclusion and control. There can be no doubt that it is, in general, necessary and useful to separate the patient from all those persons who are sources of excitement of any kind. This, however, can be effected only in one of two ways;—either in a separate house, or in a part of a house where the patient has no other associates but her nurses, and persons similarly afflicted with herself. This is the only society she has, except the short and occasional visits of the physician. Thus the power of controlling her, even by force, is placed in the hands, not of enlightened and benevolent persons, but of uneducated menials. I do not know how it can be otherwise, though I wish it could; but I think such a charge ought never to be placed in such hands, without the most vigilant scrutiny into its exercise. There may be cases where, or there may come a time when, some interruption to this solitary life may be advisable. When the disease has lasted long,—when the patient expresses a strong wish to see some near friend,—when she entertains illusions which the sight of some one may efface, the admission of such person is worth a trial. I shall be told that, when patients are mending, or have recovered, the most common cause of relapse is too early an introduction to friends, and too early a return home. When the patient is recovering, or has recovered, I do not recommend these measures. It is when the patient has *not* recovered, and is *not* recovering, that I advise them to be tried. When month after month passes without any amendment, and her mental delusions assume a shape accessible to moral impressions, then it is that I would advise an interview with a friend.*]

CHAPTER VII.

MIXED CASES; HIDROSIS, OR HIDROTIC FEVER.

Among the various diseases to which the puerperal state is liable, there is one of considerable importance in practice. I mean "hidrosis", or "hidrotic fever";—a disease not very common in its occurrence; but which, where it does take place, is in its milder form distressing and obstinate; in its severer varieties of considerable danger; and in its more malignant shape, almost invariably fatal. I have given the disease the name of "hidrotic fever", or "hidrosis" (ἱδρωσις, *idrosis*,—the second syllable long), because, in all its regular varieties, it is (as this name implies†) accompanied with sweats; which form one of its most striking characters.

Period of the Attack.—Hidrosis may begin with shivers, even before parturition has taken place; and this I have observed in one or two

* "Account of some of the most important Diseases of Women". By Robert Gooch, M.D. Pages 105 to 162.

† Derived from ἱδρως, *perspiration*.

instances, where the placenta was lying over the os uteri, and partially detached. More frequently, however, the disease commences after delivery has been accomplished. At any time within the first eight or nine days, the attack may begin; and perhaps even later than this; but it more frequently commences within the first two, three, or four days;—if I may judge from what I have hitherto observed.

The attacks are not confined to those patients only who are delivered at the usual term of gestation; for I have seen it occur, with considerable violence, after premature delivery, as well as after miscarriages of the earlier months; but whether it is more frequent after deliveries in the later months of gestation, facts do not at present enable me to decide.

Symptoms.—The symptoms which usher in, or accompany this disorder, are both numerous and important. I shall speak of them separately, and in the following order:—

Shuddering and Feeling of Coldness.—The disease opens usually, if not always, with a shudder more or less severe; and so far resembles puerperal and other fevers. Sometimes the shudder is slight;—lasting for three or four minutes only, and attracting but very little attention; while, in other cases, the patient may shake as if she were in an ague-fit. In general, this shuddering is accompanied with a sensation of cold, which is occasionally intense; while, in other cases, the feeling of coldness is slight, or perhaps wanting altogether; and I have been told by the attendants, that the patient has exclaimed—"I am so cold!"—and has called for more covering; though the flesh has felt warm to the hand of the nurse.

The shuddering and the feeling of coldness are not always in proportion to each other. Thus, the patient may shake violently, though the sensation of cold is slight; or she may complain much of the cold, without suffering a smart attack of the shudders. As in cases of puerperal fever*, so also in this disease, there is sometimes only one attack; but we may occasionally observe three or four, occurring at uncertain intervals of hours or days. Nay, in the same patient, where the disease continues in its lingering form for a period of several weeks, there may be a great many rigors; and this may, now and then, tend to observe the quotidian† period; although the patient may suffer two or three attacks in the course of a day, at irregular intervals.

Sweats and Heat.—There is more or less disposition, in this disease, to sweats and heats, combined; and this constitutes a very characteristic symptom. These sweats are at first, I think, more fluid; but they afterwards become more clammy; especially towards the close of the disease,—during the last few hours. In some cases we find them to be sparing; while in others, especially in the more malignant varieties, they are surprisingly profuse. But whether they are sparing or copious, fluid or viscid, they are never critical;—

* See Pages 506 to 558.

† From *quotidianus*, "daily".

that is, they do not remove or effectually relieve the disease;—to the great disappointment of the practitioner; and they may, I think, be not inaccurately described as *sweats of distress* in the system.

Changes of the Pulse.—This disease is attended, moreover, with an increased frequency, and other changes of the pulse. Previously, perhaps, under ninety in the minute, it rises to one-hundred-and-thirty, one-hundred-and-forty, one-hundred-and-fifty, or more; and in some, I may say in *many* forms of the disease, it is very variable. At one period of the day, it may be one-hundred-and-forty, or one-hundred-and-fifty in the minute; at another, one-hundred, or one-hundred-and-five. These changes occur in the compass of a very few hours. To this I may add, that the pulse, in many cases, is round, soft, and bounding, till the collapse commences; so that, on the whole, it is very unlike the pulse of puerperal fever, in any thing but its frequency.

Morbid State of the Nervous System.—In hidrotic fever, there is not unfrequently a morbid state of the nervous system; which shows itself in a certain quickness of manner, rapidity of utterance, or a wayward, pettish, or passionate disposition. Sometimes, also, the patient becomes the subject of whimsical impulses, either of a comic or tragic character; so that there is an evident tendency to puerperal mania*; which may ultimately, though not generally, occur. On the other hand, the patient's manner is now and then marked with a sort of forced calmness; and, in some cases, there is no very obvious disorder of the nervous system; for these symptoms are not constant.

Secretion of Milk usually Disturbed.—That the secretion of milk is always suspended or changed in hidrosis, I am not prepared to assert. Indeed, as the disease sometimes commences before delivery, and still more frequently within forty-eight hours after parturition, it is pretty evident that there is no essential connexion between the mammary action and the fever. Nevertheless, I think it will be found that this action is often disturbed. Sometimes, where the disease commences before the ordinary free secretion,—which occurs forty-eight hours after delivery,—not a drop of milk forms in the breast; and this, too, in women who, on former occasions, have produced milk very profusely, and made excellent nurses. In other cases, the secretion of milk is diminished, but not completely arrested.

Abdominal Pains, &c.—In the course of this fever, there is sometimes very little pain; but, in one stage or other, the patient will frequently complain of uneasiness, principally felt in the region of the pelvis; though it may also attack other parts, more especially the epigastrium and chest;—coming and going. In general, these pains are not very severe. Now and then, cases occur in which there is scarcely any pain at all; but in certain cases,—in those, I suspect, in which the inflammation hangs about the uterus,—the suffering of

* See Pages 577 to 590.

the patient is acute; and bears a strong resemblance to inflammatory after-pains.

In hidrotic fever, tympanites and sub-tympanites not unfrequently occur; more especially in the close of the disease. These symptoms, however, are not always observed; and I have attended one or two well-marked and vehement cases, in which, as far as I was able to observe and learn, there seemed to be no abdominal inflation throughout.

Appearances of the Blood.—There is variety in the appearance of the blood; which is sometimes highly inflammatory, and sometimes but obscurely so. My observations, however, have not hitherto been sufficiently numerous and accurate, to enable me to speak at large on this point.

Terminations of the Disease.—There are three principal ways in which this disease usually terminates:—1. Resolution. 2. Collapse. 3. Conversion into some other affection. Sometimes, in the milder form especially, the disease is brought to its close by a gradual retreat of the symptoms; so that, day after day, it gets milder; till the patient ultimately gets well. But in the severer forms of hidrosis,—even those varieties of it which do not appear very formidable at the outset,—there is, I suspect, always a pertinacious tendency to collapse;—the strength sometimes giving way very rapidly (say, in the course of a few hours), as if the patient had been poisoned; while, in other cases, though the system holds out for three, four, five, or six days, yet the powers are at length laid prostrate, and the patient at last sinks. The complete collapse is marked by the usual symptoms;—a pulse of perhaps one-hundred-and-seventeen in the minute, small, and easily stopped by compression; a corpse-like coldness of the hands and feet; breathing more or less laborious, sometimes very much so; and, occasionally, a tympanitic affection of the abdomen.

When the disease terminates in the third mode (if termination it can be called), it is converted into some other affection; and the patient is assailed with puerperal mania, abscess of the breasts, phlegmasia dolens, &c.;—the form and seat of the affection changing; although the nature of it probably remains the same.

Varieties of Hidrosis.—Hidrotic fever may, in the present state of my knowledge respecting it, be divided into seven different varieties:—1. The ultra-malignant. 2. The malignant. 3. The acute. 4. The lingering. 5. The mutable (in which there is an obvious disposition to break out into some other affection). 6. The fugacious. 7. The remittent.

Ultra-Malignant Variety.—The "*ultra-malignant* hidrosis" sometimes, I believe, makes its attack later after delivery; but more generally, as far as I have hitherto had occasion to observe, soon after parturition has taken place;—before the milk can, with probability, be supposed to have any connexion with its occurrence. The patient is seized with a chill more or less violent; the pulse rises suddenly to one-hundred-and-sixty, or more, in the minute; the

perspiration is profuse and clammy; there is, from the very first, a disposition to the failure of the animal heat; and when the physician arrives,—perhaps no long time after the shivers,—the limbs, and it may be the whole body, are disposed to a corpse-like coldness. The strength is prostrate; tympanites and laborious breathing are perhaps already apparent; and death itself may take place within three or four hours from the chill, or even earlier;—the patient giving way as rapidly as if she had taken a vehement poison, or been assailed with malignant cholera *.

In cases of this kind, where the symptoms are so malignantly violent, there seems to be little hope of cure by any known method of medical treatment. Indeed, the patient will most probably be moribund before the practitioner arrives. Ammonia and other stimuli, together with the ordinary remedies of extreme collapse, seem here to be indicated.

Malignant or Second Variety.—In the *second* variety of the disease, or "*malignant* hidrosis," as I would call it, the patient is attacked, as before, with shivers or chills more or less vehement. The pulse is frequent, small, weak, and perhaps one-hundred and-fifty in the minute; the sweats of distress are copious and sometimes very much so; and, when suspended, break out afresh during sleep;—at first with a general warmth of the body, afterwards with coldness. The secretion of the milk is, I suspect, arrested or greatly diminished;—and if the disease exist on the third day of delivery, this secretion perhaps does not appear at all. To this I may add, that there is sometimes a certain wildness of manner; that the abdomen is apt to become tympanitic; and that there may be a complete collapse in the course of twelve or twenty-four hours.

I have seen the disease commence on the fourth day; but I suspect that it generally begins on the first or second day of delivery. Whether or not this is indicative of greater danger, I am not prepared to decide.

In this variety of the disease, as well as the former, I fear there is little to be done; for though less rapid than the "ultra-malignant" fever, this "*malignant* hidrosis" proceeds to its close with great violence and rapidity. Would the rapid production of mercurial action, or early and copious venesection, be of any service here? The efficacy of both may be doubted.

Acute or Third Variety.—In the "acute" or *third* variety of hidrosis, the disease is characterized by its lasting sometimes for several days together; by its fluctuations (that is, its exacerbations and remissions); and by its pulse; which may be frequent, soft, and bounding; sometimes more steady; but sometimes (as in several cases which I have seen) surprisingly variable; so that, in the course of a few hours, it will leap from one-hundred-and-two, to one-hundred-and-sixty in the minute; and range irregularly between the extremes. But I am not prepared to assert, that these fickle changes of the pulse are constant. The sweats are copious; and seem to in-

* From χολη, *bile*; and ρεω, *to flow*.

dicate distress in the system. The body is worn, the strength may suddenly give way; the mind may be either excited, or in a state of forced or morbid calmness;—in both cases looking towards mania. There may be tympanites or sub-tympanites; perhaps more generally the latter. More or less tenderness is frequently felt over the lower part of the abdomen; and over the uterine, or perhaps I ought to say the *ovarian* region.

The milk is disposed to fail; and there is not always pain in the head. In this variety, there is less disposition to a prostration of the strength than in the two preceding;—the patient sometimes escaping the collapse altogether, and gradually recovering. More frequently, however, after irritating and tantalizing our hopes, the disease overpowers our best remedies. The strength fails, sometimes rather suddenly; and the patient dies on the third, fourth, fifth, sixth, seventh, or eighth day;—sometimes, perhaps, later.

The pertinacity, the irregular remission of the disease, the beforementioned variableness of the pulse, and other symptoms, are all very remarkable. In the present state of my knowledge, I should feel strongly inclined in these cases,—nothing peculiar forbidding,—to throw in mercury immediately;—whether by the mouth, the lungs, or inunction. If this remedy should be rejected, then I would recommend palliative measures;—a cool head; warm feet; the support of the mammary secretion; open bowels; flowing liver; cool diet; and, perhaps, a moderate support of the perspiration. I am not prepared to deny the utility of blood-letting, in moderation; but the disease is pertinacious, and not likely to yield to a smart attack of that kind; and, in the present state of my knowledge, I should not feel disposed to press the active use of venesection.

Lingering or Fourth Variety.—The next (or *fourth*) variety of hidrosis which I think it right to notice, may be called "the *lingering.*" Though it differs, in a striking manner, from the "ultra-malignant" variety already characterized, yet, from viewing it in connexion by the help of a succession of intermediate cases, I think these two extremes may (obviously enough) be annexed to each other; so as to show that they are, at bottom, essentially the same.

Hidrosis may sometimes last for six or eight weeks; though it is not always so long protracted. It invariably shows a disposition to lurk about the patient; and seems, as it were, loath to take leave of her at last. The disease usually commences with chills; which may be confined to the back, or diffused over the surface of the body. They are not always severe; nor perhaps, in all cases, observed by the patient. One chill only may occur; or there may be several in the course of the night,—say twenty or thirty,—followed by a flush of heat. The pulse may rise to one-hundred-and-fifty in the minute; especially if the case tend towards danger; but, more frequently, it ranges between one-hundred-and-ten and one-hundred-and-twenty-five. The beat is more generally round and soft, than small and thready; more especially when it is not very frequent. Sometimes, as in the third variety, it is very variable. The

warmth of the body is increased, as in former varieties; and, throughout the disease, there is a disposition to the breaking forth of a breathing sweat; so that, not unfrequently, the physician finds his patient in this state of diaphoresis, perhaps after she has been so for some days. Though not quite healthy, still the patient's manner, on the whole, reminds one of health. Perhaps she turns from the back to the side, when we speak to her; and exhibits other marks of strength. But, in some well marked cases, the sensorium is disturbed; and she complains of strange sensations in the head, and of those irregular impulses of the mind referred to in the general history of the disease*. She becomes excited and irritable;—so as to lead us to think of puerperal mania. Wild dreams and startings are not uncommon during sleep.

The centre of the body is more or less distressed. There may be vehement after-pains; great tenderness of the hypogastrium;—perhaps more towards the side than the centre; so that incipient phlegmasia dolens is suspected; and, perhaps, the patient tells us that she formerly laboured under that disease.

The degree of tenderness varies; being sometimes slight, and occasionally very severe. Blood drawn at this time, may exhibit a buff. All these symptoms occur more especially, I think, during the first days.

Throughout the progress of "lingering" hidrosis, the patient is liable to be assailed with those chills and heats with which the disease opens. These sometimes return at irregular intervals of a few hours. In other cases, they observe, for a time, the quotidian period; so that, for several evenings in succession (say five or six), she may be attacked with creeping sensations, and slight chills; followed by febricula, restlessness, and a night without sleep. The whole disease will sometimes begin as early as the third day.

The treatment of this variety of the disease, is purely palliative. All violent measures ought, I conceive, to be rejected. The disease is pretty evidently allied to phlegmasia dolens†. Country air bids fair to be of service.

Mutable or Fifth Variety.—There is yet a *fifth* variety of hidrosis; which I would call "the *mutable*", because it frequently shows a disposition to change into some other affection, apparently different. This difference, however, is rather apparent than real; for, I suppose, the nature of the disease always remains the same. "Mutable" hidrosis is, I suspect, generally connected with a diminshed flow of the lochia; or with a cessation of the mammary secretion in women who, in ordinary circumstances, were disposed to produce milk copiously. At first, this disease appears very similar to "lingering" hidrosis, before described‡; but it soon shows a disposition to break out into other affections; of which the principal that have fallen under my notice, are puerperal mania, violent palpitation of the heart, abdominal pains (especially about the pelvis), phlegmasia

* See Page 592. † See Pages 558 to 567. ‡ See Page 595.

dolens, and abscess of the mammæ. The disease, in its original together with its secondary form, is protracted for weeks or months together.

Of course, the treatment of this affection must vary according to the shape that it assumes. In the first part of the attack,—I mean when it resembles "lingering" hidrosis,—the same remedies which are found useful in that variety of disease, will prove serviceable here. But when the disease changes,—becoming converted into the secondary affection above enumerated,—of course the treatment must vary accordingly. Of this treatment I say but little; because I feel that I have nothing to offer, which will not suggest itself to every one acquainted with the general principles of medicine.

Fugacious or Sixth Variety.—There is another form of disease which must, I suspect, be referred to the hidrotic affection; and which may be called "*fugacious* * hidrosis." It may commence as late as the seventh day of delivery, or even later, with rigor, followed by frequency of the pulse; which is one-hundred-and-twenty or more in the minute;—the mind and the nerves not being much excited. This frequency of the pulse may continue two or three days; it then ceases; and all the other symptoms subside;—the only alarming indication throughout, being the chills and the acceleration of the circulation. There are no obvious signs of abdominal inflammation; nor is there, I believe, always much sweat. The latter consideration leads me to doubt whether this may be regarded as belonging to the hidrotic affection. Future observations must decide this point. A case of this kind which fell under my notice, was marked with the following circumstances. The child died in utero. At birth, it was found to be of a brown colour; with exfoliating † cuticle. The cord was brown, soft, and (as I was told) offensive. In this case, as I was informed by the practitioner, there was a flooding to the amount of one or two pints, before the birth of the placenta, which was removed by peeling. The secretion of milk was not kept up; as there was no child to take the breast. Till the seventh day, the patient was doing pretty well; though there was an offensive discharge from the vagina;—in other words, offensive lochia. Before the attack on the seventh day, there had been a good deal of uterine pain; and a coagulum as large as a walnut was expelled. The expulsory pain was considerable. This patient soon recovered. Diaphoretics, relaxation of the bowels, soothing remedies, and time, perfected the cure.

Seventh Variety.—There is a *seventh* variety of hidrosis;—the "intermittent" or "remittent". I suspect that this variety of the disease is, in its nature, different from genuine hidrosis; but am not yet determined on the point. Sometimes there is a single proxysm only;—consisting of a chill, a heat, and a sweat; and probably identical with "the weid," or "ephemera," so well described by Burns‡. In other cases, we have repeated paroxysms occurring at irregular intervals, two or three times in the course of the day; and this for days

* From *fugax, fugacis,* "fleeting". † From *exfolio,* "to cast the leaf".
‡ Dr. Burns's "Principles of Midwifery"; Ninth Edition; Page 572.

together; or there may be repeated attacks which observe the quotidian period, and regularly commence with a chill. Perhaps the two last variations here mentioned (I mean the *quotidian* and the *irregular*) may be referred to a form of the disease already considered; namely, "*lingering* hidrosis*."

Miscellaneous Observations.—To these remarks on the different varieties of hidrotic fever, it may be right to subjoin a few miscellaneous observations. In all the several varieties, the patients are, I suspect, liable to be attacked with retching and vomiting; with bilious diarrhœa; and with pale, offensive, and sometimes suspended lochia. The tongue is generally, perhaps always, more or less crusted. Sometimes the incrustation is thin, sometimes thick; and in both cases, is commonly white, and unlike the tongue in puerperal fever. As before observed, the intestines are often tympanitic or sub-tympanitic. The mind and the nerves are generally more or less disturbed.

Causes of Hidrosis.—I now proceed to subjoin a few remarks respecting the causes of this disease. First, it may be observed that, although it sometimes commences before the birth of the child, delivery seems to be the great disposing cause. It occurs, not only after delivery at the full period, but also after deliveries in the earlier months, or even weeks, of gestation.

The disease, too, appears to be connected with the failure of the mammary secretion. I do not say that it cannot occur independently of such connexion; but the mammary action, in many cases, seems to be mixed up with it. It generally commences in the earlier days after parturition; about the time when the secretion of milk should begin. I have seen one or two cases in which the disease was violent, and not a drop of milk could be obtained from the breasts, at any time when I examined; although the patient, after former deliveries, had a profuse secretion.

Flooding, whether before or after delivery, has a tendency to bring on hidrotic fever;—at least, I think so. Not but that I have repeatedly seen the disease come on after easy deliveries *without* flooding; but, in my experience, hæmorrhage from the uterus has so frequently preceded the attack, that I feel a strong suspicion that it operates as an exciting cause.

The induction of premature delivery, by detaching or rupturing the membranes,—for the latter operation (rupture) generally detaches them more or less,—has, I suspect, a tendency to produce this disease. Sometimes this cause seems to co-operate with the former;—the premature delivery induced by the operation being accompanied by flooding.

The disease seems also to be excited by the rude detachment of the secundines;—whether this be performed after delivery at the full term, or after miscarriages. A still-born child, or (I ought rather to say) a dead fœtus in utero, perhaps disposes to this disease; and I have suspected it to arise from the lodgment of putrescent substances

* See Pages 595 and 596.

in the uterus; as in cases where a portion of the placenta has been left behind. A former attack of phlegmasia dolens (after a preceding delivery) may, I think, be looked upon as a disposing cause to the "lingering" and "mutable" varieties of the disease*. One lady, attacked with hidrosis, was of a remarkably even temper; while another was naturally violent.

Mortification of the vagina, or perhaps of the omentum, occurring in very corpulent women, after laborious labours, may occasion symptoms a little like "malignant" hidrosis†. But such cases are, I suspect, essentially different from hidrosis, properly so called.

As to the more immediate cause of hidrotic fever, my mind is in doubt. Some varieties of it at least, especially the "lingering" and the "mutable"*, appear to arise from the inflammation of the veins of the uterus;—so well investigated by Dr. Robert Lee‡. Several of the phenomena may, I think, be explained upon this hypothesis; and that correspondence between the two affections is the more remarkable, because the supposition has in no way whatever influenced the characters which I have given of the disease; for they had been all marked out, more or less distinctly, in my adversaria§, before I was acquainted with Dr. Lee's valuable labours in this part of morbid anatomy.

Diagnosis of Hidrosis.—Hidrosis may be distinguished from typhus fever, by its occurrence in connexion with delivery; by its characteristic sweats, more or less copious, and never critical; by its running its course in many instances so rapidly,—say three or four days, or three or four hours,—as to prove its malignant nature; and by the tongue and mouth not exhibiting the black crusts, or aphthous redness, which usually characterize malignant typhus. To this may be added, that the general aspect of the disease is entirely different.

Hidrotic fever may be distinguished from puerperal fever by the variableness of the pulse, which is remarkably observable in some hidrotic cases; as well as by the bounding, and softness, and roundness which is sometimes observed;—by the obscurity of the abdominal symptoms; which are certainly not prominent, or (perhaps) essential;—by the characteristic sweats;—perhaps I may add, by the general warmth of the body;—by the failure or total suppression of the milk;—by the mildness of the cases;—by the lingering duration of this disease; which, even in the acuter form, may last five or six days, and then prove fatal;—in some varieties of hidrosis, by the first attack of the disease not commencing till the fifth or sixth day of delivery;—by the formation of a thick white crust on the tongue;—and, in the "mutable" variety‖, by the disposition to the attack of other diseases already enumerated.

* See Pages 595 and 596.

† See Page 594.

‡ Dr. Robert Lee on some of the most important Diseases of Women; Page 48.

§ A note-book;—from "*adversâ* paginâ scripta" ("things written on the opposite pages").

‖ See Page 596

Prognosis of Hidrosis.—The prognosis of hidrosis is, on the whole, decidedly unfavourable. The disease is of an obstinate, intractable nature; and, even in the milder forms of the acuter varieties, is not unfrequently fatal. Indeed, a very frequent pulse after delivery, is, at all times, an unfavourable symptom.

We must not suffer ourselves to be led away with an idea that the disease is yielding, because the abdomen remains flat, or the skin warm and perspiring; or because the pulse is very variable;—leaping about in the sudden manner before stated. The particular prognosis may be drawn from the history of the disease already given. The two first varieties* are highly dangerous; the third variety† not unfrequently fatal; but the four last varieties‡ often end in recovery. Even the "lingering" variety, though on the whole decidedly mild, is at best a very obstinate disease;—harrassing the physician, and wearying the patient.

Morbid Appearance.—I am not prepared, at present, to give a good account of the morbid appearances observed after death; but this defect may, I trust, be easily supplied hereafter.

CHAPTER VIII.

SLIGHT FEBRILE AFFECTIONS FROM MIXED CAUSES.

SECTION 1.—EPHEMERAL FEVER OR WEID, AND REMITTENT FEVER.

[The increased sensibility of the system, as well as the delicacy of particular organs, after delivery, render women, at that time, peculiarly liable to febrile affections. Some of these seem to arise from the general susceptibility of the whole nervous system; others from local affection of the breasts, the bowels, or the uterus. The first of these symptomatic fevers is, in general, pretty easily recognised by the sensibility of the breast; the others, particularly that connected with the state of the womb, are often more ambiguous;—the local symptoms being, in many cases, insidious.

Ephemera, or weid (as it has been called), is a fever usually of short duration;—the paroxysm being generally completed within twenty-four hours, and always within forty-eight; for if it continue longer, it becomes a fever of a different description. It proceeds from great susceptibility of the nervous system; which, in consequence of slight exposure to cold, mental agitation, or some local

* The "ultra-malignant" and "malignant". See Pages 593 and 594.
† The "acute". See Page 594.
‡ The "lingering", the "mutable", the "fugacious", and the "remittent". See Pages 595 to 597.

cause, excites a universal disorder of the frame. It consists of a cold, a hot, and a sweating stage; but if care be not taken, the paroxysm is apt to return; and either we have a distinct intermitting fever established; or sometimes, from the co-operation of additional causes, a continued, and very troublesome fever, is produced.

Causes.—Disease may take place in two ways;—by the application of causes directly to the part affected, and which act on the *extremities* of its nerves; or, by causes acting immediately on the *origins* of its nerves, and thus on their extremities. Hence, local inflammation may be produced in two ways;—by direct application of causes to the part, or by the state of the origin of its nerves. An affection of the extremities of the nerves, may either excite or render more inactive their origins (according to circumstances); and either state is apt to extend itself farther;—to neighbouring portions of the brain, or to the medulla spinalis; and thus to involve the origins of nerves going in a different direction, and to distant organs; which then come to be disordered. An extensive chain of evil may thus be produced. An affection of the extremities of the uterine nerves, may thus influence those going to the stomach or intestines; and *vice versâ*; and slight disease in one of these organs, may induce fatal disease in the others. The affection of the *origin* of a particular nerve, in consequence of irritation or excitement of its *extremity*, may also react on that extremity, and increase the disease there. Further, as it is probable that different portions of the same trunks of nerves, and assuredly different individual nerves, have distinct destinations in an organ,—as, for instance, producing sensation, secretion, muscular contraction, changes of the circulation, &c,—we may have various modifications of disease produced; according to the nervous fibrillæ principally affected. Another effect of the excitement of the *extremities* on their *origins*, is not the induction of marked disease, in any one distinct organ; but of general disorder of the system, in the form of fever. Applying this view to the puerperal state, I would go on to say, that one of the simplest effects is ephemeral fever; arising, evidently, from excitement of those nerves which influence the heart, and the secretion of heat. It may, doubtless, be produced by some causes acting directly on the *origins* of those nerves; and which may, or may not, depend on the state of the uterus. But, in many instances, it is caused by the condition of the *extremities* of the uterine nerves; in the same way as temporary fever is caused, in children, by irritation of the gastric or intestinal nerves. The wonder is, not that the uterus after delivery should have this effect, but rather that it should not always produce it. One single attack may be produced; or, when the effect on the spinal cord or sympathetic nerve has been greater, the consequence is a prolonged fever of the remittent kind; which may last without any prominent local symptom being induced; though, doubtless, very apt to end in more marked disease of some important part. But, sometimes, from causes we cannot always explain,—whether from a difference in the original irritation of the nervous extremities of the uterine system, or from different integral

parts of the nerves being affected at their origins,—we have various and formidable local affections superinduced; such as inflammation of the abdominal cavity, as in peritonitis; or of the extremity, as in swelled leg, &c.

The production of a sudden sensation of cold, in any part of the system, is very apt to induce ephemera; and if the sensation have been long continued, the effect is likely to continue long. This disease generally makes its attack within a week after delivery; but it may come on at any time during lactation; or a complaint, essentially the same, may occur in any female. It may be occasioned by irregularities of diet, or irritation of the visceral nerves; arising either from the state of the bowels, or from some condition of the uterus or its appendages not acute enough to produce pain, or any permanent local symptom; or from causes acting directly on the base of the brain, or on the medulla spinalis. No cause is more frequent than the application of cold to the surface, so as to produce sensation. Some, when nursing, cannot touch any thing cold, without having an attack. Fatigue, exhaustion, passions of the mind, or want of rest, if not exciting causes, give a strong predisposition.

Symptoms.—The attack is sometimes directly ushered in by a fit of palpitation; or is preceded by a frightful dream; from which the patient awakes in a shivering fit, with a rapid pulse; or the chill comes on, accompanied with pain in the back and head, after some slight alarm, or injudicious exposure to cold. When the cold stage has continued for some time, the hot one commences; and this ends in a profuse perspiration; which either carries off the fever completely, or procures a great remission of the symptoms. In the first two stages, the head is usually pained, often intensely, especially over the eyes. The pulse is extremely rapid, until the third stage have continued for some time. It is also subject to very great irregularities; and is very changeable in its degree of frequency. The thirst is considerable; the tongue furred; the stomach generally filled with flatus; and the bowels confined. The mind is often weakened; and the patient is much afraid of dying. In some instances, she is slightly delirious; in others, she has shifting pains in the abdomen. If the paroxysm be repeated, the secretion of milk is diminished.

The paroxysm continues for some hours; and may then completely go off, not to return again. But in other cases it recurs daily, for a length of time; always preceded by a cold fit, and often with a pain in the back; and sometimes the fit begins, regularly, one or two hours sooner, every succeeding day. It is more favourable when the fit is postponed. In other cases, after one or two distinct paroxysms, the fever assumes a more continued form; or the exacerbations are not preceded by distinct chills. When this disease is not combined with any local injury, it is less dangerous than most fevers occurring in childbed; but if it recur very frequently, and be attended with much debility, the danger increases in proportion to the continuance of the disease.

Delicate women, and those who have suffered much in parturition,

are chiefly affected with this disease; but all are more or less liable to it, especially if the bowels be neglected.

Diagnosis.—It is distinguished from symptomatic fever, arising from local inflammation, by the absence of the particular pain, and other specific symptoms, which attend these fevers; while, in them, the pulse is usually, at first, not so rapid as in the ephemeral fever.

Treatment.—In the cold stage, we give small quantities of warm fluid, and apply a bladder, or flat case, filled with warm water, to the stomach; or, on the commencement of the chilliness, a warm flannel to the back. Having hastened on the hot stage, we lessen, very cautiously, the number of the bed-clothes; and give saline mixture with diluents, to bring on the sweating stage. When this is done, we are careful not to encourage perspiration too much; as it increases the weakness, or brings out a miliary eruption, and renders the disease more obstinate. On the other hand, if the perspiration be too soon checked, the fever continues, or recurs more severely. A gentle sweat may be kept up for five or six hours, by tepid fluids. Then we refrain from them; and when the process is over, the patient is to be cautiously shifted;—the clothes being previously warmed. After the fit, if the patient be exhausted, a little wine may be given. In the whole paroxysm, we must watch against the sudden application of cold; which, in the last two stages, renews the shivering. If there be any local pain, or where the pulse is very frequent and full, and there is no contra-indication, a little blood should be taken away. In the first case it is necessary; in the second if the patient be strong, it is always safe, and often useful in preventing a repetition of the attack; especially if the bowels be immediately opened. In all cases it is necessary to give a purgative, as soon as the stomach will bear it; for it is essential that the bowels should be freely opened. If the tongue be foul, and the patient very sick, or inclined to vomit, we may, with advantage,—even during the cold stage,—give some warm chamomile-tea, or five grains of ipecacuanha, to excite gentle vomiting. In these circumstances, if the chilliness continue, this produces heat; if it have gone off, it causes perspiration. In the act of vomiting, the patient must not be exposed to cold; and should take such a position, as shall not cause any muscle to be strained in the effort.

When the fits recur, and no local cause can be detected, we may sometimes check them by giving an opiate, with æther, just before the expected accession; and by applying heat to the back and stomach, the moment the chilliness is felt; or we rub the whole back well, daily, with a stimulating embrocation*; such as camphor dissolved in the oil of rosemary†. It is of great consequence to keep the bowels open, by such medicine as agrees best with the patient; for often the paroxysms are repeated, or continued fever is produced,

* From *εμβρεχω, to soak in.*

† From *rosa,* "a rose"; and *σμυρνα, myrrh*;—so named on account of its odour.

from intestinal irritation alone. For a time, no particular appearance may be observed; but soon hard and offensive stools are obtained; and from that day improvement begins. Tonic medicines,—such as infusion of bark, sulphuric* acid, or sulphate of quinine,—are afterwards useful; and, in some cases, valerian may be joined to these with advantage. Sleep is to be procured by opiates, if they do not produce confusion of mind. During the whole time, the strength must be supported by suitable diet, with a little wine; and, as seen as possible, the patient should be carried to the country. If the fits return often, it is generally necessary to give up nursing. In very protracted cases, the disease has been mitigated by sponging with cold water and vinegar, after the cold stage had gone quite off; and that without regard to the presence or absence of perspiration. Any temporary chill, thus produced, is removed by a little warm wine-and-water. This is more especially useful in the hectic form of the disease.

Sometimes co-existent with Local Affections.—This fever,—whether consisting only of one paroxysm, or of many, or becoming continued,—is always dependent on a local cause;—sometimes the mere production of the sensation of cold, at a particular part; sometimes a deranged state of the bowels, &c. But, in many other cases,—more troublesome, if not more serious,—local disease may be the cause. At first, this may be so very obscure as to escape detection; but if the fever be prolonged, it becomes more manifest. Very often the breast becomes inflamed; and nurses say, that the fever has gone to the breast; whereas the affection of the breast, though for a time obscure, was the original cause of the fever. We ought, also, carefully to attend to the uterine region; for this fever often proceeds from slight inflammation of the ovarium, or of the round ligament, or of the uterus itself, or of its veins, or of the lining of the pelvis, or from retention of a portion of placenta. In prolonged cases, the coxal† nerves sometimes become very painful; or even paralysis of the extremities may take place. Very protracted cases will always, I believe, be found to be of the nature of hectic; and dependent on a local disease, attended with suppuration; especially of the veins of the uterine system. Other cases, of shorter duration, are marked by pervigilium‡, and a tendency to puerperal delirium, or to serious affections of the brain; or they may be considered as the intestinal fever, soon to be noticed. A fatal termination, in acute cases, is usually preceded by coma, or by vomiting of dark-coloured matter. This is most apt to take place if the origins of the nerves have been affected.

Occasionally, suppuration takes place within the pelvis; particularly after the application of cold, or from allowing the fire in the apartment to go out. This is not always preceded by much pain;

* Sulphur takes its name from *sal*, "salt"; and πυρ, *fire*;—alluding to its great combustibility.

† From *coxa*, "the hip."

‡ Wakefulness.

and its course is often attended with little or none, till it has advanced far beyond any control. Even when the uterus has been implicated, so as to form adhesions to the sides of the pubis,—as appears after death,—there may be no pain felt, on pressing it from the vagina. The fever, in this case, is long continued, and of the hectic kind; and the disease is of the nature of lumbar abscess. The matter points, at last, about the groin or buttock; and must be let out. The treatment, in such fevers, must be varied;—according to the nature of the local cause.

SECTION 2.—MILK-FEVER.

The secretion of the milk is usually ushered in with a slight degree of fever; or, at least, by frequency of the pulse. Sometimes, indeed, it is attended with a smart febrile fit;—preceded by shivering, and going off with perspiration. This attack, if properly managed, seldom continues for twenty-four hours; and, during this time, the breasts are full, hard, and painful; which circumstance distinguishes this from more dangerous fevers. Sometimes, during the hot fit, there is a slight delirium. A smart purge generally cures this disease; and is often used, in plethoric habits, on the third day after delivery, to prevent it. Mild diaphoretics, during the hot stage, are also proper. The early application of the child to the breast, is a means of prevention.

SECTION 3.—MILIARY FEVER.

Symptoms.—Miliary* fever begins with chilliness, sickness, languor, sometimes amounting to syncope, and frequency of pulse, with heat of the skin. There is, also, a sense of pricking or itching on the surface; and sometimes the extremities are numbed. The febrile symptoms usually continue for some time before the eruption appears; often for four or six days. Previously to the eruption, the patient feels very much oppressed; and has a great weight about the chest. The spirits are low; and a sour-smelling perspiration takes place, in a profuse degree. The eyes are occasionally dull and watery, or inflamed; and the patient has ringing in the ears. The tongue is foul, and its edge red;—as in scarlatina†. Aphthæ sometimes appear in the throat. The lochial discharge is diminished or suppressed. Before the eruption is seen, the skin feels rough; like the "cutis anserina." Presently, a number of small red pustules like millet-seeds appear; and are felt, with the finger, to be prominent. In a few hours, small vesicles form on their tops. These vesicles contain a fluid, straw-coloured at first, and afterwards white or yellow. In two or three days, small scabs form; and fall off like scales. The pustules are generally distinct; but sometimes they form clusters. They appear, first, about the forehead, neck, and breast; and then spread to the trunk and extremities; but very

* From *milium*, "millet";—so called on account of the resemblance of the vesicles to millet-seeds.

† From the Italian *scarlatto*, "deep red."

rarely affect the face. Different crops of pustules may come out, in the same fever. Burserius, and others, divide the pustules into several varieties; but most writers are satisfied with two, taken from the general appearance;—the red and the white. The first variety is attended with a milder disease, than the second.

Causes.—This disease is peculiarly apt to attack those who are weakened by fatigue, evacuations, or other causes; and hence we can easily explain why women in childbed should be subject to it.

Some have considered the eruption as altogether dependent on the perspiration. Others consider it as, in many cases, idiopathic; and both, perhaps, at times are right. We can consider the disease as idiopathic only, when the eruption mitigates the symptoms; when the fever goes off as the pustules arrive at maturity; and when there is no other puerperal disease present, acting as an exciting cause. It does not appear to be contagious, unless connected with a fever which is so of itself; such as typhus.

Miliary eruption also occurs, during childbed, as a symptom connected with other puerperal diseases. It often accompanies milk-fever*, or protracted weid†, when the perspiration is injudiciously encouraged; and this is by far the most frequent form under which the "febris miliaris" appears. It never alleviates the symptoms. It may also accompany fevers connected with a morbid state of the peritoneum or the brain, which generally prove fatal;—death being preceded by vomiting of dark-coloured fluid. Women much reduced, also, have partial miliary eruptions, generally of the white kind, without fever. These require no particular treatment.

Treatment.—Whether the miliary fever be idiopathic, or symptomatic, the treatment is the same. We endeavour, at first, to check or remove the fever. When profuse perspiration, with or without eruption, takes place, we must cautiously abate it, by prudently lessening the quantity of bed-clothes, or making the bed-room cooler. The rest of the treatment consists, chiefly, in removing irritation from the intestines, by the use of laxatives; and in supporting the strength by light nourishing diet; while we use tonics;—such as sulphuric acid or bark. The latter tend, also, to abate the perspiration; which is scarcely ever to be encouraged. The linen should be frequently changed. When the eruption suddenly recedes, we have been advised to renew the perspiration, to apply blisters, and to give musk and cordials;—especially when convulsions are threatened. This dangerous retrocession, however, I have not met with; and apprehend that it very rarely occurs‡.]

* Dr. Burns's "Principles of Midwifery"; Ninth Edition; Pages 572 to 579.
† See Page 605.
‡ See Page 600.

CHAPTER IX.

AFTER-PAINS.

Ordinary After-Pains.—After delivery of the first child, women rarely suffer much inconvenience from after-pains; but when they have borne two or more children, those pains are apt to harass. For a day or two, they have pains not unlike the pains of delivery, and produced by the same cause; namely, the contraction of the muscular fibres of the womb; and these pains are aggravated by concretions in the uterine cavity, by retentions of the placenta, by the application of the infant to the breast, and by the administration of warm drinks. In ordinary after-pains, you will find that opium is an effectual and valuable remedy; and it is my own custom,—as well as that, I believe, of most accoucheurs,—to prescribe from twenty-five to thirty drops of the tincture of opium, with an ounce of camphor-mixture, and a little simple syrup. Of these draughts, I order two;—one to be taken an hour after I quit the house, should pain urge; the other to be administered an hour after the former, should a first dose not prove sufficiently anodyne.

Sub-Inflammatory After-Pains.—When puerperal fever is prevalent,—and, perhaps, at other times,—you will meet with a sort of sub-inflammatory after-pain; under which the suffering is, on the whole, very severe. In cases of this kind, when you revisit the patient, the nurse perhaps alarms you, by saying that her mistress has suffered greatly in the abdomen; and you go to the bed-side expecting puerperal fever; but you have the happiness to find a pulse not exceeding one-hundred or one-hundred-and-ten in the minute. Examining the case more minutely, you discover that the uterus is hard under the touch; and there is, too, a sort of tenderness which may be observed when it is compressed. Nevertheless, you cannot learn that there have been any chills; nor (as before observed) do you find cause for apprehension, in the frequency of the beat of the heart. These cases appear to constitute a subdued form of puerperal fever; prone to break out into the more flagrant symptoms of inflammation; and they ought, therefore, during the first few days, to be watched with solicitous care; and that more especially if puerperal fever be epidemic. From ten to twenty leeches may be applied above the symphysis pubis;—three poultices (each to be left on the part for two hours) being afterward laid over the leech-bites in succession;—so as to keep the orifices bleeding. Fomentation of the abdomen, for hours together, may be useful in these cases; together with action of the bowels four times daily; and, in the more pressing cases, venesection. After the use of antiphologistics, opium may be employed, as in the former cases; and it is but rarely that it can be necessary to *begin* with anodynes; though I see no objection to their employment simultaneously with other remedies.

Spasmodic After-Pains.—Where there are no inflammatory symp-

toms, a third variety of the after-pains may occur; under which, for two or three days together, the patient suffers so severely, that, perhaps, for ever afterwards, she looks forward to the after-pains with still greater apprehension than to the pains of labour itself. In some cases, this highly severe after-pain is occasioned by something in the uterus;—a portion of the placenta, or a concretion of blood, for example; and the severe pain is followed, perhaps, by the expulsion of a solid mass, as large as the closed hand. In other cases, however,—and I have seen one among my own relatives,—these severe pains occur without any distention to account for them.

If the patient want fortitude to wait till the disease ceases spontaneously, you may apply leeches, and give opium in operative quantities;—the bowels having been previously cleared with salts-and-senna. The doses of opium must vary in different cases; but, I suppose, the first may range, on an average, between sixty and eighty drops;—smaller quantities, of twenty or thirty drops, being afterwards administered, according to the effect produced. Do not heedlessly have recourse to these very active practices; in most cases it is, perhaps, better that the disease should subside of itself.

Diagnosis.—In practice, it is of vast importance to distinguish mere after-pains from those pains which are of inflammatory nature; —whether they arise from inflammation of the ovary, the uterus, or of any other part; nor is the diagnosis difficult. If inflammation attend, there is a chill, dry heat, tenderness, and (above all) an ominous pulse of one-hundred-and-twenty, one-hundred-and-thirty, or one-hundred-and-forty, in the minute; but in pure after-pains, the pulse is below one-hundred, and the chills and heats are not observed.

From uterine pains we must also distinguish the pains which arise from spasms of other parts;—of the bladder, or the bowels, for example;—not to mention those of the ureters and gall-ducts, which are of rare occurrence.

Spasms of the Abdominal Viscera.—Over-distention of the bladder may give rise to violent spasms; always accompanied, I believe, with much frequency of the pulse. A large hard tumour in the uterine region, and the introduction of a catheter into the bladder, are the best diagnostics. Spasm of the bowels is known by flatulence, tormina, and pains unlike (in kind) the after-pains; and, moreover, not accompanied with expulsion of solid blood, or other substances, from the cavity of the uterus. In fine, in cases of after-pain, the seat of the pain (which is the same as that of incipient delivery; namely, the back, hips, and thighs); the kind of pain (similar to the cutting grinding, and sawing pain of parturition); the eruption of the lochia; the feeling as if something were expelled from the uterus, or the actual expulsion of a large concretion; and the increase of the pain occasioned by the application of the child to the breast;—these are some of the best diagnostics I know; and, in general, they will enable us to distinguish these after-pains without difficulty.

CHAPTER X.

DISTURBANCE OF THE LOCHIAL DISCHARGE.

After parturition has taken place, and the placenta has been removed, women are liable to a red discharge from the uterus; —"the lochia", as it is called; and supposed to be of a purifying nature; but, in reality, consisting of little more than blood which oozes from the orifices laid open by the separation of the placenta. Consisting, at first, of deep red blood, this discharge afterwards acquires a greenish colour; and is denominated "the green water"; when the odour is said to be unpleasing. Subsequently to this, it becomes whiter and more transparent; and afterwards ceases altogether. The discharge varies exceedingly in quantity; being three times as abundant in one woman as in another; but both patients recover, notwithstanding, with equal facility or difficulty. Much variety, moreover, is observed in the duration of the discharge; as it may last for hours only, or days, or for two or more weeks. To its average duration I have paid little attention; but I suppose it may be ten or twelve days.

Excessive Lochial Discharge.—In modern practice, much attention is not paid to the lochia; though our predecessors, fond of humoral pathology, professed to study this discharge with a great deal of attention; and certainly it ought not to be overlooked. Although the discharge from the uterus may be more abundant than ordinary, yet if the health suffer but little in consequence, quietude and patience are all that the case appears to require. Cough is not unfrequently the cause of overflow; and almond emulsion and paregoric elixir seem to be the best palliatives. A piece of placenta retained may augment the flow of the lochia. Vomiting, offensive discharge, and protracted after-pains, are the principal presumptive symptoms indicating the accident; which is to be ascertained with certainty only by examination; when the retained substance may be felt. In those cases, removal is the best remedy; but, unless the symptoms are very urgent, it is better to refrain from manual operations. Left to its own efforts, the uterus will, perhaps, more safely clear itself.

Suppression of the Lochia.—On visiting the patient, you sometimes learn that this discharge is suppressed altogether;—an accident which ought always to attract your attention. If you find, on examination, that there is no increase of the frequency of the pulse, and that all other symptoms are favourable, then you need not alarm yourselves about the suppression; which is more especially apt to occur if a woman have already lost large quantities. But suppressed lochia may arise from inflammation of the womb;—an accident which may be known by cold along the spine; by the roundness, hardness, and tenderness of the uterus, which is easily felt through the abdominal coverings; and, above all, by the heat of the skin, and

the frequency of the pulse; which rises to one-hundred-and-twenty, one-hundred-and-thirty, or more, in the minute. Suppression of the lochia, too, may result from closure of the mouth and neck of the womb by a clot;—the blood collecting within, and giving rise to enlargement, induration, and pain about the uterus;—all the symptoms giving way after a severe after-pain, under which the concreted blood is expelled.

CHAPTER XI.

LACERATION OF THE PERINÆUM.

In the close of delivery, women are liable to lacerations of the perinæum; occasioning, when extensive, much distress to the patient. Of these, therefore, we will next treat.

Different Degrees of Laceration.—The perinæum may be lacerated in different ways. It may be torn to the extent of an inch only; when it is a matter of little importance. Or it may be laid open from one end to the other, into the extremity of the rectum;—the sphincter ani being lacerated too; so that the part loses its retentive power. Or, it may be, that the perinæum is perforated;—the fœtal head passing through the aperture thus formed. Or, lastly, with tremendous disruption, the head of the child may be forced through the orifice of the rectum;—an accident of which I have myself known one instance. Of these various lacerations of the perinæum, or the parts about it, the most frequent is that in which the perinæum is torn from one extremity to the other. This laceration of the perinæum may be produced variously;—sometimes by instruments, and the rude abstraction of the head; sometimes by rough attempts to introduce the hand of the accoucheur; and sometimes by the mere pressure of the head;—the practitioner having, perhaps, neglected to guard the perinæum; or the perinæum being guarded with the nicest care, but the head forcibly and unexpectedly making its egress from the pelvis, perhaps during some start of agony; for it is not always that laceration of the perinæum implies either ignorance or carelessness on the part of the practitioner.

General Plan of Treatment.—When the injury has taken place, if it is merely a slight laceration, keep the parts clean, and it will heal of itself;—the patient, it may be, never suspecting what has happened. If the laceration be more extensive,—reaching through the sphincter,—miserable consequences ensue;—the patient becoming, for a time, incapable of retaining the contents of the bowels. It is, however, a satisfaction to know that, in the course of months, the parts harden round the orifice of the laceration; and, in consequence of this hardening,—unless there be diarrhœa, or extraordinary action of the rectum,—the fæces may be retained; though not without

uncertainty. Moreover, where this accident occurs, sexual intercourse suffers; and the uterus is very apt to bear down beyond the external parts. Extensive laceration, therefore, is looked upon as a very great misfortune; and not without reason. Where a laceration of this kind has occurred, if there should be a copious discharge of blood,—an accident, however, which I never myself have seen,—ligatures, cold, and pressure, would prove the most effective remedies. This accomplished, it would next be desirable to clean, as much as might be, the surface of the sore; which is ragged, broad, and sloughy. Oil-of-turpentine (duly diluted), tincture of myrrh, and other detergents, may be found useful for this purpose; but the question is purely surgical; and, for information on these points, I must refer you to professors of that subject.

Endeavour to produce Re-Union.—The surface of the sore once cleaned, it may be well to attempt a re-union of the parts; though, in this attempt, we are in general totally disappointed;—partly in consequence of difficulty in keeping the parts together; and partly in consequence of indisposition to adhesion, and a propensity to suppuration or slough. Continued contact of the sore, is a principal indication in these cases; and this may be variously attempted. That ligatures of the rectum are of doubtful use, seems to be agreed on all hands; but a ligature may, now and then, perhaps, be inserted into the perinæum with advantage. I have reason to believe, however, that it is not so easy to keep the surfaces of the sores together, by means of the ligature, as *à priori* we might have expected. The ligatures are apt to give rise to inflammation, irritation, perhaps suppuration and slough; and, in this manner, they are apt to detach themselves before adhesion is accomplished, after the parts have been brought together. The conjunction of adhesive plaster with the ligature, may prove a considerable help; and sometimes the union may be accomplished by the use of the adhesive plaster only, independently of the ligatures. If the latter can be accomplished, it is to be preferred.

When you are attempting re-union, the management of the bowels is a point of very nice importance; and this may turn on opposite principles. After clearing them thoroughly, you may torpify so, that there may be no evacuation for a week or more together;—the patient, during this term, using one or two eggs only for her daily food; or, pursuing an opposite method, you may keep the bowels in a lax state from the first;—giving very mild aperients for the purpose. The object, here, is to occasion as little disturbance and tenesmus of the parts as may be; and the patient, when the bowels act, carefully guards against effort. Of these two modes of management, I know not which is decidedly preferable; though I have seen one case in which a re-union of the skin forming the perinæum (properly so called) was produced, after constipation of the bowels had been kept up for about ten days. Circumstances must, I presume, direct your choice.

In these distressing cases, it is, I conceive, always proper to at-

tempt re-union; but much cannot be safely promised; for we seldom succeed to our wishes. Even when re-union is accomplished, I suspect it is, in a manner, more apparent than real; for I doubt much whether the parts are ever brought back into the state in which they were before the occurrence of the accident. When muscular parts are torn, retractions,—very unfavourable to their becoming duly united,—are apt to occur; and such appears to be the case here.

Chronic Rents of the Perinæum.—Women will sometimes come to you with chronic rents of the perinæum, a year or more after the accident;—anxious to know whether any thing can be done for them. If they are merely troubled with prolapsus uteri, that may be remedied by a pessary, without an attempt at re-union; but if married, they may, for other reasons, be solicitous of a cure. I have seen one case in which, by removing the callous edges of the wound, and by torpifying the bowels in the way I have been describing, the parts were made to unite. This case was, I think, under the management of Mr. Rowley, in this neighbourhood*; and did credit to his surgery. Other cases I have seen, in which the attempt has been made; but not with the same success. The edges of the fissure were removed; ligatures were applied; the bowels were managed with the nicest care; the operation was twice repeated; but either the ligatures came away by sloughing, or there was so much irritation, suppuration, or sloughing of the sides of the wound, that re-union could not be accomplished. The inference I could draw from cases of this sort is the following:—In chronic laceration of the perinæum, there is a chance, now and then, of accomplishing a re-union of the parts; but,—in irritable constitutions especially,—it is probable that we shall fail in our attempts. If, therefore, a woman is very pressing and anxious that something should be done, an attempt may be made to serve her; but it is not well to be eager for the undertaking; nor to promise too much, where the probabilities of failure are so great. Reproaches never sound musically to the ear; and to these you lay yourselves open when, after all your pains and all your promises, the patient finds herself in a condition very different from what both had expected!—

> ——————"Amphora cœpit
> Institui; currente rotâ cur urceus exit?"†

* The neighbourhood of Guy's Hospital.

† "The formation of a *large* vessel (*amphora*) was undertaken; why, in the progress of affairs, is a *small* one (*urceus*) the result?"—*Horace, on the Art of Poetry*; *Lines* 21 *and* 22. Dr. Blundell applies this passage to the disproportion between what the accoucheur undertakes, and what he achieves, in attempting to re-unite a lacerated perinæum.—*Dr. Rogers.*

CHAPTER XII.

INFLAMMATION OF THE MAMMA, AND EXCORIATION OF THE NIPPLES.

SECTION 1.—STRUCTURE OF THE MAMMARY GLAND.

[The gland of the breast is enclosed between two layers of fascia;—one going over its surface, and rising up along the nipple; another passing below it, between the mamma and the pectoral muscle. These adhere intimately to the gland; at the margin of which they meet; and can be traced up, on the axillary side, till they form or are lost in the fascia (both deep and superficial) of the axilla. There, between the two layers, as well as deeper, we find lymphatic glands. From the skin or corium, there descend numerous septa, of dense cellular substance; to be lost in, or identified with, the fascia covering the gland. These form cells or chambers, of various sizes, filled with fat. Some of these are quite shut up, and may be as large as a walnut; others open into the neighbouring cells or compartments. These anatomical facts are of importance, in explaining the propagation of disease from the breast.

The gland itself varies at different ages, and in different circumstances. If we examine a breast after delivery, we find it to be a circular cake; sometimes more than an inch thick at the centre, but becoming thinner as we approach the circumference. On cutting it, we distinctly observe the section to exhibit an appearance of grains, imbedded in a substance very dense, though of a pulpy look; having interspersed numerous canals or small tubes, many of them cut across. Here and there, in the substance of the gland, we sometimes, but not uniformly, find small packets of fat; which have no communication with those above, between the fascia and the skin. When present, they are oftenest met with toward the circumference.

If we inject the gland from the nipple, we find that the grains, or acini*, are filled; and from each little grain arises a small tube, which joins with others coming from neighbouring acini; and these, at last, unite in forming one large duct, opening on the nipple; and often dilating, before it rises in the nipple, so as to form what has been called "a sinus." Each large duct, when injected, can only fill with wax a certain number of acini, all the way from the nipple to the circumference. The number of large ducts is variable (twelve, fifteen, &c.); and if we fill these with injections of different colours, we find the gland to be a party-coloured cake. But, without this, we cannot discover any boundary or distinction between the portions which give rise to the larger lactiferous† ducts; and which have

* From *acinus*, "a grape." Small glands arranged in clusters are called "acini", in allusion to bunches of grapes.

† From *lac, lactis*, "milk"; and *fero*, "to carry."

been called "lobes". If, on the other hand, we trace the duct from the nipple, we find it subdividing into very numerous canals, each ending in an acinus; and the various acini are connected by a dense, smooth-looking substance.

If we do not inject the ducts, then the gland, when cut, resembles an agglomerated package of bodies, like millet-seeds; sometimes of a reddish, often of a whitish colour; and connected by a dense substance. The acini resemble little curls, or dilated portions of the duct, rather than grains.

If the female be not pregnant, or giving suck, we find the gland to have an homogeneous* appearance; not granulated, but smooth; apparently made up of a white firm substance; in which, when cut, we see small ducts;—best observed when divided. In every state, arteries, veins, and lymphatics are seen, with small branches of nerves; especially in the cellular substance.

In old women, the appearance is variable. Sometimes the gland is homogeneous, flat, and thin; with small portions of fat interspersed, and pervious ducts visible. In other breasts, the gland is still more absorbed; and only a very thin portion may be left between the two layers of fascia; or it may be so much more wasted, as to make the whole (including the fasciæ) resemble a sheet of fascia, in which we find striæ running (like radii) from the nipple; or, sometimes, lines more reticulated. These lines are the ducts.

In a child of ten years of age, the gland has the same homogeneous appearance as in the adult; but it is very thin, not much larger than a sixpence, and adheres to the firm pectoral fascia.

SECTION 2.—INFLAMMATION OF THE MAMMA.

Its Varieties.—Inflammation of the mamma may be divided into three species;—according as its seat is the subcutaneous cellular substance, the fascia, or the glandular substance. It may take place at any period of nursing; but is most readily excited within a month after delivery. It may be caused by the direct application of cold, engorgement from milk, the irritation of excoriated nipples, mental agitation, &c. Some have the breasts prodigiously distended when the milk first comes; and the hardness extends even to the axillæ. If, in these cases, the nipple be flat, or the milk do not run freely, the fascia, particularly in some habits, rapidly inflames. Others are more prone to inflammation of the dense substance in which the acini and ducts are embedded, or of the acini themselves.

Subcutaneous Inflammation.—The subcutaneous inflammation, if circumscribed, differs in nothing from a common phlegmon†; and requires the same treatment. It is not easy to resolve it; but a tepid poultice will do this, if it can be done. If not, it brings it forward. When it bursts, the poultice should be exchanged, in a day or two, for mild dressings.

Inflammation of the Fascia.—The inflammation of the fascia, if

* From ομος, *like*; and γενος, *a kind*.

† From φλεγω, *to burn*.

slight, is marked by some little tension of the breast, with erythema of the skin, over the affected portion. There is considerable fever, but not much pain; and the disease is likely to yield to tepid fomentations, and a purgative, if the milk can be drawn off freely. If the fascia be more extensively, or severely inflamed, the breast swells quickly; and this distention adds to the disease; which, indeed, is often caused, at first, by distention of the fascia. The pain is great, and the fever considerable. The inflammation never is confined to the fascia; but is communicated, either to the subcutaneous cellular substance above it, or to the parts below it;—usually to the former; and often, at the same time, to the latter.

Inflammation of the Substance of the Gland.—When the deeper parts are affected, the inflammation may be more or less prominent;—in the lactiferous ducts; or in a cluster of acini; or, often, in that dense peculiar kind of substance which is their medium of union; or in those fatty packets, which are sometimes met with in the gland. It often seems to commence in one of the sinuses near the nipple; and, spreading, involves the surrounding cellular substance. In this case, it soon becomes prominent; and seems as if quite superficial. Milk is not secreted by those acini which have suffered. Matter presently forms, and spreads under the fascia, with much destruction; and when, at last, after long suffering, the abscess gives way, much pus is discharged; together with pieces of slough, chiefly consisting of portions of fascia. Usually, there is a considerable degree of fever attending the complaint; and the pain is often severe; especially when the breast is extensively affected.

Great Tendency to Suppuration.—It is a very difficult thing to prevent this inflammation from ending in suppuration. It is to be attempted, however, by purgatives; and by the application of a tepid poultice of bread-and-milk, or of cloths moistened with tepid water. A cold solution of acetate of lead, either alone or preceded by leeches, has been recommended; but I have long been obliged to abandon this practice, from the little success which attended it. If it be ever useful, it is only in slight cases, where it is adopted early, and where the disease is chiefly in the cellular substance near the surface. If there be only a little diffused fulness, with some degree of pain, gentle friction with warm oil is useful. If the breast be distended with milk, it will be proper to have a little taken away occasionally; provided this can be done easily, and without increasing the pain. Our object, in doing so, is to diminish the tension; and to prevent farther irritation, from accumulation in the vessels. The breast is also to be carefully supported; and, indeed, the patient will be easiest in bed. The internal exhibition of tartar-emetic has been recommended; but I cannot, from experience, speak of its utility.

Treatment.—When the pain becomes throbbing, a warm bread-and-milk poultice is proper, to assist the suppurating process. After the induration has abated, and matter is formed, it ought to be freely let out, by an opening of sufficient size; provided there be no ap-

pearance of the abscess bursting soon, of its own accord. This is never the case where the fascia is strong; and if we delay long, we not only protract the suffering of the patient, but add greatly to the destruction of the breast. If the puncture be followed by a troublesome oozing of blood from the wound, dry lint and compression must be used. In one instance I knew, the hæmorrhage prove fatal. After the abscess bursts, or is opened, there is, for some time, a discharge of purulent matter; which is frequently mixed with milk*. The surrounding hardness then gradually abates. The poultice may be continued for several days, as it promotes the absorption of the indurated substance; but if it fret the surface, and encourage a kind of phagedenic† erosion, it is to be exchanged for mild dressings. A little fine lint is to be applied on the aperture; but not so firmly as to confine the matter; and, over this, a cloth spread with spermaceti-ointment. Great attention is to be paid to the evacuation of the matter, and the prevention of sinuses. A fungus, at the orifice of the sinuses, requires escharotics‡.

In some instances, the milk soon returns, and the patient can nurse with the breast which was affected; but more frequently it does not; and the child is brought up on one breast. It may even be requisite,—if the fever and pain be great, and the secretion of milk much injured,—to give up nursing altogether.

Sometimes Terminates Unfavourably.—It sometimes happens,—if the constitution be scrofulous, the mind much harassed, or the treatment not at first vigilant,—that a very protracted, and even fatal disease may result. The patient has repeated and almost daily shivering fits, followed by heat and perspiration, and accompanied with induration, or sinuses, in the breast. She loses her appetite, or is constantly sick. Suppuration slowly forms, and perhaps the abscess bursts; after which the symptoms abate, but are soon renewed, and resist all internal and general remedies. On inspecting the breast at some point distant from the original opening, a degree of œdema may be discovered;—a never-failing sign of the existence of deep-seated matter there; and, by pressure, fluctuation may be ascertained. This may become distinct very rapidly; and therefore the breast should be examined, carefully, at least once a-day. Poultices bring forward the abscess, but too slowly to save the strength; and, therefore, the new abscess, and every sinus which may have already formed or existed, must be, at one and the same time, freely and completely laid open; and so soon as a new part suppurates, the same operation is to be performed. If this be neglected, numerous sinuses form, and slowly discharge fetid matter. Both breasts are often thus affected. There are daily shiverings, sick fits, and vomiting of bile; or absolute loathing of food, diarrhœa, and either perspiration, or a dry, scaly, or leprous state of the skin.

* A duct within the breast has sometimes been distended, and the milk has accumulated; so as to form a considerable collection, like an abscess.—*Dr. Burns.*

† From *ραγω, to eat*;—the ulceration spreading rapidly.

‡ From *εσχαροω, to scab over.*

Sometimes the internal glands (those of the mesentery, for instance) seem to participate in the disease; or the uterus is affected, and matter is discharged from the vagina. The pulse is frequent, and becomes gradually feebler; till, after a protracted suffering of some months, the patient sinks. It is observable that, in those cases which seem to depend on a constitutional cause, and when there is great debility, the sinuses often heal rapidly after being laid open; but a new part instantly begins to suppurate. Internal remedies cannot be depended on here; for they cannot be retained. If they can be taken, they are those of a tonic nature that we would employ; with opiates to abate diarrhœa, and procure sleep.

The diet must be as nourishing as possible; with a liberal allowance of that kind of wine which agrees best with the stomach. Our prognosis, indeed, will be more or less favourable, according to the nourishment which can be taken. The main security of the patient, however, rests on an early stop being, if possible, put to the disease, by opening the abscesses or sinuses freely, and before the constitution has been injured, or undermined, by repeated paroxysms * of fever. If, however, the sinuses be deep or numerous, it will, in the first instance, be proper to try the effect of enlarging the most dependent aperture. It ought to be impressed on the mind of every practitioner, and every patient, that unremitting attention should be early paid to the state of the breast; and that no deep-seated collection of matter should ever be allowed to remain unopened; for we do not know where the mischief, if permitted to continue, may end. This is urgently necessary, in proportion to the severity of the constitutional symptoms.

Sinuses.—There are indolent cases; where sinuses form, and give little or no trouble, except by the dressing or attention they require. Timid patients will not submit to have these opened; but the cure is hastened if that be agreed to. In the former state, it was,—from the affection of the general health, and the state of the patient,—imperative. In this indolent state.—where the patient is in pretty good health, and walking about,—it is proper, but nevertheless more optional. Superficial sinuses should be laid open. Those which are very deep, should either have a counter-opening made, or a seton introduced; but this is seldom necessary. Induration, with sinuses, yields to laying the sinuses open, and then employing gentle friction. This holds true even with regard to simple induration frequently occurring after an operation for cancer. In the case under consideration, I have never known bad effects, but quite the contrary, follow from free incisions, even into the substance of the breast.

Induration of the Mamma.—Sometimes, although the abscess may heal readily, and may have been small, there remains an induration; which may either continue long indolent, and cause apprehension respecting the consequences, or may occasion a relapse. It is to be removed by gentle friction, with camphorated spirits, three times a

* From *παροξυνω, to aggravate.*

day; and by the application, in the intervals, of cloths wet with camphorated spirits-of-wine*; with the addition of a tenth part of acetum lythargyri†; or a bread-and-milk or cicuta‡-poultice may be applied. In more obstinate cases, mercurial friction, or a gentle course of mercury, may be tried; but I cannot speak with any confidence of the effect. The bowels should always be kept open.

Tendency to Relapse.—After an abscess heals, it is not uncommon for the breast to swell a little, at night, from weakness; and the same cause renders a relapse easy. It is therefore proper to invigorate the system, and to defend the breast, for some weeks, more carefully than usual, from cold. When a relapse takes place, especially if the patient be not nursing, the tumour is sometimes pretty deep or indolent; is for a long time hard to the feel; and gradually extends more through the breast;—forming a pretty large substance, not unlike a scirrhous or scrofulous gland. But, during this time, suppuration is slowly going on; though there may be little pain. At last, a more active change takes place. The pain increases, and becomes throbbing; the skin grows red; and, finally, the abscess bursts. This state requires the application of warm poultices, and hot fomentations.

SECTION 3.—EXCORIATIONS OF THE NIPPLE.

Excoriation of the nipple is a very frequent affection; and often excites that disease we have just been considering. The sore may be extensive, but superficial; or it may be more circumscribed, but so deep as almost to divide the nipple. When the child sucks, the pain is severe; and sometimes a considerable quantity of blood flows from the part. In some instances, an aphthous state of the child's mouth excites this affection; in others, excoriation of the nipple affects the child. A variety of remedies have been employed. Spirituous, saline, and astringent lotions have been used, previously to delivery, with a view of rendering the parts more insensible. They have not always that effect; but they ought to be tried. When excoriation takes place, six grains of sulphate of zinc, dissolved in four ounces of rose-water, form a very useful wash; which should be applied frequently. Solutions of sulphate of alumina, acetate of lead, sulphate of copper, nitrate of silver, &c.,—in such strength as just to cause a little smarting,—are also occasionally of service; and it is observable, that no application continues long to do good. Frequent changes, therefore, are necessary. The nipple should always be bathed with milk-and-water, or a solution of borax, before applying the child. When chops take place, it is sometimes of use to dress the part with lint spread with spermaceti-ointment. A combination of white wax with fresh butter or melted marrow, with or without vegetable additions, forms popular applications. Stimulating oint-

* Now called, in the London Pharmacopœia, "Tinctura Camphoræ."

† "Goulard's Extract." Its present name, in the London Pharmacopœia, is "Liquor Plumbi Diacetatis."

‡ From *cæcus*, "blind";—alluding to the effect on the sight produced by eating the plant *Cicuta Virosa*, "Water-Hemlock," or "Cow-Bane."

ments, such as "unguentum hydrargyri nitratis," diluted with axunge*, are sometimes of service; or the parts may be touched with burned alum, or nitrate of silver; or dusted with some mild, dry, powder.

Means for defending the Nipple.—It is often useful to apply a tincase over the nipple, in order to defend it; or broad rings of lead or ivory. It is also proper to make the child suck through a cow's teat, or an artificial nipple; so that the irritation of its tongue or mouth may be avoided. This is often of great service; although it does not always succeed. Some children cannot suck through it; but this sometimes happens from it's not being so applied, as to prevent the child drawing in air. The artificial nipple is preferable to to the cow's teat. The assistance of a nurse, to suckle the child through the night, is useful. But although the nipples ought to be saved as much as possible, yet, if we keep the child too long off, or permit the breast to become much distended, inflammation is apt to take place. When all these means fail, it is necessary to take off the child; as a perseverance in nursing exhausts the strength, and may excite fever. The part then heals rapidly.

Venereal ulcerations of the nipple or areola, accompanied with swelled glands in the axilla, and a diseased state of the child's mouth, require a course of mercury.

SECTION 4.—CIRCUMSTANCES DISQUALIFYING A WOMAN FROM NURSING.

It may be proper, before concluding this chapter, to add some remarks on causes disqualifying a woman from nursing. If the nipple be very flat, and cannot be drawn out by suction,—so that the child can get hold of it,—the woman cannot nurse. A glass pipe, however,—such as is frequently used,—sometimes remedies this defect; or the artificial nipple can be employed. A deficiency of retentive power, so that the milk constantly runs out, is another disqualification; and for this it is not easy to find a remedy. When the milk disagrees with the child,—having some bad quality,—we are under the necessity of employing another nurse. If the mother be very delicate, or consumptive, or affected with obstinate melancholy, or have her eyes much inflamed, or the sight injured by nursing, or if the secretion be very sparing, she must give up nursing. Some delicate women suffer so much from nursing, that chlorotic† or phthisical‡ symptoms are induced. In this case, we must take off the child. Opiates are useful, at bedtime, to procure sleep; and the bowels are to be kept open. Many women, after delivery, are subject to disorders of the alimentary canal;—especially diarrhœa,

* "Hog's-Lard." From *axis*, "an axle-tree"; and *unguo*, "to anoint."

† From χλωρος, *green*;—alluding to the complexion of those affected with the disease.

‡ From φθιω, *to consume*.

and worms*. These impair the health, and diminish the secretion of milk. They are to be treated with the usual remedies. Anasarca, jaundice, erysipelas, &c., may also occur in the puerperal state, and prevent nursing. The ordinary methods of cure are to be employed.

When a woman weans a child, or, from the first, does not suckle it, it is usual to give one or two doses of some purgative salt, by way of lessening the secretion of milk. The secretion is also checked by keeping off the child; but if the breast be very much distended, so

* The following table of worms and other parasitic animals to which the human body is liable, is constructed on the plan of the late Dr. Fletcher:—

I. Cystica[1] (Hydatids).

1. Cysticercus[2] Cellulosus[3] (Bladder-Tailed Hydatid).
2. Echinococcus[4] Humanus[5] (Acephalocyst[6]).

II. Nematoidea[7] (Cylindrical Worms).

3. Hamularia[8] Subcompressa[9] (Bronchial Worm).
4. Ascaris[10] Lumbricoides[11] (Lumbricus[12]).
5. Tricocephalus[13] Dispar[14] (Trichuris[15] Vulgaris[16]; Long Thread-Worm).
6. Oxyuris[17] Vermicularis[18] (Ascaris Vermicularis; Thread-Worm).
7. Strongylus[19] Gigas[20] (Urinary Worm).
8. Filaria[21] Medinensis[22] (Dracunculus[23]; Guinea-Worm; Hair-Worm).

III. Trematoda[24] (Intermediate Worms).

9. Dystoma[25] Hepaticum[26] (Fasciola[27] Hepatica; Fluke).
10. Polystoma[28] Pinguicola[29] (Fat-Worm).

IV. Cestoidea[30] (Tape-Worms).

11. Bothriocephalus[31] Latus[32] (Tænia[33] Osculis[34] Superficialibus[35]; Broad Worm).
12. Tænia Solium[36] (Tænia Osculis Marginalibus[37]; Long Worm).

Notes to the preceding Table.—1. From κυστις, *a bag*. 2. From κυστις, *a bag*; and κερκος, *a tail*. 3. From *cellula*, the diminutive of *cella*, "a cavity". 4. From εχινος, *a hedge-hog* (*bristly*); and κοκκος, *a cell*. 5. "Belonging to the human species". 6. From *a*, *without*; κεφαλη, *the head*; and κυστις, *a bag*. 7. From νημα, νηματος, *a thread*; and ειδος, *likeness*. 8. From *hamulus*, the diminutive of *hamus*, "a hook". 9. From *sub*, "slightly," and *compressus*, "pressed together". 10. From ασκεω, *to move about*. 11. From "lumbricus", *the earth-worm*; and ειδος, *likeness*. 12. From *lubricus*, "slippery". 13. From τριχος, *hair*; and κεφαλη, *the head*. 14. "Unequal". 15. From θριξ, *a hair*. 16. "Common". 17. From οξυς, *sharp*; and ουρα, *the tail*. 18. From *vermiculus*, "a little worm". 19. From στρογγυλος, *round*. 20. From γιγας, *a giant*;—from γη, *the earth*; and γαω, *to be born*;—the giants being sometimes called "the sons of the *earth*" (the goddess *Tellus*). 21. From *filum*, "a thread". 22. From *Medina*; at which city this worm is frequent. 23. From δρακων, *a serpent*. 24. From τρημα, τρηματος, *an aperture*, and ειδος, *likeness*. 25. From δις, *double*; and στομα, *a mouth*. 26. From ηπαρ, ηπατος, *the liver*. 27. From *fascia*, "a fillet". 28. From πολλυς, *many*; and στομα *a mouth*. 29. From *pinguis*, "fat". 30. From κεστος, *a girdle*; and ειδος, *likeness*. 31. From βοθρος, *a depression*; and κεφαλη, *the head*. 32. "Broad". 33. From ταινια, *a fillet*. 34. From *osculum*, "a little mouth." 35. From *superficialis*, "on the surface." 36. From *solus*, "alone";—because it infests the body *singly*. 37. From *marginalis*, "at the edge".

much milk must occasionally be taken away,—by suction, or milking the breast, or applying a warm glass bell,—as to relieve the feeling of tension or pain. If this be neglected, inflammation may be excited.

Some women feel, after lying-in, a considerable weakness, or sensation of want about the abdomen; which symptoms are frequently increased by nursing. It is often produced by taking off the bandage from the abdomen too soon (which should not be done for a month at least); and is relieved by the application of a broad firm band round the abdomen. When there is constant aching in the back, and failure of the appetite, nursing must be abandoned.

Pain in the side, or in the abdomen, which is sometimes produced by nursing, is often relieved by friction, warm plasters, and an invigorating plan. General weakness requires tonics; which must be varied.*]

CHAPTER XIII.

EFFECT OF PREVIOUS DISORDER OF THE GENERAL HEALTH, UPON THE STATE OF THE PATIENT AFTER DELIVERY.

[This is a most important and interesting question; and it has two bearings;—the first, upon the parent herself; the second, through the medium of the milk, upon the infant. I† chiefly allude, in this place, to those forms of the disorder of the general health of which I have attempted a description, in the first part of this volume‡.

Such a state of disorder,—especially if long continued, and attended by much pallor or a pale icterode§ hue,—involves in itself a state approaching to that of loss of blood; and it has been sufficiently shown, that this form of general disorder itself depends upon a deranged state of the functions of the intestinal canal, and of the other digestive organs; so that, obviously, such a condition, before confinement, predisposes to the effects of intestinal irritation, and of exhaustion.

I need not remark how important it is, in such cases, to devote especial attention to the restoration of a healthy state of the system. The state of the bowels should be watched daily; a mild but invigorating diet should be enjoined; and the tonic effect of exercise in the open air, should be secured during the whole period of preg-

* Dr. Burns's "Principles of Midwifery"; Ninth Edition; Pages 621 to 630.
† Dr. Marshall Hall. ‡ Dr. Marshall Hall's "Commentaries".
§ From *icterus*, "the jaundice";—so called from the resemblance which the colour of the skin, in that disease, bears to the colour of the golden thrush. Pliny relates that if a jaundiced person looks at this bird, the latter dies, and the patient recovers.—*Dr. Hooper.*

nancy;—for conception is not generally prevented by this state of disorder of the general health.

In extreme cases, the bowels become exceedingly loaded, and there is a state of the system approaching to bloodlessness. In neglected cases of this description, death has quickly and unexpectedly ensued, from a far less shock than that of parturition. In other cases, a series of painful symptoms has ensued; and have perhaps exhausted the patient finally, though more slowly.

It may happen that the patient was not known to the physician, before the period of her confinement. It will then be found important to have studied the external characters of disorder of the general health; especially the characteristic appearances of the complexion, of the tongue, of the state of the alvine evacuations, &c.; and much will, of course, be ascertained by a careful inquiry into the history of the case.

It is of the utmost importance to conjoin aperients with a cordial and nutritious kind of diet. For I am persuaded that the strength is far more apt to fail in these cases, than is generally imagined; and especially in that variety which is attended by extreme pallor; and which, in fact, denotes a state approaching to bloodlessness and exhaustion.

The next point to be mentioned, is the influence of a morbid condition of the general health upon the secretion of the milk, and upon the health of the infant. It has frequently occurred to me to lament that patients have given up all hope of ever being allowed to nurse, from the sad consequences produced on the infant. This circumstance generally depends upon disorder of a protracted kind of the general health; and it is obviated by proper and persevering efforts to restore the functions to their natural state.

It may be necessary for the infant to be fed, or to have another nurse, if these precautions were not enforced before the approach of confinement; for time is required to subdue the disorder, and change the secretions. But if there be space for effecting the due changes, the plans which had been already recommended for restoring the general health of the parent, will always succeed in enabling her to nurse without disordering her infant.*]

* Dr. Marshall Hall's "Commentaries." Pages 354 to 357.

PART IV.

PHYSIOLOGY AND DISEASES OF THE FEMALE ORGANS OF GENERATION IN THEIR UNIMPREGNATED STATE.

INTRODUCTION.

DISORDERS INCIDENT TO FEMALE YOUTH IN GENERAL.

[MANY circumstances concur to render the disorders of female youth different from those of the male sex; but chiefly peculiarity of constitution, and the important change which, at that period, is effected in the uterine system.

The peculiarity of constitution existing in the female sex, and modifying its disorders, appears to consist principally in a greater development of the capillary* vessels, and in a greater susceptibility of the nervous system, than are observed in the male sex. The circulation is obviously more capillary, and the blood more lymphatic; and this is not only the natural character, but is especially the morbid tendency of the circulation in the female youth. From the influence of these circumstances, there is a peculiar tendency to those affections which are attended with pallor and œdema; and to dropsical and even hæmorrhagic effusions;—the former flowing chiefly from the capillary vessels of the *serous*, the latter from those of the *mucous* surfaces. This peculiarity in the natural character, and in the pathology of female youth, has by no means been fully investigated. It leads to various and peculiar states of the complexion and of the general surface; and with these are associated,—partly as effects, partly as causes,—peculiar states of the blood itself, and of the uterine discharge.

The female sex is far more sensitive and susceptible than the male; and is extremely liable to those distressing affections which, for want of some better term, have been denominated "nervous"; and which consist chiefly in painful affections of the head, heart, side, and (indeed) almost every part of the system. These morbid affections are not only painful and distressing, but they are apt to be confounded with others of a more dangerous character; so that, in

* From *capillus*, "a little hair";—alluding to the small size of the vessels in question.

every point of view, an accurate knowledge of them is of the utmost importance to the physician.

Another circumstance greatly influencing the state of health and the character of the disorders of female youth, is the growth of the body. Nor is the growth less influenced, in its turn, by the condition of the general health. Too rapid a growth is apt to induce those disorders which involve a state of debility; but more frequently, perhaps, debility of the constitution, or derangement of the general health, impedes the growth and due development of the form of the spine, and of some large cavities of the body (as the thorax, and perhaps the pelvis); and leads to distortions of the person, of a peculiar character.

The change which is established in the uterine system, and in the whole habit of the body in female youth, is of too extraordinary and important a nature not to have great influence upon the general health; while it is no less certain that the condition of the general health exerts great influence over the due establishment of this change. It is, consequently, at this period of life, and from the influence and operation of these causes, that a foundation is frequently laid for future indisposition and suffering. Too much attention cannot be paid to the general health of those young persons in whom this change is expected.

Derangements in the return and flow of the catamenia, after these have once appeared, are also most frequently the effect of some disorder of the general health; so that a continued and watchful attention to this point is still essential. In other cases, an undue suppression or flow of the catamenia, or a leucorrhœal discharge, is the cause of derangement of the general health. The question is, therefore, frequently a complicated one; and it becomes still more so when we take into account the circumstance, that a morbid state of the uterine discharges is not unfrequently connected with a morbid condition of the uterus itself;—approaching, in its nature, to inflammation. The state of the uterus, and of the uterine discharge, also greatly influences that of some other organs or functions, and especially that of the mamma. The approaching flow of the catamenia, is usually attended by tumidity and tenderness of the mamma; and some of the diseases of this latter organ are evidently induced by an interruption or morbid flow of the catamenial discharge. Another example of the influence of the state of the uterus, is seen in the case of varicose veins of the legs. That painful and troublesome affection is apt to be aggravated on every approach of the catamenial period. I * do not mention other examples of the mutual influence of the functions of the uterus, and of other organs, in this place.

But peculiarity of constitution, and the establishment of a change in the uterine system, are by no means the only circumstances which modify the disorders of female youth, and render them peculiar, and different from those of the male sex; and, after these, the in-

* Dr. Marshall Hall.

fluence of a confined and loaded state of the bowels is most prevalent, and most important to be considered. In conjunction with this, the sad effects of the inactive and sedentary habits which usually obtain at this important period of female life, must be duly appreciated.

Very few young persons escape the evil of a constipated state of the bowels;—suspected or unsuspected. In female youth, this state doubtlessly frequently arises from the want of a regular system of active exercises; and, indeed, nothing can enforce the necessity of attention to this source of health more than this consideration. A certain activity of the body appears to be essential to induce an interrupted peristaltic* movement of the intestines, and the consequent propulsion of their contents. In a state of continued inactivity, these movements are retarded; the alvine evacuation becomes scanty and less frequent (but especially scanty); and the intestines remain loaded. In some instances, indeed, the evacuations are more frequent than natural; but, being scanty and insufficient, the bowels still remain loaded, and the patient is greatly deceived with regard to their real condition. Another cause of constipation and a loaded state of the bowels in young females is, I fear, frequent delay in yielding to the solicitation of nature to evacuate the bowels, in a multitude of circumstances. The point should be repeatedly explained to all young persons. There is also a predisposing cause of constipation in young females, in the ampler size of the abdomen, the pelvis, and the large intestines, in the *female* sex than in the *male*. From the operation of these and other causes, a loaded state of the bowels is extremely apt to obtain in female youth; and it certainly proves the source of most of the painful and distressing disorders to which it is exposed.

From this loaded state of the bowels, their functions, and those of all the chylopoietic viscera, become deranged. The alvine contents become morbid, merely by delay; and their morbid presence and condition induce, in their turn, a disordered state of the functions of all the organs subsidiary to digestion; and, at length, of other organs remotely situated in the animal frame. First, the state and functions of the parts within the mouth, become obviously disordered. The secretions are morbid; the gums and internal parts of the cheeks are red and tumid; the teeth decayed; the tongue is loaded and swollen; the breath tainted; and the saliva profuse and offensive. The complexion and general surface of the body, then become morbidly affected; and there are pallor, icterode and other hues, morbid states of each of the textures composing the skin, and frequently œdema. These conditions of the complexion, and of the general surface, vary, both in their seat and appearance, with the kind and state of the original disorder, and with the state of the tongue and internal parts of the mouth. With each of these appearances there is associated a peculiar condition both of the functions of the intestinal canal, and of that of the uterus; and all these affections

* From *περιστελλω, to contract.*

are variously and characteristically modified by the duration of the malady. It is also to be presumed that, along with the state of the alimentary canal, the organs which contribute to digestion,—as the liver, the pancreas, &c.,—are proportionately deranged in their functions. Digestion is variously disordered; the contents of the intestinal tube become morbid; and these, again, act upon each other reciprocally. Nutrition is also frequently impaired; and there is, in consequence, a certain degree of loss of flesh; and it is a point which I have ascertained by repeated observation, that, after a certain duration of a disordered state of the digestion and of the general health,—associated with a peculiar appearance of the tongue, which I have termed "lobulated",—there is frequently simple enlargment of the liver. Upon the subject of affections of the liver, however, I would earnestly renew a caution which I gave some years ago;—not to consider every icterode hue in the complexion, or general surface, as denoting disease or even disorder of this organ. This state of the cutaneous surface is frequently the effect of a loaded condition and impaired function of the alimentary canal; and it is, in various instances, an affection of each of the cutaneous textures, or of the cutaneous circulation, altogether independent of any tinge of bile.

I would also briefly observe, in this place, that not only the parts already noticed are implicated in this morbid state, but that the head, the heart, and other organs, are variously affected in different cases, or at different periods of the same case. To term these various diseases "bilious" or "nervous", or to apply to them any other of the fashionable epithets of the day, would afford a partial and inadequate view of this comprehensive subject. It is, indeed, of the utmost importance to divest the mind of all exclusive views; and to take into consideration all the circumstances of so complicated an affection.

There is a class of disorders to which female youth is particularly, although certainly not exclusively, liable; each of which consists of a general morbid affection, frequently combined with some painful topical symptom or symptoms. The general affection is, as we have already observed, complex and various; the local complications are multiform and changeable; and, by their incidental predominance, frequently resemble inflammatory and other diseases, widely different in their nature.

Perhaps no organ is subjected to the influence of the condition of the intestinal canal, in a more marked manner than the uterus. Together with the changes observed in the state of the tongue, of the complexion, and of the general surface, precisely proportionate changes take place in the state of the uterine discharges; and, indeed, the very state of these discharges may, in many instances, be ascertained by that of the tongue and of the complexion.

From the state of the alimentary canal,—probably through the medium of the deranged function of the uterus,—the mamma very often suffers. In this manner have been induced some tumours,

which have been mistaken for carcinoma*; but which have been removed by restoring the functions of the organs primarily affected.

It would be wrong, even in this rapid sketch of the history of the disorders incident to female youth, to pass by the chief external cause of these disorders with so cursory a notice of them as has already been given. I allude to the baneful but prevalent habits of sedentariness and inactivity, in which young persons pass their early years. It is not too much to say, that the greater proportion of the disorders of female youth originate in the recluse manner in which this truly critical part of life is passed. Instead of having their health invigorated by a free and constant exposure to the open air, and by a regular plan of active exercises, young persons of the present day are enfeebled and disordered by a system of sedentary studies, pursued in warm and close apartments;—an occasional walk, in fine weather, being taken merely as a sort of apology for the total neglect of what, alone, deserves the name of exercise. It is to be hoped that the period is not far distant, when, amidst the many and real improvements in education, some attention will be paid to this important point. In every system of education, a plan of regular and active exercise should form an essential part. Such a mode of proceeding will invigorate the mind as well as the body, and dispose to study; so that the benefit accruing from it will be apparent, even in this less important point of view. The want of due exercise not only leads to a general feebleness of the frame and of the mind, but it frequently sadly interferes with the growth and development of the form. Many examples of this kind have fallen under my notice. They have chiefly occurred in youthful *females*, scarcely ever in *boys*; and many of them have first attracted attention when the young person has returned from a school in which little attention has been paid to exercise, and to the health of its youthful inmates.

This is a subject to be strenuously pressed upon the attention of parents, and of all persons engaged in the education of female youth. Certain portions of every day should be appropriated and devoted, not to mere walking, but to exercises of a more active kind. When this plan is fully adopted, the most frequent and powerful cause of the disorders of early youth, in the female sex, will be removed; though there will still exist causes enough why the health of girls should suffer more than that of boys. Not to pursue this subject to too great a length, it may be well to mention one of these causes in this place. Nothing, for instance, can be more absurd than the defective system of clothing of the present day. The point is of the greater importance in youth, and in the female sex, from the very peculiarities of constitution to which allusion has been already made; and especially from the feeble and lymphatic character of the circulation, at the general surface and in the extremities. The effect of cold in general, in such a constitution, is directly debilitating; coldness of the extremities is particularly apt to impair the functions of the alimentary canal; and both are apt to impede or interrupt the flow of

* From *καρκινος, a cancer.*

the catamenia. The feet, therefore, in the colder seasons, should be kept warm by lamb's-wool stockings and exercise; and the general surface should be protected and excited by flannel.*]

CHAPTER I.

PHYSIOLOGY AND DISEASES OF MENSTRUATION.

SECTION 1.—PHYSIOLOGY OF MENSTRUATION.

[As an accurate knowledge of the different secretions from the sexual organs in the female, will very materially assist the practitioner in his inquiries, some remarks will be here made respecting them.

All the discharges from these parts come away from the os externum; but they spring from various sources, and are of different kinds. The parts from which these secretions arise, are:—1. The internal surface of the uterus and of the fallopian tubes. 2. The inner membrane of the vagina. 3. The lacunæ about the os externum. 4. The mucous membrane of the urethra†.

1. The secretions from the uterus. These are:—(1.) The menstruous secretion. (2.) The secretion from the mucous membrane of the uterus; which membrane extends to the cavities of the fallopian tubes. (3.) The secretion from the glands in the neighbourhood of the cervix uteri.

(1.) *The Menstruous Secretion.*—The menstruous secretion is a fluid of a red colour; possessing very little tenacity; and not coagulating. It is poured out by the arteries of the uterus, once every lunar month, in healthy women, if they are neither pregnant nor suckling‡. It begins at puberty; and generally continues, in this country, till between the age of forty and fifty; so that,—calculating the age of puberty to be the fifteenth year, and the duration of life to be seventy years,—it may be said that the menstruous secretion is performed during three-sevenths of it.§]

Peculiar to the Human Female.—Women alone are liable, during the child-bearing period, to a periodical discharge from the uterus; —constituting what is called "menstruation".

[When this function is about to be established, certain changes take place, denoting the age of puberty. The uterus becomes more ex-

* Dr. Marshall Hall's "Commentaries on some of the Diseases of Women"; Part I; Chapter I.

† These are the surfaces from which the natural secretions arise; but discharges from the os externum may originate from the surfaces of newly-formed tumours, such as the "cauliflower-excrescence"; or they may be the contents of hydatids.

‡ Some women who give suck *do* menstruate; but it is not usual.

My father (Dr. A. Lee) has now under his care, a case of *suppression of the catamenia* in a woman who has suckled her seventh child for six months. She also states that she has regularly menstruated after her six former pregnancies, during the entire period of lactation.—A. L.

§ Sir C. M. Clarke, on the Diseases of Females; Third Edition; Pages 10 to 12.

panded and receives its adult form; the vagina enlarges; the mons veneris swells up, and becomes covered with hair; the pelvis is enlarged, and its shape changed; the glandular substances of the breast is unfolded, and the cellular part increased; lastly, the mental powers become stronger, and new passions begin to operate on the female heart.*]

Its periodical Recurrence and Duration.—Not to mention the solar month, this discharge may occur every three, four, or five weeks, for the term varies in different women. Periods of *three* weeks are by no means uncommon; those of *five* weeks are rarer; but most commonly the catamenia return every *four* weeks; and that with such exactness, that they commence, for years together, on the same day of the week; and, perhaps, on the same part of the day. The duration of this discharge is various. It may average about five or six days; sometimes it lasts eight, sometimes ten, and sometimes only three or four. Now and then, there is a day of intermission, when it may cease entirely;—afterwards returning and continuing, so as to complete the period. In the quantity of the evacuation there is no small difference.

Quantity and Nature of the Secreted Fluid.—Some women, of robust constitution, have a more sparing discharge; others of spare and delicate habit, often menstruate more copiously. The average measure has been stated (though I have never myself made this the subject of accurate examination) as ranging from six to seven ounces; but whether this be correct or not, I am not prepared to determine. The discharge, though of a red colour, does not consist of blood†; for though small concretions are now and then observed, yet, in the main, it is not found to coagulate, so as to form clots, or so as to harden the textures which are imbued with it. It sometimes happens, from obstruction of the os uteri or vagina, that the catamenia are retained for months, or even for years; when pints or quarts may be collected in the uterus. When this is the case, the fluid thickens; and, like treacle, becomes more or less viscous‡; but it never coagulates like blood. Hence we may venture to infer that, though red, and apparently sanguineous, still this fluid is not truly of the nature of blood.

Generally indicates Aptitude for Impregnation.—It is, I have said, during the child-bearing period of life, that the discharge flows§; and, therefore, it is (most probably) associated, in the way of cause and effect, with aptitude for impregnation. Before puberty, there is no menstruation; and after a term of some thirty years, when the powers

* Dr. Burns's "Principles of Midwifery"; Ninth Edition; Page 161.

† Mr. Brande analyzed the menstrual discharge, collected from a patient with prolapsus uteri, and consequently free from admixture of other secretions. It had the properties of a very concentrated solution of the colouring matter of the blood in diluted serum. No globules could be discerned. This will probably account for the greater power of resisting putrefaction which it possesses; as we know that, while fibrin rapidly becomes putrescent, solutions of the colouring matter (provided they be free from fibrin) would resist putrefaction for a very long period.—A. Lee.

‡ From *viscum*, the fruit of the misletoe.

§ See the previous page.

of fecundity are lost, the menses are found to cease more or less suddenly. Impregnation, however, may certainly occur, though the catamenia have never appeared.

Periods of its Commencement and Cessation.—In warm climates, the discharge begins very early; because puberty is precocious. At ten years of age, or earlier, impregnation may, I am told, take place; and that great "unitarian" in theology, and connubial pluralist,—that great yet cunning Arabian,—the desire of the East, and the detestation of the West, Mohammed,—who has been so liberally besainted, bedeviled, and bepraised, according to the humour of his judges,—seems not to have deemed it inconsistent with his character, in the eyes of his countrymen, to marry his favourite Ayesha, when her age did not exceed nine years*. In colder climates, the action of the uterus begins much later; and it is asserted, that in those countries which lie nearest the polar ocean, the menses do not make their first appearance till girls have reached the age of seventeen or eighteen years. In this country, it is usually about the twelfth, thirteenth, or fourteenth year,—sometimes sooner, and sometimes later,—that the catamenia commence; and it is about the forty-fifth year,—earlier in some cases, and later in others,—that menstruation ceases. Many females continue to menstruate till they are nearly fifty; while, in some few, the action ceases before forty. I believe it holds good as a rule,—though I have not ascertained this fact myself, by any very exact or numerous observations,—that the earlier the catamenia commence, the earlier will be their cessation.

Sources of the Discharge.—The source of this discharge, once so much disputed, seems now to be clearly ascertained. It is not from the vagina, or from the os uteri, but from the inner membrane lining the uterus, that the flow proceeds. A woman was brought into this hospital†, labouring under procidentia of the uterus. When I saw this patient, the womb lay forth, within sight, between the limbs; and,—the uterine secretion being present at the time,—the fluid might be observed to issue from the os uteri, drop by drop. Many years ago, a similar observation was made by the celebrated anatomist Ruysch. Dr. Clarke, too, in his excellent treatise on the Diseases of Women, tells us that he once met with a case in which the uterus was inverted;—the inner membrane lying under the eye; so that, when the womb was in action, he could distinctly see the catamenia oozing from the pores of the membrane; and hence we are enabled, by ocular demonstration, to set at rest the question, whether this discharge issues from the inner membrane of the uterus, or from some other part. But it has been asked, further,—"Do the *veins* menstruate, or the *arteries?*" In considering this question, you ought to

* The author has known an instance of a European child who went to the East Indies at the age of six years, in whom menstruation took place at the ninth year, and continued to occur regularly during three months; but the child then returning to a more temperate climate, the secretion ceased, and has not yet returned. The child is now twelve years old.—*Sir C. M. Clarke on the Diseases of Females; Third Edition; Page* 12.

† Guy's.

recollect that arteries are vermicular*, and that veins are straight in their course. Now it has happened occasionally, that women have died suddenly when in full health, and during the process of menstruation; and Hunter observes, that he once took the uterus of a woman who died in this way under the catamenial action; and that, upon laying it open and examining the inner membrane, he found it was moist. Observing this, he was next desirous to ascertain whether the moisture came from the veins or from the arteries; and, therefore, after wiping the uterine surface, he made pressure upon the vessels;—distinguishing the arteries from the veins, respectively; by the vermicularity or straightness of their course. When he pressed the vessels, he found the fluid clearly oozing from orifices communicating with the arteries; whence it is to be inferred that,—as in most other parts of the body, so here,—it is by capillary arteries that the secretion is formed.

Symptoms attending its Appearance.—Menstruation is often preceded or attended by various symptoms of uneasiness in the head, bosom, and the centre of the body; and in some women there is, at this time, a sort of excitation of the whole system, with a disposition to hysteria;—all the symptoms becoming mitigated as the discharge proceeds.

[In some instances, the discharge takes place at puberty, without any previous or attendant indisposition; but, in most cases, it is preceded by uneasy feelings; very often by affections of the stomach and bowels, pain about the back and pelvis, and various hysterical symptoms. These affections, which are more or less urgent, in different individuals, gradually abate; but, at the end of a month, return with more severity; attended with colic-pains, a quick pulse, sometimes a hot skin, and a desire to vomit. There now takes place, from the vagina, a discharge of a serous fluid slightly red; but it does not, in general, become perfectly sanguineous for several periods. When the discharge flows, the symptoms abate; but frequently a considerable degree of weakness remains, and a dark circle surrounds the eye. In a short time, the girl menstruates; often without any other inconvenience than a slight pain in the back; though sometimes, during the whole of her life, she suffers from many of the former symptoms every time she is "unwell"; and all women, at the menstrual period, are more subject than at other times to spasmodic and hysterical complaints. Attention to the origin and connexion of the uterine nerves, will enable us to explain the pain which attends menstruation, and the sickness which sometimes accompanies it; as well as the general irritability of the system, and the particular sympathies which may be exhibited. We may, also, understand the bad effects consequent on an inefficient effort to menstruate; and the production of formidable diseases, such as epilepsy itself; or of vicarious or coexistent hæmorrhage from the stomach. It ought to be remembered, that the uterus has two sets of nerves;—the one derived from the *sympathetic,* and the other from the *spinal* nerves.

* From *vermis,* "a worm". A worm is called "vermis" from *verto,* "to turn";—alluding to its tortuous mode of progression.

From an affection of these last-mentioned nerves, not only pain in the back may be produced; but, in certain cases, tenderness in one or more spots; with fever, and pain in the sides or legs. Or,—from the spinal cord being more extensively affected.—the œsophagus or stomach may be very sensitive; so that food causes pain till it gets out of the stomach.*]

Why, in different constitutions, menstruation observes different terms,—why it affects the hebdomadal† period,—why it more frequently affects the *lunar* than the *solar* month, I am unable to explain. Dr. Mead was, I fancy, disposed to be a little merry, when he gravely ascribed the tides and the catamenia equally to the influence of the moon. If a worthy man says a foolish thing, it is sure to be remembered; and of all the opinions of Dr. Mead there is none, perhaps, which is more frequently cited than this.

Its Interruption frequently produces Vicarious Discharges.—When uterine menstruation is suspended, there is sometimes, vicariously, a periodical discharge from other parts; and, to omit other examples, I may observe that, in the hospital over the way‡, there fell under my own notice a case, in which every three weeks, for at least three times in succession, there was a discharge from a sore on the hand, in place of a discharge from the uterus (observing the same period) to which the patient had been previously accustomed. In this case, it is worthy of remark, that, some two or three hours before the commencement of the eruption, there was a throb in the course of the radial and ulnar arteries.

Enlargement of the Uterus.—Although I am not prepared to assert that, in menstruation of the uterus under procidentia, the organ *always* doubles its size, yet, in one instance at least, I know that a great increase in the bulk of the uterus occurred (I think I may say) regularly; and the whole womb might be felt to throb. Laying these facts together, we may, I think, venture to infer that, whatever may, month by month, be the cause of the topical increase of the vascular action in the menstruating vessels, it is the determination of blood to the uterus, produced by this topical excitement of the vessels, that gives rise to the discharge. These excitations and congestions are, perhaps, allied in nature to the congestions and excitations observed in the genitals, the breasts, the nipples, and the appendages to the heads of our domestic fowls. They are also allied, perhaps, to the œstrum of animals;—but of that in another place. When women are led, from disease of the pelvis, to examine the uterus, they sometimes imagine that it is larger during the catamenia, or immediately before. Probably their remark is correct. During the action of the uterus, and just before it, the bosom often swells, and becomes more tender and firm.

Generally interrupted during Pregnancy and Suckling.—Although women menstruate during the child-bearing period of life,—as I have already observed §,—this action is entirely arrested during pregnancy and suckling;—there being, however, exceptions to the

* Dr. Burns's "Principles of Midwifery"; Ninth Edition; Pages 160 and 161.
† From ἑβδομας, *a week*.
‡ St. Thomas's.
§ At Pages 628 and 629.

general rule. Some women menstruate during the first months of gestation; nay, perhaps, in some rare instances, throughout the whole process. In most cases, however, it ceases; and also ceases during suckling; though, in the latter process, it is not unfrequently renewed at the end of ten or twelve months, although the suckling be continued still; and hence we must not hastily conclude that a woman is not pregnant, merely because she menstruates; for although doubts may be raised respecting the continuance of the catamenia during the whole term of gestation, yet I have repeatedly met with cases of pregnancy, in which the catamenia have continued to flow during the first two or three months. Indeed, notwithstanding Denman's assertion to the contrary, this may, I think, be looked upon as by no means very uncommon.

[Numerous as the opinions have been of the efficient cause of menstruation, two only have been entertained of its final cause; first, that it was designed to put and preserve the uterus in a state fit for conception; secondly, that this blood, being more in quantity than was necessary for the ordinary purposes of the constitution, became, during the state of pregnancy, nourishment for the fœtus, without any reduction of the strength of the parent.

The first of these opinions, I believe, is not controverted;—observation having fully proved that women who do not menstruate from the uterus, or who are not in a state disposed to menstruate, cannot conceive; even though they should have a periodical discharge of blood from any other part of the body. Hence we may conclude,—whether menstruation be eventually necessary for the constitution of a woman or not,—that it is a circumstance on which the due and healthy state of the uterus very much depends. It has also been observed that all animals, at the time of their being salacious (or in a state fit for the propogation of the species), have a discharge equivalent to menstruation. This discharge is generally mucous; but in some instances, in very hot seasons and climates, it becomes sanguineous;—as I have often observed.

The truth of the opinion, that the menstruous blood contributes to the formation or nutriment of the fœtus, there is much reason to doubt or to deny. The former seems to have been founded on the observation, that women who did not menstruate could not conceive; and this, if carried to its full extent, might have led to another conclusion;—that the time of menstruation was most favourable to conception. This conclusion is allowed not to be just;—there being the readiest disposition to conceive, not *during*, but soon *after* a period of menstruation. As to the share which the menstruous blood might have in the nourishment of the fœtus, as all animals, whether menstruating or not, supply their conception with nourishment of a proper kind, and in sufficient quantity to bring them to perfection, we may be permitted to conclude that it is by some more common principle. Had there been a gradual abatement of the discharge, in proportion to the increase of the fœtus, its nourishment might have been presumed to be one of the final causes of menstrua-

tion; but, as there is an instant and total suppression of the menses when a woman has conceived, they must either be *superfluous* in the *early*, or *deficient* in the *advanced* state of pregnancy.

The mucous discharge from the uteri of animals, proves that they are in a state favourable to the propagation of their species; and the menstruous discharge is a proof of the same in women, as far as the uterus is concerned. For the reason of this difference, we are to search in the structure of the uteri of the different classes of animals. The desire of procreation exists, in animals, only at certain seasons of the year. By these seasons it is regulated in such a manner, that the offspring is produced at the time when it is likely to suffer the least injury from the climate in which it is to live; so that it is accommodated to every climate;—unless the genuine nature of the animal be changed by indulgent treatment, or by defect of nourishment. Women, on the contrary, having every month that discharge which proves them capable of conceiving, propagate their species at every season of the year; and the gratification of the attendant desire, when enjoyed with prudence, may be esteemed a peculiar indulgence granted by Providence to mankind.*]

Menstruation.—[In this country, menstruation commences between the fourteenth and nineteenth year; in warm climates, it begins earlier; and in cold, not till after the twentieth year†. Great variety is observed in the period of its return. Sometimes it occurs every three weeks; but the usual time is *four* weeks. The discharge is sanguineous, but not pure blood; for it does not separate into crassamentum‡ and serum§; and though kept for years, it does not putrefy. Some maintain that there is an analogy between the menstrual flux, and the tides of the ocean‖; but if that were the case, all women would menstruate at the same time. When the uterus has been prolapsed, the menstrual secretion has been observed to drop from its orifice¶. The quantity amounts to about four ounces; and it lasts, in this country, about four days. The discharge contains no coagula; and when these exist, it is a case of menorrhagia. On the first day, it is generally scanty; becomes more copious next day, particularly towards night; and then declines. The uterus is larger and heavier at the periods of menstruation, than at other times. Females are more exposed to cold, while menstruating; and therefore take more care to guard against it. People, if they know a woman well, can tell by her countenance when the menses are present. I am made sensible of the same fact by an unfortunately quick scent. When you have occasion, in practice, to question a lady on

* Dr. Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 105 and 106.

† The dependence of the first menstrual period on climates is generally recognised; but is disputed by Mr. Roberton, of Manchester, in an able paper published in Number 113 of the "Edinburgh Medical and Surgical Journal".

‡ From *crassus*, "thick."

§ From *serus*, "late";—because the remainder of the milk, after losing its richer parts, is "serum."

‖ See Page 632.

¶ See Page 630.

the subject, you ask "when she saw anything last", or if she is "regular." A nod will often be sufficient. Some females suffer much in menstruating; and even die prematurely. Many consumptive patients, for instance, die from difficult menstruation. At the first menstrual period, the habits of the female become changed from freedom to shyness. The discharge is colourless at first: but at the subsequent periods it becomes of a dark colour. It may be accompanied by pains in the pelvis, and by an inclination to eat strange things; such as cinders, earth, &c. I have known a quarter of a pound of chalk eaten daily; and the secretion not to become sanguineous for some months. When menstruation is suppressed, a vicarious discharge sometimes take place. I have seen blood issue from the nipples, in such cases; and likewise sanguineous perspiration.*]

(2.) *The Secretion from the Mucous Membrane of the Uterus, and of the Fallopian Tubes.*—[The uterus is lined throughout with a mucous membrane, which is also spread along the fallopian tubes. The secretion from this membrane is permanent, and continues during the whole of life, with the exception of the period of pregnancy; at which time the internal structure of the uterus undergoes a great change, and forms the outer membrane of the ovum, called by Dr. William Hunter "the membrana decidua". This mucus resembles, in consistence and appearance, the uncoagulated white of an egg, and does not differ from mucus in other parts of the body†. A very small quantity of this mucus is secreted;—its use being simply to lubricate the sides of these passages, so as to prevent the cohesion of them; and for this purpose very little is sufficient. In the other passages, which have external openings, the mucus is to be considered likewise as a defence against stimulating bodies which pass through and into them.

(3.) *The Secretion from the Glands in the Cervix of the Uterus.*—The structure of the uterus itself is very simple. Its sides are muscular, and the muscular fibres are capable of great exertion; and it is principally owing to the contraction of these fibres, that uterine hæmorrhage after parturition is restrained.

The structure of the cervix of the uterus is more complicated. More nerves are sent to this than to any other part of the viscus; on which account the dilatation of this part, in labour, is attended with great pain; and the diseases affecting it are productive of great distress and suffering.

The cervix of the uterus is also beset with a number of glands. These glands are more readily discernible in women who have died pregnant; and in some bodies they are probably much more numerous than in others.

The mucus secreted by these glands contains a smaller proportion

* Dr. Mackintosh's unpublished Lectures on Midwifery.

† According to the experiments of Mr. William Brande, mucus consists of albumen and soda.—See a paper in the "Philosophical Transactions", on albumen and some other secreted fluids.

of water than any other mucus in the body;—approaching nearer to the nature of a *solid*, than to that of a *fluid* body. It is semi-transparent, and possessed of a great degree of tenacity; it adheres to the fingers like birdlime; but the attraction of cohesion between its parts is so strong, that it may be generally drawn away entire from any body to which it has adhered. If the uterus of a pregnant woman is examined after death, this mucus may be drawn out of the orifices of the glands which secrete it. These glands, in a state of health, perform the office of secretion in pregnancy only; or if at any other time, the matter secreted is of a very different kind;—so resembling common mucus, as not to be distinguished from it.

It is probable that the secretion of this viscid substance is confined to the commencement of the state of pregnancy; for if the body of a woman in the third month of uterogestation is examined after death, the quantity of mucus filling the cervix uteri will be found to be quite as considerable as at the close of pregnancy. The intention of this mucus has been supposed to be, to prevent the escape of the ovum in its early state; and that when it has answered this purpose, the secretion ceases; but it is probable that it has some other use, at present not understood.

It is known that the uterus prepares for the reception of the ovum, before the ovum reaches its cavity, by the formation of the decidua.* The cervix uteri also performs the secretion of this viscid substance, immediately after impregnation has taken place†.]

SECTION 2.—OBSTRUCTED FLOW OF THE MENSES FROM ORGANIC CAUSES.

It sometimes happens that the catamenia fail to flow at the age of puberty, in consequence of organic obstruction of the vagina, or deficiency of the womb, or a want of the ovaries.

Absence of the Ovaries.—For women to be formed without ovaries, is indeed an uncommon occurrence, yet sometimes observed;—the ovaries either not existing at all, or consisting of mere vestiges. When the ovaries are thus wanting, or merely vestigiform, the uterus (sympathizing with this defect) is perhaps generally of small size, thin, sparingly supplied with blood-vessels, and (in consequence) but little prepared to act. When, too, the ovaries are wanting, it is remarkable that in some cases, at least, the genital and the general system do not undergo the usual womanly changes. The breasts are not developed; the pelvis does not spread; the external genitals are not enlarged; and the sexual appetites are not acquired. In a word, throughout life the patient,—whether at twenty or forty, whether sexagenarian or octogenarian,—seems to remain a mere girl still. From these indications, you may pretty certainly infer that the

* See "Medical Commentaries"; and a paper, by Dr. Clarke, in Volume 1, of the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge".—The parts referred to are preserved in the collection of the author (Sir C. M. Clarke); and in the preparation both these facts are demonstrated.

† Sir C. M. Clarke "On the Diseases of Females"; Third Edition; Pages 15 to 18.

ovaries are wanting; and the deficiency of the catamenia, in these cases, may be looked upon as incurable.

Absence of the Uterus.—It sometimes happens, that women are formed destitute of the uterus; or (which is more frequently the case) they have possessed it originally, but it has been removed by ligature or otherwise. I have elsewhere mentioned four cases of this kind;—Mr. Newnham's, Mr. Windsor's, Mr. Chevalier's, and my own; in all which the womb, being in a state of chronic inversion, was removed by ligature. If the uterus be, in this manner, thoroughly extirpated, menstruation ceases; except, perhaps, a little *show*;—the vagina menstruating *vicariously*, as it is called;—taking upon itself the office of the uterus. My own patient, who recovered thoroughly, remained (as I learned from a near relative) free from the catamenia for two or three years, at least; since which no report of her condition has come into my hands. Mr. Newnham's patient had no catamenial discharge for a length of time;—I believe I may say four or five years; but I am speaking from recollection. After that term, if there was any appearance, it was slight. Mr. Windsor's patient, also, ceased to menstruate after the uterus was taken away;—at least, for a time; and therefore it seems that the deficiency of the uterus, whether original, or from an operation, may occasion a cessation of the menstrual discharge. It deserves remark, however, that when the womb is removed, and the catamenia cease to flow, there may be a determination of the blood to other parts; more especially if the habit be in full health in other particulars. In my own patient, there was a determination of the blood to the head; so that cupping was necessary. I should add, however, that the symptoms were not so violent as we sometimes find them in women whose structure is complete, and in whom the cessation has been produced by other causes. Mr. Newnham's patient became plump after the operation. The removal of the uterus does not extinguish sexual desire.

Obstructed Orifice of the Vagina or Uterus.—The catamenia may fail to make their appearance in consequence of another organic affection; and that is an obstruction of the orifice of the vagina itself, or of the os uteri. When, in this manner, the parts are perfectly well formed, excepting that the hymen is impervious, all the other structures develop themselves at the age of puberty; but still there is no red discharge from the genitals; and the patient is supposed, at first, to labour under chlorosis of the ordinary kind. In this state of things, if the catamenia are secreted, in the course of some two or three years after puberty, the abdomen begins to enlarge; and when the character of the girl and the history of the case are not sufficiently known, perhaps the patient is supposed to be pregnant;—a mistake the more easily committed in the advanced stages of the disease, because the uterus becomes larger and larger every month; until, at length, it acquires the bulk of a nine months' pregnancy. The disease still continuing, it reaches at length its third stage; and then pains are felt like those of parturition; and perhaps the obstetrician (I use the commodious and not inelegant appellation first proposed

by Dr. Ryan) is sent for in all haste; and when he makes an examination, he feels something very similar to the membranes charged with the liquor amnii; and perhaps he fancies that he perceives something like the head of the fœtus; and he tells the lady that she is going to have a boy; and really the mistake, though ludicrous, is by no means unpardonable; for the resemblance to the membranes, as observed in ordinary labour, is very close; and might deceive an experienced obstetrician;—provided the examination were made carelessly. After all, however, this rounded substance,—which resembles the sac containing the liquor amnii, is,—in truth, nothing more than an imperforate hymen, dilated in consequence of the accumulation of the catamenia within, and forcing through the external parts, much in the same way as the water-cyst during parturition. There are, then, three different states of the body with which the retention of the catamenia, from obstruction, may be connected;—namely, chlorosis, pregnancy, and parturition;—the disease, notwithstanding, being none of the three; but merely an accumulation of the catamenia, occasioned by the imperforate state of the hymen (which is, perhaps, the most common cause of these symptoms); or else arising from the closure of parts above;—the vagina for example, or the os uteri.

Operation for Imperforate Hymen.—When the disease arises from an imperforate hymen, it may, at any time, be cured with facility. The hymen is laid open with a scalpel. A crucial * or stellated † incision is to be preferred; for the opening should be free; and, during the healing process, care must be taken to prevent the entrance of the vagina from so far closing, as to become unfitted for sexual intercourse. When the hymen is divided at a time when the patient has uterine pains, the catamenia are expelled somewhat like the liquor amnii in labour; but if the catamenia are thickened by absorption,—so as to resemble treacle,—they are apt to be in part retained, and may become putrescent; when it may be necessary, not only to cut through the hymen, but to inject warm water, with a long-tube syringe, into the cavity of the womb itself;—so as to purify it by rinsing. There is one other remark, not without its importance, which I will offer on this part of the case. It seems that where puerperal fever is epidemic, women in whom the hymen has been divided in this manner, are liable to inflammation of the peritoneum afterwards;—in the same way as they are liable to similar inflammation after they have been recently delivered. Cases of this kind,—two in number, if my memory serve,—have been mentioned by Denman; and a few years ago, at the London Hospital, a case occurred, for a reference to which I was indebted to Mr. Mitchell of Kennington. In this case the accumulation of the catamenia amounted to two gallons, or more. The obstruction was divided; inflammation of the peritoneum ensued; but the patient was saved by vigorous antiphlogistic remedies. As this is the case, if I had a patient under my care, I should dissuade her from submitting to the

* From *crux, crucis,* "a cross". † From *stella,* "a star".

operation, till the epidemic predisposition to puerperal fever had subsided; even though she waited for three or four years; for, without pretending to assert that abdominal inflammation from this cause is equally dangerous with the genuine fever of puerperal women, I think it not impossible that it might cost her her life. Why the discharge of the accumulated catamenia should, like parturition, give rise to peritonitis, I do not pretend to explain; but the fact is curious. Is there any analogy between the lochia and the catamenia; and is this the cause of these similar effects? Perhaps some great pathological truth lies concealed here.

Vagina, or Orifice of the Uterus Impervious.—When the orifice of the vagina is open, the parts may be impervious above; and this I suspect in two ways; for the closure may be confined to a certain spot only;—the mouth or neck of the uterus, for example; or the middle of the vagina; or, on the other hand, the sides of the uterine cavity, and of the vagina, may mutually adhere throughout their whole extent. Of these closures some may, perhaps, have existed from the birth; but others,—indeed, I may say *most*,—are the results of inflammation or slough of the inner membrane; and though these inflammations may occur even in virgins, yet the most common cause of the disease is a more or less laborious parturition. When the closure above is not partial, but reaches throughout the whole extent of the genital passage, the case scarcely admits of a remedy; nor, indeed, will the catamenia form. But when the obstruction is confined to a particular spot of the genital cavity, the catamenia may form and accumulate; and the history and the treatment of the case will be found to be, on the whole, very similar to that of an imperforate hymen. As, however, in a case of this kind, it is not so easy to enter the cavity above, as in those cases in which the hymen alone is thickened and imperforate, I should dissuade the operator from being in too much haste to take up the scalpel. If he wisely wait, so as to allow of an accumulation of the catamenia, and a dilatation of the womb and vagina above,—provided he possess a moderate share of dexterity,—he will find his operations easy; but if he attempt to lay open the parts when the accumulation is small, it may be no easy task to enter exactly the upper cavity; and the knife may accidentally penetrate into the bladder, the rectum, or the parts that are interposed. In those cases, too, where the parts are impervious, there is yet a further advantage in waiting. If the cavity is closed throughout its whole extent, there seems to be but little effective use in our attempt to cut down upon it; or if the parts above should be wanting, and more especially the uterus, why should we try the scalpel?

Diagnosis.—Hence the need of being able to decide these important points. If we operate too soon, the diagnosis may be difficult; but if we wait, so as to give full time for the accumulation of the catamenia,—say to the amount of one or two pints,—the presence of this fluid in the uterine cavity above, will at once demonstrate the existence of the womb and ovaries, and the absence of any general

and diffused adhesion of the parts. But how are we to discover the catamenial accumulation? By examination. The task is easy to those who possess the requisite tact.

When the genitals are impervious above,—provided the obstruction result from inflammation, suppuration, or slough (in consequence of delivery, or other cause),—the probability is that the obstruction constitutes the whole of the disease; but if the obstruction have existed from the birth, the possible co-existence of some other affection is not to be forgotten. Indeed, in some of these cases,—as observed already,—the womb or ovaries may be wanting; and I recollect one case which ultimately came into our hospitals*, where tubercular dropsy of the ovaries was associated with the diseases. Careful examination must determine these points. A diagnosis becomes more necessary, if the disease have not been produced by laborious parturition. Thus much, then, respecting those failures of the flow of the catamenia, which are to be ascribed to organic defect;—to a want either of the womb, the uterus, or the ovaries, or to an obstruction of the parts below the body of the womb.

SECTION 3.—LEUCOPHLEGMATIC CHLOROSIS.

General Appearance.—Patients will sometimes be brought to you pale, cold, and bloated; with an abdomen enlarged from flatulence; a disposition to swelling of the legs; feelings of languor, lassitude, torpor, and an incapability of much muscular action. They are unwilling to move about; going up stairs seems to be an Alpine labour; and traversing the room requires an effort of resolution, sufficient to carry many across the Straits of Dover. Now, together with this inactive state of the system, and the evident deficiency of healthy blood,—as shown by the paleness, and coldness, and sallowness of the patient,—there may be a failure of the flow of the catamenia; so that at the age of sixteen, seventeen, or eighteen years, perhaps, the catamenia have scarcely, or not at all appeared.

Its Stages.—[Chlorosis steals insidiously on the patient;—so insidiously sometimes, that I have known parents even to be unconscious of its existence, until it has been distinctly pointed out to them; although it may have attained its most marked form. It has three tolerably distinct stages;—the incipient, the confirmed, and the inveterate.

The incipient stage of this morbid affection is more particularly characterized by paleness of the complexion, an exaginous state of the lips, slight tumidity of the countenance, and puffiness of the eyelids,—especially the upper one. Along with this marked state of the countenance there is, sometimes, a slight tinge of green, of yellow, or of slate-colour. In the confirmed stage of chlorosis, the state of pallor of the complexion is still more marked; and the tongue, as well as the lips, is exanguious;—perhaps with a slight lilac-hue in the upper lip. There is usually tumidity of the integu-

* Guy's and St. Thomas's.

ments in general, and of the eye-lids in particular. In the inveterate or last stage, this state of the countenance is apt to be modified by a degree of loss of flesh on one hand, and by increased œdema (perhaps partially disposed) on the other.

State of the Tongue.—In the first stage of this affection, the tongue is rather white and loaded; and somewhat swollen and marked by pressure against the teeth. Its papillæ* are enlarged; it is slightly formed into creases or folds; and its colour is rather pale. The gums and inside of the cheeks are, like the tongue, somewhat tumid; and the latter also, like the tongue, are impressed by the teeth. The mouth is generally clammy, and the breath tainted with a peculiar odour. In the confirmed stage of chlorosis, the tongue becomes clean, smooth, and exangious; with a slight appearance as of transparency, and a slight lilac-hue. It is flat upon its surface, and still somewhat indented by pressure against the teeth. In the last stage, the tongue frequently becomes smoother still, and slightly shining; and I have, in some cases, observed an odour of new milk in the breath of the patient.

General Pallor of the Surface.—In the beginning of this morbid affection, there is an increasing pallor of the general surface, hands, fingers, and nails; an opaque, white, and tumid state of the skin; a slight tendency to œdema of the calves of the legs, and ankles, and to loss of flesh. In the more confirmed stage, the skin is still smooth, but rather dry; and the integuments are exangious, puffy, opaque, and perhaps yellowish, with the same or increased tendency to œdema. The nails are exangious; and, in some instances, slightly split or exfoliated. In the confirmed stage, the appearances are the same, with the addition of some loss of flesh, and perhaps increased œdema. The nails are sometimes slightly split, and their tips opaque.

Deficiency of Nervous Energy.—The patient in chlorosis is languid, listless, sedentary, indisposed to exertion, easily overcome by exercise, nervous, low-spirited, and frequently a prey to singularities of temper. There is generally severe recurrent headach, or vertigo; sometimes heaviness for sleep; and sometimes an impaired state of the memory, and of the faculty of attention.

Palpitation and Breathlessness.—There is frequently palpitation recurring in attacks, or of a more permanent character; and, more frequently still, a sense of fluttering in the præcordia†, with irregular action of the heart, or imperfect syncope. The pulse is sometimes rather frequent, always easily accelerated. There is usually a degree of breathlessness experienced on any exertion; sometimes fits of dyspnœa; sometimes a sonorous cough.

Pain of one or both Sides.—Frequently, also, there is a singular and peculiar pain of one or both sides, either together or alternately; —situate over the false ribs; and spreading a little upward, backward, or downward;—so as to occupy the space between the false

* From *pappus*, "down".

† From *præ*, "before"; and *cor, cordis*, "the heart".

ribs and the ilia. The recurrent nature, the particular situation, and the alternating character of this pain, are altogether peculiar and characteristic. The patient perhaps complains on pressure; but, on a careful examination, this pain will be found not to be aggravated by a deep inspiration. For this purpose the inspiration must be repeated; as it may appear, at first, to increase the pain; but afterwards it will be found not to do so.

Appetite Impaired.—The appetite is generally impaired, capricious, and even depraved;—inducing longings for some indigestible substances; such as acids or pickles, magnesia or chalk, tea-leaves, flour, grits, wheat, cinders, sand, &c. The patient likes to have some one of these substances in her mouth; but especially when affected by agitation or anxiety.

State of the Bowels.—The bowels, in the incipient stages, are always constipated. Afterwards this state alternates or leads to diarrhœa, and sometimes to hæmatemesis or melæna*. The evacuations are usually scanty, dark coloured, and fetid.

State of the Menstrual Discharge.—The flow and condition of the catamenia are, in general, very early affected in this disorder. They become irregular in their returns, inconstant, or of short duration in their flow, defective in quantity, and pale in colour. Sometimes they are discoloured; sometimes they do not cease kindly, but are continued into a state of leucorrhœa; at other times, and especially in the latter stages of the disorder, there is amenorrhœa†. In some instances, each return of the catamenia has been preceded and attended by much pain in the back, and in the region of the uterus.

In the more Advanced Stage.—In the inveterate stage of this disorder of the general health, the symptoms assume a modified but still more aggravated character. There is a very slow but progressive loss of flesh; the langour assumes the form of permanent debility; the œdema increases, and assumes the aggravated character of anasarca; the pulse becomes more constantly frequent; and there is altogether less of the character of functional derangement, and more of that of disease. The local complications become more permanent, or are renewed by the slightest causes; and, in some painful instances of this affection, the patient has been unable to bear the most ordinary occurrences of domestic life; and has, perhaps, been compelled to remain altogether in her room, or upon the sofa or bed. In this stage of the disorder, there is sometimes an almost permanent pain of the head, perhaps with intolerance of light or of noise; sometimes incessant pain of the chest, with tenderness, difficulty of breathing, and cough; and there are frequently pain and tenderness of the abdomen, with sickness, and constipation or diarrhœa. Various other symptoms prevail in different instances; such as locked-jaw, clenched hand, contracted foot, twisted limbs, palpitation or other forms of dyspnœa, fits of coughing, hiccup, retention of urine, &c.

* From μελας, *black*.

† See Pages 649 to 656.

Pathology of Chlorosis.—I should despair of giving any thing accurate or specific, with regard to the pathology of this form of disorder of the general health. There appears to me not to be a system, an organ, a texture, or even a fluid in the animal economy, which does not suffer in different instances of this multiform disorder. It has already been shown*, that the complications of the more *acute* form of disorder of the general health, differ totally from those of the more *protracted*, both in their various seats, and in their nature;—the former affecting the more vital organs, the latter the superficial textures. A similar remark equally applies to that form of disorder of the general health now under consideration.

There is in chlorosis a remarkable state of the capillary system of circulation, both of the vessels, and of the fluids; it is this which gives origin to the exangious appearance of the countenance, lips, tongue, gums, and general surface; to the tendency to œdema; and to different species of hæmorrhages, especially those of the mucous and cutaneous surfaces; such as epistaxis†, melæna, hæmatemesis, and even purpura‡; and it is from this circumstance that the catamenia become almost colourless and aqueous. I have observed the blood which has flowed from the nose scarcely to tinge the sheets; and that taken from the arm to resolve itself almost entirely into serum, with scarcely any crassamentum. This disorder affords, therefore, one of the most unequivocal examples of the humoral§ pathology.

The state of the capillary system of circulation, is widely different from those forms of disorder of the general health already referred to‖. From that of the last chapter¶ it differs, especially, in not having any tendency to produce these diseased states of the mucous and cutaneous surfaces, and to assume the character of cachexia, to which allusion was slightly made in that part of this work.

Causes.—It would be difficult to trace the series of causes and effects in the pathology of this affection; but I do think the *first* cause is in the state of the bowels; that a *concurrent* cause is the peculiarity of constitution already described; and that an *exciting* cause is the inactive and sedentary mode of life usually obtaining in female youth. The stomach suffers from its continuity with the intestines; the uterus possibly by contiguous, the head and heart by remote, sympathies. The pain of the side is peculiar, and too common to be a mere accidental complication; and it also, therefore, probably depends upon the state of the large intestines.

The state of the circulating fluids is probably deteriorated from defective digestion and assimilation; and this deteriorated condition

* In Dr. Marshall Hall's "Commentaries on some of the Diseases of Females". Part 1; Chapters 2 and 3.

† From *επισταξω, to distil from.*

‡ From *πορφυρα, a purple shell.*

§ From *humor*, "moisture";—derived from *humus*, "damp earth".

‖ In Dr. Marshall Hall's "Commentaries".

¶ Chapter 3, in Dr. Marshall Hall's "Commentaries"; Part I.

of the blood probably becomes a cause, in its turn, of impaired vital energy;—the heart and the brain being imperfectly stimulated. I am led to this conjecture, at least, by an attentive consideration of the effects of a deficient quantity or quality of the blood in some other cases; and especially of the effects of blood in cases involving a deranged state of the general health, of the characters described in the second and third chapters of this work*. It is obvious, from these remarks, that blood-letting, so apt to be described for the painful affections of the head or side, should be employed with the utmost caution.

The state of disorder has sometimes been mistaken for organic disease; but its character is so distinct, that there does not appear to me any danger of mistake with the careful observer. The state of the complexion, especially when it has assumed somewhat of the icterode hue,—to be mentioned in the ensuing chapter†,—has, indeed, frequently led to the suspicion of disease of the liver. The diagnosis is, however, readily established, on comparing the state of the lips, of the tunica conjunctiva, of the urine, and of the fæces; and by a careful examination of the region of the liver.

The patient affected with chlorosis, is extremely subject to attacks of the local affections already mentioned; and to the same affections in a more continued form. It is, therefore, essential to distinguish the complications of this morbid affection from some sudden and some chronic diseases. The first case in which I saw the necessity and the importance of these distinctions, had been successively treated as inflammation of the brain, and inflammation of the liver, by bleeding, blisters, and leeches, to an almost incredible extent;—the patient having been first subject to severe pain of the head, and afterwards to pain of the right side. The case was distinguished by the usual appearances and symptoms of disorder of the general health; and it was perfectly and even promptly removed by the appropriate remedies.

Diagnosis.—The diagnosis is founded upon the state of the countenance, of the tongue, of the general surface of the bowels, and of the catamenia; the multitude and variety of the other symptoms; the variable history of the case; perhaps, the suddenness and repetition of the attack; and the effects of remedies. The only difficulty is, when some topical inflammation comes on, in a patient previously affected with chlorosis. Even in this case the disease assumes a more settled and definite form, instead of the varying and complicated character of chlorosis; and may then be distinguished by a careful examination.

These observations strictly apply to the diagnosis of chlorosis with pain of the head, from inflammation of the brain or its membranes. In the latter disease, there are not the characteristic appearances and symptoms of chlorosis;—as observed in the countenance, tongue, general surface, and general symptoms; while there are, on the con-

* Dr. Marshall Hall's "Commentaries". † Of Dr. Marshall Hall's Work.

trary, the peculiar and definite symptoms of inflammation of the encephalon*; which it would be out of place to mention here.

The cough and dyspnœa, the palpitation of the heart, the pain of the side, and the pain and tenderness of the abdomen, are to be distinguished from inflammation within the chest or abdomen, in the same manner, by comparing the general and local characteristics of chlorosis with those of each of these diseases; and by ascertaining the history, and observing the effects of remedies.

The pains of the side, or of the abdomen, so apt to occur as complications of chlorosis, are to be distinguished from pleurisy or peritonitis, by the same recurrence to the state of the complexion, tongue, and general surface, to the other symptoms, and by their own peculiar character. These pains, for instance, are less constant (both in situation and duration) than those of an inflammatory nature; and though sometimes aggravated by a deep inspiration, are not invariably so;—especially on repeating the inspiration a third or fourth time. The accession of pain of the side, in chlorosis, is apt to be sudden; the side affected is sometimes changed; the degree of pain is sometimes extremely severe, at others less so; and there is more *expression* of pain than is permitted by the pain of *inflammation*; which represses the movements of respiration implied in the loud expression of pain.†]

Treatment.—In treating leucophlegmatic‡ chlorosis,—for so it may be called,—we have it not generally in our power promptly to cure the disease; but sooner or later,—sometimes in one or two years, and sometimes in a few months,—it may give way. Although I know not that I can lay down to you any mode of treating this chlorosis with that certain efficacy which I could wish, yet I will throw out a few hints, which have not been without their utility in my own practice; and which, therefore, may be of service in yours.

Attend to the Chylopoietic Viscera.—In the case of leucophlegmatic chlorosis, I deem it always a point of the first importance to attend to the state of the chylopoietic viscera;—the stomach, the bowels, and the liver. You may therefore commence your treatment by clearing the alimentary tube, by means of emetics and purgatives. An emetic which answers the purpose very well, is ipecacuanha;—given once or twice a week, for two or three weeks; and the ordinary purgatives, senna and salts, will very effectually clear out the bowels. With the same view of improving the state of the chylopoietic viscera, it has been advised, that we should not merely put the patient on the temporary use of purgatives, to displace any matter that may be accidentally lodging in the alimentary tube, but that a regular course of laxatives, joined with the occasional use of the

* Some writers restrict this term to the cerebrum alone; others comprehend in it the whole contents of the cranium. It is derived from εν, *in*; and κεφαλη, *the head*.

† Dr. Marshall Hall's "Commentaries on some of the Diseases of Women". Part I; Chapter 4.

‡ From λευκος, *white*; and φλεγμα, *phlegm*.

blue-pill, should be administered for weeks together. This method of keeping up the intestinal action seems to be the rather necessary, because we generally find the evacuations to be faulty;—sometimes white, sometimes green, often black, and often offensive in a high degree; with a strong disposition to constipation; and seldom, if ever, in a state that is perfectly healthy. With the view of improving the state of the chylopoietic viscera, it has been proposed by Dr. Hamilton of Edinburgh,—who has written on purgative medicines*,—that we should not merely use a gentle course of laxatives, but should administer the purgatives in large doses, day after day; till we have given the patient a thorough purgation, and obtained stools of healthy character. He states, as matter of observation, that in cases of chlorosis, when this method of large purgation has been followed up one week after another, it has been ascertained that, instead of patients losing strength, they have, on the contrary, rather acquired it;—an accident which is to be explained by the improvement of the state of the stomach and bowels, which this strong stimulus will sometimes occasion. I should observe to you, however, by way of caution, that I have been told by a very able and distinguished practitioner,—whose name would carry much weight with it,—that when he was at Edinburgh, a case being managed in this way,—certainly with the best intention,—the girl died;—sinking, as it appeared to him, under the effect of the purgatives. This single case I mention to you merely as a caution; and not, by any means, with the view of passing a general condemnation on the practice which has the authority of Dr. Hamilton (not the obstetrician) to recommend it. I may observe, however, at the same time, that I mention this method of strong purgation on this authority only; that I have never myself admitted it into general use; and that I cannot, therefore, pass upon it a personal judgment. Milder remedies being in general sufficient for the purpose of curing the disease, if time be allowed, I always give them the preference; except, perhaps, in a few anomalous cases, where the original strength of the habit was great. Here, then, are the three principal modes in which it is proposed to manage the chylopoietic viscera, in cases of leucophlegmatic chlorosis;—by the use of active purgatives, according to the Hamiltonian method;. by the administration of milder laxatives, consisting of blue-pill and so on (a method which is perhaps the safer, as it is the less violent); and by the mere clearance of the bowels, under emetics, and a few doses of ordinary purgatives. Of these three modes, the second is that which I should recommend to your attention.

Invigorate the Sanguifying Powers.—In many cases of leucophlegmatic chlorosis, it is of the first importance to inquire into the quantity of the healthy red blood in the body;—generally deficient. From the very look of the girl,—from her coldness, paleness, and inactivity,—her white lips, her pallid tongue, her sallow cheeks,—

* "Observations on the Utility and Administration of Purgative Medicines in Several Diseases. By James Hamilton, M.D."

it would seem that, though her vessels may be full enough, yet that they are not full of healthy, rich, red blood; and if we can, therefore, invigorate the sanguifying power,—so as to acquire for her a fuller supply of the vital fluid,—we shall, in truth, have made one grand step towards the complete cure of the disease. In this attempt at augmenting the quantity of red blood, you will find great assistance from the medicines to which I shall presently advert; and if you once get this fluid into a healthy, not to say *lively* state, there will be little doubt that the disease will speedily give way.

Regulate the Diet.—With this view of filling the vessels with healthy blood, you should allow your patient a generous diet, apportioned to the powers of her digestive apparatus; and she may be supplied with all the food that she can take without producing symptoms of dyspeptic oppression, and offensive stools. Three meals, and perhaps four, she should take in the course of the day;—breakfast, an early dinner, tea, and a supper. In the way of peptic* preparative, you may recommend her, on rising in the morning, to take a table-spoonful of white mustard-seed, unbruised; and two or three pills, consisting of quinine, say one grain, and four grains of the best Cayenne-pepper (I say "of the *best* pepper"; for some is little better than saw-dust); and this pepper should be powdered thoroughly; and mixed up with a little mucilage, or any other combining substance which is likely to dissolve soon in the stomach. This peptic medicine may be taken four times a day; about half-an-hour before each of the four meals. The quantity of it ought to be measured according to the effect produced;—warmth of the stomach, and a little gnawing pain there, being perhaps the best criteria that the medicine is in action. At breakfast she may use biscuits, or dry toast, or stale bread; with fresh butter, perhaps a new-laid egg, and one little cupful of hot black tea;—as hot as the mouth will bear it; in order that it may warm the stomach, and stimulate the inner membrane; for these hot drinks, though hurtful to the healthy, may be found very useful in a diseased stomach; and, much in the same manner as heated water is found to swell the hand immersed in it, and to excite the capillary circulation,—so as to produce reddening and perspiration,—the hot tea may be reasonably thought to produce its action on the capillaries of the stomach. The patient should be confined to one cupful of tea, that she may not deluge the stomach; for some women are very fond of taking tea in excess; and, in this way, they may overload the gastric cavity, and dilute the gastric juice, so as greatly to impair its digestive and solvent powers. At about one or two o'clock,—namely, five or six hours after breakfast,—another spoonful of the white mustard seed and the peptic pill may be used;—being administered half an hour before the dinner. At this meal, be it observed, *boiled* meat is preferable to *roast* meat; *white* meat to *red* meat; that which is *well*-done, to that which is *under*-done; the *in*side to the *out*side; and potatoes to every other vegetable. The food is to be thoroughly masticated, and eaten slowly. There should be no drink; or if there must be

* Digestive; from πεπτω, *to ripen.*

some, then take half-a-tumbler of very hot water; but, in general, the drink required ought to be taken two hours before dinner is begun. Toast-and-water, table-beer, or other aqueous fluids, are to be preferred. The pepper and the mustard-seed will supersede the alcoholic stimulus. Three or four hours after the dinner, the tea may be ordered;—not sooner, lest it should disturb the digestive powers. This meal is to be similar to the breakfast; and three or four hours after tea, the patient may sit down to supper, in the form of a very light dinner. With respect to the general beverage, my opinions are a little unsettled. To the alcoholic stimulus I have an aversion, perhaps even a prejudice; and, certainly, if your patient under the use of this diet is acquiring strength, I should not give much stimulant of this kind; but if not, then wine, or ale, or porter, or spirit, may be given; and of the four I give a preference to spirit, in measured quantity, and diluted with four or five times its bulk of water. These fermented liquors, you may tell your patient, must never affect the head; and while she keeps clear of any unpleasant impression of that kind, she cannot be considered as indulging in marked excess. In general, in these cases, whatever beverage the patient uses, is better taken apart from the food;—say three hours afterwards; or, still better, two hours before. Both you and your patients may read Ludovico Cornaro on longevity, with great advantage.

Tonic and Chalybeate Medicines.—In cases of leucophlegmatic chlorosis, again, you should not only endeavour to improve the red blood, and increase the quantity, but it should be your object to invigorate the system; and if you succeed in the two former points of treatment, you will find that this third indication, in a manner, fulfils itself. To invigorate the system you may make trial of tonic medicines;—taking care you do not overload the stomach, so as to obstruct digestion. Bark, bitters, aromatics, and preparations of iron,—now too much neglected, and very improperly superseded by calomel,—may all be used in turn. I can especially recommend iron and the compound myrrh-mixture, to your consideration, or the carbonate of iron, or the sulphate (in powder), are perhaps the forms in which it may be best administered. The compound myrrh-mixture constitutes what was formerly called *Griffiths's mixture**. It is rather bulky and offensive. The carbonate may be given in powder, or in an electuary; and the sulphate in a pill. Dr. Marshall Hall, whose opinion is always to be heard with attention, has found iron of great efficacy; and I have myself, in many instances, been very well satisfied with its effects.

Change of Air and Bathing.—Still more to invigorate the patient, if she is in the midst of a large town, you ought to send her to the sea-side, or into the country. Indeed, I know of no means more efficacious for improving the digestive secretions, than change of air. I do not here except mercury itself. You may sometimes have patients, for weeks together, in this large city†, with a metropolitan

* The "Mistura Ferri Composita" of the Pharmacopœia. † London.

paleness of the cheek, and a commercial whiteness of the tongue;—weak, sallow, emaciated;—rich and miserable;—in a word, labouring under gastric symptoms, too strong for your remedies; and yet these very patients, after having been eight or ten weeks, sometimes five or six only, in the country, acquire their full digestive powers, and become comparatively plump and fat. The cold shower-bath, where the patient is vigorous enough to re-act under it, may be used every day, or on alternate days. A dip in the ocean may be recommended, if the patient is at the sea-side; but it is better to defer the use of bathing, till the patient has a little recovered her strength. One of the best proofs of the salubrious action of the bath, is the production of a full glow; but if the body, after plunging, is pale-blue and chilly, or if local pains are felt, we must refrain. These different measures having been carefully pursued, the chylopoietic viscera having been strengthened and amended, the quantity of red blood having been increased, and the vigour of the system corroborated, should amenorrhœa* continue, you may have recourse to emmenagogue† remedies;—but of these hereafter ‖. Chlorosis is no medical objection to matrimony.

[Chlorosis is generally thought to be the consequence of amenorrhœa; but I think it is a kind of dyspepsia, *giving rise* to amenorrhœa. Pica‡ occurs in this disease, as well as in the African, or "dirt-eating" cachexia. But the latter occurs only where nostalgia§ is present; and this may be supposed to have vitiated all the secretions. Chlorosis is characterized by a green hue of the skin, a capricious state of the mind, black stools, disinclination to exertion, &c. Beside the remedies for dyspepsia, you should give emmenagogues‖; which are either purgative, antispasmodic, tonic, or specific. The latter include ruta graveolens (rue), crocus sativus (saffron), rubia tinctorum (madder), and secale cornutum (ergot of rye). Exercise and chalybeates are the best emmenagogues.¶]

SECTION 4.—AMENORRHŒA** OF THE ADULT,

Definition.—Women in the full vigour of life, and menstruating month after month with the utmost regularity, may, from some acci-

* From *a*, *without*; *μην*, a *month*; and *ρεω*, *to flow*.

† From *εμμηνια*, *the menses*; and *αγω*, *to move*.

‡ From *pica*, "the magpie"; which is said to be subject to this depraved appetite.

§ From *νοστεω*, *to return* (meaning to the patient's native country); and *αλγος*, *pain*.

‖ See a List of them at Page 655.

¶ Extracted from Dr. Fletcher's unpublished "Examinations."

** According to Sir Charles Mansfield Clarke, amenorrhœa is the result of inflammation of the substance of the unimpregnated uterus. In his work "on some of the Diseases of Females, attended with Discharges", he has described a white mucous discharge from the vagina, as characteristic of two affections; namely, "inflammation of the cervix uteri", and "inflammation of the substance of the unimpregnated uterus." In the first of these affections, menstruation is seldom affected, but proceeds as usual; though, occasionally, it may be painful. In the latter affection, the function of menstruation becomes suspended;—constituting amenorrhœa;—an occurrence which might be expected from the existence of disease in the organ which performs it.—A. L.

dental cause,—perhaps a fright, or cold, or the like,—be seized with a cessation of the catamenial flow.

Its Effects.—At first, perhaps, no inconvenience is experienced beyond the alarm; but afterwards the general health seems to give way; the habit becomes sallow and emaciated; there is darkness round the eyes; the cheek-bones rise into notice; and the general appearance is cachectic. At the same time, the stomach and bowels get into an unhealthy condition; and, perhaps, there are irregular determinations of blood to different parts of the system;—the chest, the bowels, the stomach, the brain, and the schneiderian membrane, being the parts of the body to which the flows are principally directed. When the determination of blood is to the brain, in general there is no effusion; otherwise our patients would be seized with apoplexy. Throbbings, cephalic pains, and mental confusions, may attack the woman; but the disease usually stops there. It rarely happens that vessels give way within the cranium; but where the determination takes place to other parts where the vessels seem to be less secure, effusion is by no means unfrequent; so that bleedings from the nose, bowels, and lungs, are by no means uncommon. When the bleeding is from the nose, there is no danger; when it is from the lungs, it may suffocate the patient; when from the stomach and bowels, it may prove dangerous too. Sometimes women throw up blood month after month, to the amount of one or two pints at a time;—not to mention larger quantities. It is not always that the effusions are of monthly occurrence. Nevertheless, there is frequently a tendency to periodical return; and, in some cases, you will find the discharge takes place with such regularity, that the disease may be properly enough called "vicarious menstruation." The case of this kind which occurred in St. Thomas's Hospital*, you have not, I presume, forgotten; and many other examples might be cited.

[A woman may have passed over that period of life when chlorosis is likely to occur, and menstruation may have been established very regularly for months or years; when, from certain causes, its return at the usual period may be prevented; or the discharge may be suddenly checked when it has actually taken place. An interruption of either kind may, in general, be attributed either to mental emotion, or to the application of cold.

We are continually witnessing the effects of these causes on the functions of the sexual organs. Sudden terror, or any other passion, will not only check the secretion of milk, but will alter its quality; for if a child sucks under such circumstances, it will be griped. It is an ascertained fact among ass-breeders, that if the foal dies and another is invested in its skin, and introduced to the mother as her own progeny, the milk will be freely secreted so long as the deception continues; but that, on her discovering the cheat, the secretion of milk immediately ceases. This proves that mental agitation has a powerful influence over the function of *one* part of the sexual system; and it will also affect not less powerfully the function of the

* See Page 632.

uterus. I was prescribing for a French lady labouring under a suppression of the menses; and, on questioning her, found that she had not menstruated since the Cossacks entered Paris; and it was a well authenticated circumstance, that at the time the allied armies entered Paris, a great number of French ladies were thus affected, from a similar mental emotion. The French journals of the day, contained long lists of patients labouring under this disease. The effect of cold on the uterus during menstruation, or about the time of its occurrence, is a matter of familiar experience; and it is to this influence that the suppression of the menses is, perhaps, most frequently to be imputed.

How do these causes operate? On some occasions they seem to excite an inflammatory action in the uterus; and they act on others by producing spasm;—differences dependent upon the idiosyncracies of different individuals. If a young unmarried woman of full habit, with a red face, fleshy, and robust, be exposed to these causes, the consequent cessation of the discharge is followed by pains in the head and back; a sense of weight, pain, and tension about the region of the uterus, which is also tender on pressure; together with a hot skin, and rapid pulse. Here the attack seems to be of an inflammatory nature. But when females of a delicate habit, having an irritable nervous system, are subjected to a similar influence, the consequences are irritation and spasm of the uterus, rather than inflammatory disease; for the pain is not continued; the uterus is not tender on pressure; the pulse is neither rapid nor full; and the skin is not hot. On the contrary, there is a general sense of chilliness; and the feet are particularly cold.*]

[Cases of suppressed menses having been regarded as arising from debility of the system or of the local vessels, it has been too frequent a practice to resort, in all cases indiscriminately, to the same supposed means of relief;—to the exhibition of chalybeates†, gum-resins, irritating purgatives, and cantharides. No diseases admit of being treated so generally; for even the most simple complaints require care in their management. In the cure of the itch by brimstone, for instance, the skin of one patient will be inflamed by a preparation of this drug, which will produce no mischievous effects in another. If cases exist of obstructed or suppressed menses, where the fluid is tardily secreted, in consequence of general or local debility, there are many others in which an opposite state of the frame becomes the cause of their production. The reason is obvious:—The function of menstruation, like the other functions of the body, is best performed when the system is in health. Now, health is not constituted by excess of fulness, or by the performance of violent actions;—any more than by debility, or enfeebled action. Consequently, the exhibition of stimulants will not influence this secretion, unless attention be given to the restoration of the general health of

* Dr. Gooch's "Compendium of Midwifery"; Pages 14 to 16.

† From *chalybs*, "iron" or "steel."

the patient, even in cases of debility. Still less will such a mode of treatment be applicable to cases of interrupted menstruation occurring in plethoric habits; where the presence of the plethora itself is the cause of the interruption of the due performance of the natural secretions.

Instead, then, of resorting to such measures,—to the employment of the whip and of the spur in such cases (where, if they do anything, they do mischief),—let the morbid peculiarities of the constitution, and the habits of life of the patient, be taken into consideration. Let the first be counteracted, and the second improved. Let the sanguine have her excess of fulness diminished; and let the debilitated have her powers augmented. In short, let the general health be amended; and then the functions of health will be restored.

The different secretions of the body are governed by the same laws, and are affected by the same causes. A derangement of one of them can seldom exist long, without being attended by a disturbance of the rest; and constitutional derangement will interrupt almost all of them. Every day's experience shows, that when the secretions of those organs which are esteemed of the greatest importance to health and life are duly performed, other secretions, which appear to be in unison with them, proceed also with the greatest regularity; and *vice versâ*. When the liver becomes indolent, and no bile is secreted, the mouth becomes clammy, the urine scanty, the skin dry, and perhaps (from the latter circumstance) hot;—a harsh skin being an almost constant attendant upon a diseased state of the secretions subservient to the process of digestion. But let means be taken to restore the function of the liver; and with the increased secretion of bile will be found a return of saliva, a more abundant discharge of urine, and a soft skin. So, in that constitutional affection called "fever", the secretions from the skin, the mouth, the liver, and the kidneys, are interrupted; but, the febrile action having subsided, they one and all return. No man in his senses would think, in such a case, of giving his patient diuretics to excite the kidneys; mercury, to act on the liver; pyrethrum*, to stimulate the salivary glands; or of applying heat to produce perspiration. No man, in possession of reason, would attribute the presence of the fever to the want of one or the other of these secretions. But let the case be changed. Let obstructed menstruation be a feature of it. The patient and her friends are possessed with a notion, that this circumstance is the cause of all the other ills; and a similar impression is made, too frequently, upon the mind of the medical attendant; who, from that moment, directs all his attention to the uterus, and subjects his patient to a course of myrrh and steel![†]

Indications for Treatment.—In treating this amenorrhœa, where the general health is unimpaired, it ought to be our first object to

* From πυρ, *fire*;—on account of its hot taste.

† Sir Charles Mansfield Clarke, on the Diseases of Females; Third Edition; Part II; Pages 37 to 41.

improve this; and you may manage the treatment much in the same way as in cases of leucophlegmatic chlorosis.

Is there Local Determination of Blood?—If there is a determination of blood to any part of the body, the method of treatment must vary according to circumstances. If the blood, for instance, were in the bowels and stomach, I should occasionally bleed from the arm; I would give diaphoretics to equalise the circulation; and I should think of slight mercurial action;—keeping the patient in a state of perspiration, and not neglecting the emmenagogues to be hereafter enumerated.* If the determination of blood is to the head, the action of the cerebral vessels must be kept under. The hair should be taken off, if necessary; cooling lotions should be applied; the nape of the neck should be cupped; the arm should be opened by venesection; and blood may, now and then, be taken away from the temple. The bowels, too, should be opened every day; and ale or wine (spirits, of course, never enter a lady's stomach) should both be carefully avoided.

Stimulate the Uterus.—While we are using these remedies, we ought not to forget to stimulate the uterus. It is to be lamented that we have not more effectual means than we at present possess, for exciting the catamenial action;—in the same manner as we can excite the skin, the bowels, the liver, or the salivary glands. It is not improbable that powerful and certain emmenagogues may exist in nature; but, granting their existence, they have not yet been discovered by human sagacity. We are indebted to Lavagna for a topical method of exciting the uterus; which I incline to think of real efficacy; and though this method may not be very convenient in girls, yet in married women, who have had children, it may be adopted, and easily enough. Lavagna's practice consists in taking a few drops (say eight or ten) of the aqua ammoniæ puræ†, and adding an ounce or so of water to it. It is used by means of a syringe, which ought not to be oiled; for that tends to render the ammonia saponaceous‡. This fluid is to be thrown up two or three times in the course of the day, so as to reach the upper part of the vagina. The object of this injection is to produce a throbbing and fulness about the parts; and if you mean to give the remedy a fair trial, you must increase the strength of the injection before you can prove its effect; because,—as in so many other instances, where the remedy is not a mere placebo,—it is not the *measure*, but the *effect*, which is to regulate the dose. I have now, in repeated instances, ordered this remedy for patients in consultation; but I have scarcely had an opportunity of knowing whether the remedy has proved successful or not. The majority of those to whom I have prescribed this remedy, have not afterwards come under my notice; so that my observations have not been sufficiently large and numerous, to enable me person-

* See Pages 654 and 655.

† The "Liquor Ammoniæ" of the London Pharmacopœia.

‡ From *sapo, saponis*, "soap."

ally to interpose a well ascertained opinion on the point. I can, however, observe with truth, that the catamenia have repeatedly followed the use of the remedy; and that my general impression, at present, is decidedly in its favour.

Employment of Emmenagogues.—Should the use of the ammonia be inadmissible, or should it be found that this method of treatment fails, the ordinary emmenagogue remedies should then be tried; and the best I know of are the smart doses of aloetic purgatives, warm hip-baths, or general immersion of the body, and horse-exercise. The best time for pushing these remedies, is that period when the catamenia ought to flow;—known by former recurrence; or else by certain feelings in the head and pelvis, with which the system is familiar, and indicative of a return. Night after night, at this time, for five or six nights in succession, the patient may sit for twenty or thirty minutes in a hip-bath at a smart heat;—taking afterwards eight or ten grains of aloes. Horse-exercise, where circumstances will allow, should be used in the morning; or if this is not to be had, the chamber-horse may be substituted. As an emmenagogue, electricity is well worth a trial;—more especially in town, where it may be easily administered in all its forms. Denman seems to have a favourable opinion of its efficacy; and he says that instances have occurred, in which the action of the uterus has been exerted, even while the patient was under the operation.

Various other Remedies.—Unhappily, these remedies may be tried month after month, very often without the desired effect; but, sooner or later, the catamenia are in general re-established. Should the retention, however, prove obstinate, other remedies (to be found in most works on materia medica) may deserve a trial; such as savine, for example; aloes, madder, myrrh, and a succession of gentle emetics. The tourniquet has been advised; but this, I suspect, is rather a *plausible* than a *useful* remedy. It is said, that when there is a disposition to the flow of the catamenia, the tourniquet may be put on both thighs;—so as to prevent the flow of blood along the femoral arteries; and, in this manner, occasion an accumulation about the vessels of the womb; and a consequent eruption of the catamenia.

[Women think menstruation is a part of "the curse"; but it is not worse than our shaving; and is a source of health to them;—improving the shape, and producing a fine skin, and damask cheeks. But if menstruation does not go on well, their skin becomes coarse, and their temper morose. Their sedentary life renders menstruation necessary; for, after twenty, you will not get them out for a walk, except to meet their sweethearts.

If a female passes the usual period of life without the menses appearing, emaciation ensues; with impaired appetite, a large and flatulent abdomen, pale face, and sore eyes. The countenance is like that of green-sickness; and I have often heard, with indignation, the present affection called by that name. Broth passes through the intestines unchanged; and constipation alternates with diarrhœa.

There are many remedies in the Pharmacopœia for this affection;

such as savin*, pennyroyal†, &c. Indeed, every old woman has a remedy. One of these is "hiccory-piccory" (hicra-picra); a mixture of powdered aloes and canella‡. There is no objection to this; but I do not like violent emmenagogues§. A little calomel may do good. You may also give the Harrowgate waters‖, &c.; but I prefer solid medicine here; for saline purgatives weaken the patient. You may give pills composed of three grains of aloes, one grain of camphor, and one of extract of hyosciamus. If there be flatulence, give assafœtida; which is best administered in little lumps, as pills. Examine the stools, to see if any food passes undigested; and give tonics, of which wine is the best. Along with it administer a grain of sulphate of quinine, two or three times a day. The latter is a very useful medicine in night-sweats. Sulphuric acid is often given; but beware of producing disease of the bowels. Some practitioners, the moment diarrhœa appears in any case, give astringents (such as catechu); but it is better to determine to the skin;—especially if there be ulceration of the mucous membranes of the intestines. Cayenne-pepper¶ is a very good tonic; and I often order a girl to take it with her food. Cantharides are recommended; and I think they may act in determining blood to the pelvic region; but the doses administered are not large enough. You should begin with ten drops of the tincture. Should it produce strangury**, this effect may be immediately controlled by camphor and hyosciamus. Make four-grain pills, of equal parts; and give three every two hours. If you sprinkle a blister with camphor, before applying it, the peculiar effect of the cantharides on the urinary organs will be prevented; and camphor is useful in all irritations of the bladder.

If called to a case where the menses are stopped from cold, or mental emotion, put the feet into hot water, and administer purgatives. If they have been long obstructed, and the constitution is

* Juniperus Sabina.

† Mentha Pulegium.

‡ The "Pulvis Alöes cum Canellâ," of the Dublin Pharmacopœia. It has no place in the Pharmacopœias of London and Edinburgh.

§ We copy the following list of Emmenagogues from Dr. Duncan:—1. Helleborus Niger (Christmas-Rose). 2. Ruta Graveolens (Rue). 3. Gambogia (Gamboge). 4. Sinapis Alba (White Mustard-Seed). 5. Gummi Fœtida (Fetid Gums). 6. Rubia Tinctorum (Madder). 7. Valeriana Officinalis (Valerian). 8. Artemisia Abrotanum (Southernwood). 9. Tanacetum Vulgare (Tansy). 10. Aristolochia Serpentaria (Virginian Snake-Root). 11. Juniperus Sabina (Savine). 12. Crocus Sativus (Saffron). 13. Alöe Socotorina (Socotorine Aloes).

‖ Containing both sulphureous and saline ingredients. The following classification of Mineral Waters is taken, in a condensed form, from Dr. Saunders:—1. Simple Cold (Malvern and Holywell). 2. Simple Hot (Bristol, Matlock, and Buxton). 3. Simple Saline (Sedlitz, Epsom, and the Sea). 4. Highly Carbonated Alkaline (Seltzer). 5. Simple Carbonated Chalybeate (Tunbridge). 6. Hot Carbonated Chalybeate (Bath). 7. Highly Carbonated Chalybeate (Spa and Pyrmont). 8. Saline, Carbonated Chalybeate (Cheltenham and Scarborough). 9. Hot, Saline, Highly Carbonated Chalybeate (Vichy and Carlsbad). 10. Vitriolated Chalybeate (Hartfell). 11. Cold Sulphureous (Harrowgate and Moffat). 12. Hot, Alkaline, Sulphureous (Aix, Borset, and Barege).

¶ Capsicum Annuum.

** From στραγξ, *a drop*; and ουρον, *urine*.

suffering, put leeches to the groin and os uteri. Let the patient use a hip-bath, which every family should possess;—especially if there be a delicate female in it. Attend to the diet, and give laxatives. You will often succeed by introducing an instrument*. I failed once, in the case of a young widow, who has large organs of amativeness and philoprogenitiveness. She suffers great pain at the menstrual periods; but would be quite cured if I could get her a husband. You apply a blister, or seton; and order exercise, the warm or shower-bath, &c. Be careful that the patient clothes herself properly; for we may have half-a-dozen climates here† in a day; though it is the best climate on the whole that I ever was in;—and I have been in many‡.

Amenorrhœa sometimes depends on malformation of the genital organs; as in a case which lately occurred in the Edinburgh Surgical Hospital§; in which the vagina led into the bladder. Here, of course, we can only palliate the symptoms.‖]

SECTION 5.—MENORRHAGIA.

It sometimes happens, that women are affected with a discharge of blood from the genitals, independently of any organic disease; and this it is which constitutes "menorrhagia¶", as it is called; and of which there are two varieties;—the one the "active", and the other the "passive."

[The excess or profusion of the menstruous discharge may be of two kinds. It may consist either in the frequency of its return, or the superfluity of its quantity at each period; and the causes assigned for both these are, too great fulness or activity, or an irritable and debilitated state of the constitution, or the thin and acrimonious state of the blood; together with external accidents. In practice, instances occur in which women lose, at each menstrual period, a larger quantity of fluid than their constitutions are able to afford; yet those cases,—which are usually included under the term "profusion of the menses",—are rare; what are called such, being either hemorrhages accompanying early abortions, or morbid or symptomatic discharges from the uterus. The symptoms of "profusion of the menses", are the same as those which are produced by

* These instruments, which are like long knitting-needles, were exhibited by Dr. Mackintosh, at the Liverpool Meeting of the "British Association."

† In Scotland.

‡ Being an old traveller, gentlemen, I find that medical men are very apt to be annoyed with questions; and therefore, when I travel now, I take the name of Colonel Somebody or other. When I went on the Liverpool and Manchester rail-road, I forget the name by which I had booked myself; and the man who came to inquire after the fares, thought I was an impostor; but luckily a fellow-passenger had seen me pay my money.—*Dr. Mackintosh.*

§ Then under the able superintendence of Mr. Syme; who is now Professor of Clinical Surgery in the University of Edinburgh.

‖ Extracted from Dr. Mackintosh's unpublished Lectures on Midwifery.

¶ From *μηνια, the menses;* and *ρηγνυμι, to break out.*

hæmorrhages from any other part of the body; with some peculiar affections of the uterus.*]

Active Menorrhagia.—The "active" menorrhagia is, perhaps, more apt to occur in women who are robust and plethoric; and still more frequently in women who have had their nerves agitated by some domestic calamity;—the death of a near relative, for example. In this disease, you will occasionally find eruptions of blood from the uterus; more sparing or more copious; occasionally tending to observe the menstruating period, but not always;—the discharge being sometimes preceded, at first, by an unusual heat of the surface, a whiteness of the tongue, and a certain degree of hardness and frequency of the pulse; which rises, perhaps, to one-hundred or one-hundred-and-ten in a minute;—a slight degree of febricula being produced.

Bleeding.—When menorrhagia, in this manner, occurs in women who possess a moderate share of strength, and have a degree of febrile excitement lurking about the system, one of the first steps to be taken,—more especially in the plethoric,—consists in the abstraction of blood from the arm, to the amount of eight or ten ounces; or, if the strength be less considerable, by means of leeches; which seem the rather to be indicated in these cases, because there is increased action of the uterine vessels. These leeches may be applied either to the orifice of the vagina, or above the symphysis pubis, to the number of ten or twelve;—three large poultices being applied afterwards (each remaining there two hours), for the purpose of keeping the leech-orifices pervious and bleeding. If the discharge from the genitals be copious and rather alarming to the friends (though I believe it is rarely dangerous), cold may be applied in front and behind;—just in the same manner as you would apply it in the case of miscarriage. This is not, however, usually required.

Internal Remedies.—Refrigerating purgatives,—such as nitre†, sulphate of magnesia‡, or sulphate of soda§, may be of use to diminish the hæmorrhagic effort of the habit; and if there is an obstinate tendency to the increased vascular action of the system, you may then give your patient digitalis in operative quantities. There are three indications by which you may know that digitalis is in action:—1. Sickness of the stomach, and perhaps some action of the bowels. 2. A change in the pulse, which becomes intermittent or irregular; 3. An increase in the quantity of the urine. Whenever you find any one of these symptoms, you must watch the digitalis with care; for it is in action on the system; and we must not forget that the remedy, though valuable, is not without its danger; for the digitalis may accumulate, operate suddenly, and destroy. Again: in cases of this kind, I should recommend you to give diaphoretics;—so as to keep up the action of the skin; and this with a view of equalising the circulation. Stimulants, as general remedies, seem decidedly im-

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 112 and 113.

† Nitrate of Potash. ‡ Epsom Salts. § Glauber's Salts.

proper;—wine, more especially. I mention this the rather, because patients are apt to have recourse to this stimulant,—*red* wine more especially; either because they have a reliance on its astringent properties, or because they have no great dislike to its flavour.

In active menorrhagia, if the preceding remedies fail, and the disease show no disposition to yield spontaneously, there is yet another remedy, which may be worth a trial; and that is, a gentle mercurial action. For five or six weeks together, let the gums be kept slightly sore; and, by its action on the capillaries, the mercury may sometimes destroy the morbid excitement which is existing in the small vessels of the womb.

Passive Menorrhagia.—Menorrhagia, however, is not always of the *active* kind; for we sometimes meet with a second form of this disease; namely, that in which you have a discharge of blood from the uterus;—occurring, perhaps, largely and frequently; and with a great reduction of strength. The patient is cold and pale; and so feeble, that she can scarcely sit up; or she is confined to her bed, and is hardly able to move herself. In short, her condition is very similar to that of a woman who has lost much blood by hæmorrhoids *, prolapsus ani, or repeated miscarriages; and when, in conjunction with this state of system, there is a drain of blood from the uterus, the case constitutes a second and more formidable variety of the disease;—I mean, "passive" menorrhagy.

Tonics. Lead.—It is only in the slighter cases of passive menorrhagia, that much benefit is to be expected from tonic medicines;—bark, bitters, iron, or the like; but in such cases they are not to be neglected. If the bleedings from the womb are obstinate, lead may be thought of;—a remedy which, according to Haighton and Ruysch, is by no means despicable. Four grains of the super-acetate† may be given, in the course of twenty-four hours. In some cases, larger quantities may be administered, and sometimes not so much; but the dose here mentioned, though powerful, may be deemed a sort of average. With every grain of lead, administer a quarter of a grain of opium;—forming the whole into a pill; or, if you please, you may dissolve the lead in acetic acid and distilled water, and add a little tincture of opium;—so as to form the whole into draughts. Lead, however, is a dangerous remedy, if used imprudently. Unless there be clear occasion for it, you will do well not to administer it at all; and when you *do* administer it, in the larger doses now proposed, recollect that certain cautions are necessary. If the menorrhagia is checked,—if the bowels are affected with colic,—if you have given altogether a certain measure of the lead (say a total of two or three scruples), it is better to lay the remedy aside. I suppose you have not yet forgotten the important cautions, relating to this remedy, given at large, when considering the management of those cases in which

* From *αιμα, blood*; and *ρεω, to flow.*

† The "Plumbi Acetas" of the Pharmacopœia. It is not a *super*-acetate;—for it consists of one atom of the base and of the acid respectively.

there is pregnancy in conjunction with eruptions of blood from the womb*.

Small Doses of Mercury.—There is a third remedy, not without its value in the management of these cases of passive menorrhagia;—I mean, the administration of the smaller doses of mercury before mentioned†; and to be tried where other remedies fail. I incline to think the mercury may have a very beneficial effect. Certain I am that where I have used it, I have, more than once, found the discharge suspended when the mouth has become slightly sore. It is not a high state of salivation I am here proposing; but merely such a measure of the mercury as will produce a slight uneasiness of the mouth, and some increase in the secretion of the saliva.

Plugging the Vagina.—If the menorrhagia is very pressing,—if there is a discharge of blood to such an extent that you are afraid for the life of the patient, I would advise you to make use of the plug,—as in cases of miscarriage; and you may either resort to the introduction of tow, or some other soft substance, into the vagina; or, if your patient is too irritable to bear this, then a napkin may be applied to the genitals, and diligently held there; which may occasion the blood to remain in the vagina, and to coagulate;—so that the mouth of the vessels may become closed up. Such cases, also, are adapted to the topical use of cold;—to be applied to the loins or front of the abdomen;—according to the rules and cautions laid down for the management of this remedy in miscarriage.

Astringent Injections.—There is yet another remedy (first recommended to me by Dr. Haighton) which I have found of great value in the worst cases of passive menorrhagia; and that is the injection of astringents, not into the vagina, but into the uterus itself. This has been known to succeed in cases apparently desperate; where the bleedings have been going on till the patient has been reduced to the extremest degree of weakness. In order to give this remedy a fair trial, you ought to inject the solution yourself; for you cannot trust it to nurses. A syringe, or elastic bottle, with a long neck, should be used for the purpose. Simple cold water may first be tried; and if this fail, half a drachm of alum may be dissolved in half a pint of water, and used for the purpose. Weaker solutions must be employed at first; for you must not use, for the inner membrane of the womb, solutions of the same strength that you would employ for the inner membrane of the vagina;—except by advancing gradually from the weaker solutions to the stronger, as the parts may bear. Twice in the day the injection may be used. One small gush, of about two tea-spoonfuls, may be thrown up; then a second; then a third; then a fourth, in succession;—and so on till you have thoroughly wetted the uterus;—care being taken that you do not inject too forcibly; as that may tend to irritate the vessels, and increase the disease. Under the use of the alum, you will perhaps find that, in the course of two or three days, a quantity of clotted blood will come away; with pains, something like the pains of parturition; and which

* See Pages 182 to 184.

† See the previous page.

may alarm the patient. This is nothing but the blood coagulated by the alum, and may be regarded as rather favourable than otherwise; as it shows that the injection has been truly thrown into the womb, and that the uterus is contracting. Of the efficacy of this remedy we cannot be judges, till it has been tried for some two or three weeks: and if you find that after that period you are gaining ground on the complaint, you ought not to be dissatisfied. In passive menorrhagia, do not forget to nourish the patient.

Would Transfusion be available?—Whether cases ever occur in which the operation of transfusion* is really necessary, I know not; but the affirmative seems probable. I know one case in which, under this disease, the woman sunk so low, that a further gush from the uterus destroyed her; and this although, on inspection, there were no discoverable traces of organic disease; so that there seemed to be little doubt that transfusion might have been used with the best effect; but the remedy was not at that time well understood. On one occasion only, have I myself had an opportunity of examining the uterus after death, where the patient died of menorrhagia. In that case I found the uterine cavity larger than it ought to be. I found, moreover, that the whole uterus was somewhat larger than ordinary;—as if there had been a great determination of blood upon it; and the inner membrane, which was more vascular than usual, and somewhat pulpy, clearly appeared to be unaffected with any marked organic disease, excepting the dilatation of the capillaries. I may observe here, that although I have only once inspected the womb after death in these cases, I have repeatedly and carefully examined it during life. Sometimes I have found it of the ordinary size; but more frequently soft, more or less open, and two or three times larger than in its healthy state. These enlargements are frequently connected with a preceding miscarriage.

Necessity for Caution.—In both forms of menorrhagia, whether the "active" or the "passive", beware of over-activity in your practice. Most cases would, I suspect, be found to cease, sooner or later, —say at the end of two, four, or six months,—even if left to themselves; and as there is a reasonable hope of a spontaneous cure, though slow, there is the less necessity for having recourse to violent remedies. In medicine it is good to know when you ought to be *active*; and it is better still to know when you ought to be *quiet*.

Diagnosis.—In treating both forms of menorrhagia, it is of the utmost importance to make a correct diagnosis; for bleedings from the uterus may arise, not from mere functional affection, but from organic change, pregnancy, hydatids, scirrhus, cancer, polypus, or moles. In dubious cases, the point can be brought to a decision only by an examination;—an examination deliberately, extensively, and adroitly made, by those who, from much experience, possess this small yet very useful obstetric accomplishment. Independently, however, of these nicer investigations, the diagnosis may often be effected, if attention be not wanting. Thus, in most

* See Pages 209 to 248.

instances, pregnancy may be known by the usual signs (on an examination made with ordinary care); and by the age of the disease, as compared with the bulk of the uterus. Hydatids, not easily detected at first, may sooner or later be recognised;—by the signs of pregnancy; by sudden enlargement of the uterus; by occasional gushes of water; and by the escape, now and then, of a delicate membranous cyst, consisting of a ruptured and detached hydatid.

Cancer and scirrhosity of the uterus, whether tubercular or diffused, are best detected by careful examination; nor is there, so far as I know, any other certain method by which they may be discovered in the more obscure cases. The mode of making these examinations will be fully explained, when treating of the distinctions in this important disease.

A polypus within the cavity of the uterus,—of small size, and not to be detected by the touch,—may produce much pain and flooding; but, happily, these cases of difficult distinction are so rare and anomalous, that, in an ordinary diagnosis,—unless special considerations lead to a suspicion of them,—they may be thrown out of the account. Ordinary polypi growing from the mouth or neck of the uterus, or the vagina, may be discovered at the first touch; and so also when they are in the uterus;—provided the mouth is beginning to open. Rings of concreted blood ("annular coagula", as they may be called) are sometimes formed by consolidation round the body of the polypus; and may, now and then, demonstrate its existence.

Moles, when small and in a closely-shut uterus, may not be discoverable. The disease, however, is not common; and, when existing, may sooner or later be detected by uterine pains, by some protrusion at the mouth of the womb, and by an obvious enlargement of the bulk of the uterus. Of course we must always distinguish, carefully, between the "active" menorrhagia and the "passive"; and this distinction will, I conceive, be easily made by means of the diagnostic characters which have already been given of the two diseases.

Cases may now and then occur, in which the diagnosis really cannot be made with certainty. In these cases, it is best to treat the patient on the general antihæmorrhagic principles laid down for the management of uterine bleedings, when treating of flooding*;—abstaining from all the more decided measures, until, in the progress of the case, we perceive that more light has been admitted, and that its nature may now be more clearly discovered. At this time it may become proper to investigate again. One or two months may make great changes in the diagnostics.

There is an opinion abroad, that ergot has much power in checking uterine bleeding. It deserves a trial;—in the "passive" bleedings especially. Copaiba†, oil of turpentine, and occasional gentle emetics, are supposed to be antimenorrhagic in these cases. They may

* See Pages 169 to 278.

† "Copaiba" or "Copaiva";—from the American *copal*, "an odoriferous gum"; and *iba* or *iva*, "a tree".

be tried in their turns. For further hints relating to the management of uterine bleedings, I must refer you to the method of treatment laid down for the flooding-cases*.

[Menorrhagia is not an increased flow of the menses, as Cullen thought it was†; but a flow of blood in consequence of inflammation; as is shown by the discharged fluid coagulating, by its being preceded by pain, and by its often being mixed with serum and lymph. It is *active* in robust habits; but it may occur in pale, relaxed habits; and then it is *passive*. Menorrhagia may occur, from opposite states to these, in both kinds of habit. Robust women, according to Cullen's doctrine, may have menorrhagia from the capillaries acting more strongly than the heart and arteries. I do not agree in this opinion. In active cases, the cure is by venesection, laxatives, rest, &c. Bleeding is not a good means of diminishing plethora. Cullen attributes this to its diminishing the natural secretions which would lessen the plethora; but it is probably from increasing absorption into the blood-vessels. In relaxed habits, use tonics, stimulants, the "tinctura ferri muriatis‡", &c. §]

Profuse Menstruation.—[Cooks and washerwomen are very liable to this affection. You should keep the bowels open, with a little rhubarb and calcined magnesia, or castor-oil; and enforce the recumbent posture during menstruation. There are sometimes constitutional symptoms of a febrile nature; and if you stop these, the discharge may return; to prevent which apply leeches to some part of the pelvic region. These will arrest the discharge when profuse, although they bring it on when suppressed; which contrariety in the effects I cannot explain. If the patient be plethoric, you may bleed; but as a general practice it is not good. Keep the feet warm; but do not use warm water to them. Do not let the bed be too soft; and a dry diet is preferable. This holds true in many other cases.

Menorrhagia.—This is generally confounded with the preceding affection; but I agree with Burns in looking on it as a different disease, known by the blood coagulating. Sometimes, indeed, menorrhagia takes place independently of menstruation altogether. It often proceeds from structural disease of the uterus; which is distinguished by tormenting pains, fœtor of the discharge, and the changes felt on examination. If the menorrhagia be slight, the recumbent posture, with cold ablution, and abstinence from stimuli and conjugal intercourse, will be sufficient. But sometimes we are not called till the symptoms which arise from loss of blood are present; —such as syncope on the least motion, &c. Acetate-of-lead has an extraordinary effect on this, as well as all other discharges; though

* See Pages 176 to 248; 255 to 256; and 270 to 277.

† "Menstruarum copiosior, vel sanguinis è vaginâ præter ordinem, fluxus".—"A more than ordinarily copious flow of the menses, or of blood from the vagina".—*Cullen's "Nosology"; Class* 1; *Order* 4; *Genus* 38.—The reader is referred to the Synoptical Chart of his Nosology, published by Butler, St. Thomas's-Street, Southwark.

‡ Now the "Tinctura Ferri Sesquichloridi".

§ Dr. Fletcher's unpublished Examinations.

I cannot speak with respect to the discharge from an ulcer. I first tried it in menorrhagia, from its being found of so much service in hæmoptysis. In the case of a boy who suffered much from the latter, a pill of three grains of acetate-of-lead and half a grain of opium, used to arrest the discharge. On dissection, we found a large artery opening into a cavern in the lungs. I have used it in menorrhagia; and have never found it fail. The woman is too often kept shivering, from cold applications. Attention to posture is of great importance here, as well as in fevers and other diseases.*]

SECTION 6.—DISCHARGE OF MEMBRANE FROM THE UTERUS.

Nature of the Affection.—Women sometimes labour under a discharge of membrane from the uterus. This membrane may vary in its superficial measure;—the piece being sometimes no broader than the nail of the little finger, and sometimes as broad as a half-crown piece, or broader;—not to mention the intermediate measures. This membrane, on the one surface, is usually smooth; on the other rough and shaggy; and it certainly bears some little likeness to what is called the "tunica decidua" of the ovum. Month after month, when menstruation should occur, this membrane may pass away; and along with it there may be a red discharge, not of the catamenial kind, but sanguineous, and with concretions; and there is frequently pain, of a cutting, grinding, forcing nature;—not unlike the pain of miscarriage.

Treatment.—For this disease,—which is exceedingly troublesome, though not dangerous,—various remedies have been applied with little avail; and I shall, therefore, enlarge the less upon it; as I cannot prescribe any effectual cure. Carbonate of iron, preparations of myrrh, preparations of mercury in alterative quantities, have all been administered in their turn; but they have not been found to exert any very certain curative influence. I think Denman recommends a solution of the sulphate of zinc in camphor-mixture, as appearing, in some cases, to be of service. It is to be used in the way of uterine injection; and not taken into the stomach.

Impregnation as a Remedy.—The most effectual cure of all, and not always offensive to the sex, is impregnation. Denman is under a mistake when he says, that women labouring under this disease are incapable of conception; for though conception does not generally take place, yet it is by no means impossible. One of the first recorded cases of this kind, is related by Morgagni. It was the case of a Florentine lady; who, at his suggestion, separated from her husband for a time, in order that different remedies might be tried. Tired with medicines which were employed without success, she again cohabited; became pregnant; carried the ovum for three months; and then miscarried. During the whole time of the pregnancy,—menstruation being suspended,—she of course remained

* Dr. Mackintosh's unpublished Lectures on Midwifery.

clear of the disease; and also for some months afterwards; but it ultimately recurred. This case shows that impregnation may be accomplished; and that where this impregnation occurs, the disease may certainly be cured for a time; nor is it unreasonable to hope that a permanent cure might be obtained,—at least in some cases,—provided the fœtus were carried for the full period of nine months; as it seems evident that, by a pregnancy complete in all its parts, a thorough change must be made in the condition of the uterus.

Diagnosis.—It is of no small importance to the female character, that you should be well acquainted with the disease I am here considering. It bears a great resemblance to miscarriage. The grand features are the same. The pains, the eruptions of blood, and the escape of membrane, are, altogether, enough, in a country town, to set every tongue in motion; and perhaps the only peremptory and decisive difference between the two affections is, that in miscarriage there may be an embryo; while in membranaceous menstruation, neither the embryo nor its parts are ever seen. This disease, I am fully satisfied, may occur in women of undoubted honour. Nor is it difficult, in part, to explain this. When conception and formation occur, the deciduous tunic of the ovum is not formed by the rudiments; but is generated by the inner membrane lining the uterus;—as extra-uterine pregnancy proves. The action, therefore, which produces the membrane of which we now treat, is one to which the lining membrane of the uterus is by nature prone; but in generation this action is excited by the stimulus of the male fluid; and in this membranaceous affection it occurs spontaneously. I presume that the membrane is gradually formed during the intervals between the catamenia.

Preparations in Illustration.—I have two beautiful specimens of the membrane discharged under this disease. The surface which lies towards the uterus is rough; while the internal surface is smooth and polished. The larger specimen is of the exact form of the uterine cavity;—so as to show, pretty clearly, that it was formed within the uterus. For one of these preparations, I am indebted to my able friend, Mr. Gaitskell, of Rotherhithe.

SECTION 7.—DYSMENORRHŒA.

Symptoms.—Still more frequently you find women are assailed with another disease;—"dysmenorrhœa" * properly so called;—a painful menstruation, independent of a membranaceous discharge. Under this disease, in the severer form of it, women are dreadful sufferers; and look forward to the catamenial period, and not without reason, with some degree of terror; for they are affected with various pains not easily described; and which are felt about the centre of the body, and in the back, abdomen, hips, and thighs. In some cases the pains are moderate; in others so great, that the

* From δυς, *with difficulty*; and μηνορροια, *the menses.*

patient rolls about in bed; and ultimately, under the excessive excitement, becomes slightly delirious. It is remarkable that, in the severer cases which I am here describing, there is frequently a great deal of tenderness of all the muscles incumbent on the painful parts; insomuch that the women can scarcely bear you to compress them. Irritation of the bladder, and an imperfect action of the uterus, with sparing menstrual discharge, are common in this disease. Menstruation may continue four or five days, or more; and, during this period, the pain may be severer at one time than another. It may, too, remit from one day to another; and generally terminates as menstruation closes. Severe as the pain is, women under this disease have scarcely any febrile excitement; and if they but lie tolerably quiet, I think you will not, in general, find the pulse above one hundred-and-eight or one hundred-and-ten in the minute.

Treatment.—For dysmenorrhœa, I regret to say, we know, with one exception, of no certain remedy. In the severer cases, alterative medicines, are certainly of little benefit. Mercury has been given, so as to act on the mouth. Preparations of iron have also been administered. I do not say those medicines are altogether without effect, or ought not to be again tried with caution; but you ought not to be profuse with your promises; for a man must, I presume, be hungry indeed, before he can willingly subject himself to the risk of having to eat his own words. Leeches above the symphysis pubis, or at the orifice of the vagina, may, in some cases, be tried with apparent benefit; but failure is, I fear, common. Opiate suppositories* for the rectum, and the warm hip-bath, or the warm slipper-bath, are sometimes beneficial; and in one very severe case,—the last entirely under my own care, and the only one so treated,—the sulphate of quinine in free doses, before the disease commenced, appeared to operate as a very effectual palliative. Of course anodynes, in sufficient quantity, palliate. They ought to be commenced before the pains are fully formed; and be careful that you do not impair the general health by them. It is remarkable that dysmenorrhœa, though so painful, does not necessarily do much damage to the general health. This reminds me of the remark of a certain surgeon to a complaining friend of mine, who suffered dreadfully;—"——it, what's *pain*"! The remark was unfeeling, and excited resentment; but it contains a useful truth. Pain, in itself, is not necessarily dangerous; nor will it justify violent remedies. But what is that exceptive remedy for dysmenorrhœa, at which I before hinted? It is—a husband! This disease does not necessarily produce sterility; and, I think, there is reason to hope that, after three or four children have been produced, the state of the uterus would become completely changed; so that a cure might be expected; for, after all, the seminal† fluid is the most effectual alterative for the genitals. Nor must we forget, that so long as the woman is pregnant and suckling, so long (at least) she certainly remains free from the

* From *sub*, "under"; and *pono*, "to place".

† From *semen, seminis*, "seed";—from *sero*, "to sow".

disease. The removal of the ovaries would probably cure this distressing affection; but you will not suppose that I recommend it. In the last and worst states of this disease, arsenic*,—an acknowledged remedy for periodical affections,—may deserve a trial.

Causes.—It has been suggested by Dr. Mackintosh, that dysmenorrhœa depends on the coarctation of the mouth and neck of the womb. This opinion deserves much attention from us, in future cases. Whether erroneous or not, it certainly is ingenious and plausible; and has much of the air of one of the happy thoughts of genius. In the present state of my knowledge, I am not prepared to decide on its merits.

[By some, the disease has been thought to arise from a spasmodic constriction of the extreme uterine vessels. Thus, Dr. Good observes,—"The spasmodic action commencing in the minute vessels of the uterus, not only spreads externally to the lumbar muscles, but internally to the adjoining organs of the rectum or bladder;—in many instances, indeed, to the kidneys; and hence an obstinate costiveness and suppression of urine are added to the other symptoms, and increase the periodical misery; the frequent return of which embitters the life of the patient, and effectually prohibits all hope of a family; for if impregnation should take place in the interval, the expulsory force of the pains is sure to detach the embryo from its hold, and to destroy the endearing promise which it offers."†

[This affection (difficult and painful menstruation) is sometimes very severe,—resembling labour. You will find in books only placeboes mentioned,—especially opiates; which enable her to get through that time; after which she remains well till the next period, when she suffers much for about four days. In time the appetite is lost; the tongue is fevered; the bowels are disordered; and the sleep is disturbed. The feet are cold; but when in bed they burn. I have known women roll on the carpet before the fire, in consequence of the agony they suffered. The health becomes broken; and the sufferer often dies of dropsy, or phthisis.

I was once shown a uterus which was said to have no orifice; but on squeezing it, I found it had one, though very small. It immediately occurred to me, that this small size of the os uteri must be the cause of dysmenorrhœa. On inquiry, I found that the female from whom the uterus was taken, had suffered from dysmenorrhœa all her life; and died a shrivelled old maid at forty-five. It is true a uterus with a very contracted orifice was once shown me, taken from a woman who was said to have had two children. This I cannot explain; but it may have been from adhesive inflammation taking place after delivery. Sometimes there may be a stricture or polypus in the cervix uteri; though the mouth itself may be sufficiently large.

In looking over some old preparations of diseased uteri, I found

* Perhaps from *αρσην*, for *αρρην, of the male gender*;—alluding to its great power.

† "Study of Medicine"; Third Edition; Volume 6; Page 48.

the orifices of more than two-thirds of them deficient in size. In fact, this state of things gives rise to other diseases, when there is a predisposition to them; and the latter may destroy the patient; or she may die from the effects of the dysmenorrhœa itself. Sometimes she lives till about forty-five years of age, when menstruation ceases; after which she becomes well. If a woman subject to dysmenorrhœa marries, she becomes worse;—from the uterus being exposed to greater excitement than before. Over-excitement in this organ, often gives rise to a secretion of false membrane*; which is expelled with labour-pains;—so as to be mistaken for a miscarriage. I knew a friend who married; and his wife was delivered, every month, of a substance of this kind. The husband thought these membranes were children; and buried them in the garden in pill-boxes, with an inscription on each! Dr. Denman described this affection.

I have a specimen of this false production, taken from a lady in whose case I afterwards applied the instruments. She then menstruated well for three periods; but relapsed at the fourth; though the pain she then felt, was not nearly so much as she had formerly experienced.

Dysmenorrhœa is one cause of barrenness; and all women like to have children. I do not know one exception. There was a woman who had been married seven years without having a child. The dysmenorrhœa, to which she had always been subject, became worse after marriage; and her health was broken. I cured her by dilating the os uteri†, till it was large enough to admit a small bougie, of the size marked number nine. She regained her health; became pregnant; has had two children; and is now quite well. Another woman, likewise subject to dysmenorrhœa, was very anxious to have a child. I cured her of deficient size of the os uteri in a fortnight; and she never menstruated again till she was delivered of twins. I had five other cases of a similar description, which are published in the second volume of my work‡; and I have since met with two others. You must make the husband and wife sleep in separate beds and rooms, while the patient is under treatment; for if she should happen to conceive, miscarriage might take place.§]

SECTION 8.—OFFENSIVE CATAMENIA.

Before I speak of the cessation of the menses, I may observe here, that there are some young persons made very unhappy, because, when the catamenia form, they are offensive. Dr. Whiting related to me a case of this kind;—stating, at the same time, what he conceived to be the cause. It seems that the disease is produced (at least sometimes) by a partial closure of the orifice of the vagina; in consequence of which the catamenia have not a free escape during the menstruating period; and, from their being partially retained in

* See Pages 663 and 644.
† With an instrument described in a Note at Page 656.
‡ On "Pathology, and the Practice of Physic."
§ Dr. Mackintosh's unpublished "Lectures on Midwifery."

the vagina, putrescence and offence ensue. If the patient is taught to use a syringe and warm water, in a proper manner, during the menstruating period, this little infirmity may be easily relieved for the time; and marriage and child-bearing will accomplish the rest.

SECTION 9.—CESSATION OF THE CATAMENIA.

In this climate, it is usually about the forty-fifth year that the catamenia cease to flow;—in some persons sooner, and in some later. Not to mention Sarah * and Elizabeth,†—of consecrated memory,—even among ourselves women have borne children at the more advanced periods of life. In some women the cessation of the catamenia takes place very suddenly. Month after month the woman goes on menstruating regularly; and then there is a sudden stoppage of the discharge; but more frequently,—perhaps I might add "more naturally,"—it stops gradually. The patient misses a period; and is then again "unwell". She misses a second time; and then, at a more remote period, the discharge again makes its appearance: and so on;—at first more copiously, then more sparingly;—the action sometimes continuing, sometimes ceasing;—sometimes augmenting, sometimes decreasing. In this gradual and preparatory manner it is superseded altogether; and ultimately the system suffers but little inconvenience.

Effects of the Cessation.—As the cessation of the catamenia is (as you all know) a natural process, of course the majority of women do very well; and though females look on to this part of life as a critical period, yet they will, in general, find that their apprehensions are groundless. Still, though the majority of women do well under this process, yet not all; for there are different affections that seem to be more apt to occur about this time. Thus, it is by no means uncommon for women, at this period, to acquire more flesh than formerly; or, if previously corpulent, they may now become more slender. An overload of the animal oil, may produce a good deal of inconvenience, and is certainly to be deprecated. Lax bowels, occasional bleeding from the arm, spare diet, exercise, and abstinence from a beverage so much drunk in this metropolis as porter, should, by all means, be recommended in good time; for, in cases of this kind, it is easier to *prevent* corpulence than to *relieve* it by safe means. Some patients, however, are so prone to corpulence, that they would fatten on cabbage-stalks.

Cerebral Effects.—At the cessation of the catamenia, a determination of the blood to the head is by no means uncommon; and flushings of the face, throbbings of the carotids, failure of the memory, frightful dreams, sometimes want of power in the arms and legs,

* "Shall Sarah, that is ninety years old, bear?"—"It ceased to be with Sarah after the manner of women."—*Genesis*; *Chapter* 17, *Verse* 17; *and Chapter* 18, *Verse* 11.

† "Thy cousin Elizabeth,—she hath also conceived a son in her old age."—*The Gospel according to St. Luke*; *Chapter* 1, *Verse* 36.

restless nights, and other results from the afflux of blood to the head, are continually harassing them. Under this very troublesome disease, women generally do well at last. In most cases, in the course of four or five years, the system gradually accommodates itself to the change; and then those cerebral affections cease, or are by no means very violent. Meanwhile, it is the business of the physician to temporize and palliate. The hair may be removed; cooling lotions may be applied; cold shower-baths may be suffered to fall on the head itself, apart from the rest of the body; leeches may be applied to the temples; cupping-glasses to the nape of the neck; a little blood may be taken away occasionally from the arm; and the bowels may be opened;—all these remedies may be tried. In a word, you are to recollect that, in the disease under consideration, you have a sort of transfer of the increased action which used to subsist in the uterus itself, to the vessels of the brain; and you must endeavour to overcome the effects of this action, by endeavouring to keep the blood away from the head, as much as can be done without inflicting any serious injury on the constitution.

Disturbance of the Digestive Organs.—At the time the catamenia cease to flow, we have sometimes a good deal of disturbance of the digestive organs; though not of a serious kind. I have no proof of hepatic disorganization being apt to take place at this time; though some of my friends seem to think that they are more apt to occur now than at other periods. Inflation of the bowels, a want of appetite, gas in the stomach, constipation, and other chylopoietic symptoms,—these are some of the principal affections apt to occur. In truth, they are little more than the simple symptoms of dyspepsia*; and require treatment by the same methods.

Disposition to Cancer.—It is said that, at the cessation of the catamenia, there is a greater disposition to cancer† of the breast, or of the womb, than at other times. My own mind is unsettled on this point, but I incline to the affirmative; and as there is a persuasion among women, and among practitioners themselves, of there being a proneness to cancer at this period, it is well to keep a strict eye on the uterus; in order that, if any dangerous symptoms occur, we may promptly have recourse to remedies.

Necessity of a Vicarious Discharge.—When the catamenia cease to flow, we have been recommended to make trial of issues, setons, blisters, and so on;—as a sort of substitute for the monthly discharge. Like a great deal more of ancient practice, however, this has gone into the shade; but though I should by no means recommend it on ordinary occasions, yet in the more obstinate cases of diseased cessation, and when (more especially) the blood tends toward the head, these remedies ought not, I think, to be lost sight of.

Cessation of the Menses.—[At this period of life, when the uterine functions cease, females require attention. They often resort to

* From δυς, *with difficulty*; and πεπτω, *to concoct.*

† From *cancer*, derived from καρκινος, "a crab"; the claws of which the large blue veins in a cancerous mamma were thought to resemble.

emmenagogue quack-medicines; and I never knew a woman use them much, without suffering from them. We are often not called till disease of the uterus is established; but even schirrus, if taken early, may be subdued and kept under. Leech, and keep the bowels open; and give opiates occasionally, to procure sleep.*]

[I† am of opinion that, if the general health were perfectly good, the cessation of the catamenia would always be accomplished naturally, without either disturbance or danger to the patient. Every kind of regularity in the return, flow, and appearance of the catamenia, may take place at this period. The question is generally an anxious one, whether these irregularities portend the final disappearance of the catamenia, or not. The diagnosis and the treatment are at once suggested by an attention to the previous question of the state of the general health.

The remark which I have just made with regard to the catamenia, I had also almost made in regard to those diseases of the mamma and of the uterus, which are so apt to occur in the later periods of life. They would probably be far more seldom seen, if the general health were strictly attended to, before and after, as well as during the period of this singular and important change in the female constitution. The same observation applies still more forcibly to the attacks of paralysis, and of some other diseases which are so apt to occur in the later periods of female life.

With regard to the final cessation of the catamenia, therefore, I would briefly observe, that the general treatment involves two points:—1. The restoration of the general health, if this be impaired; and, especially, daily observation of the state of the bowels, and attention to diet, air, and exercise. 2. To promote, by every gentle means, the flow of the catamenia when they do appear.

With regard to the head, it is to be observed that the patient, at this period of life, is particularly liable to be affected with flushes, and with attacks of vertigo. In this case,—besides a free evacuation of the bowels, and the most restricted diet,—blood should be taken from the arm, but especially (by cupping) from the back of the neck. This is necessary, long after the catamenia have disappeared; for such is the period during which the patient is most liable to apoplectic or paralytic attacks. During the whole of this period, too, the patient should wear little or no hair; should frequently wash the head with cold water; and the feet should be kept carefully warm. Supper should be avoided; and the head should be placed high in bed.

I think the danger by no means confined to the exact period of the cessation of the catamenia. I have remarked that many of the attacks of apoplexy or paralysis, have occurred several years after this change had been effected. This may have arisen from gradually increased plethora during this interval. For some time after the disappearance of the catamenia, the person is frequently observed

* Dr. Mackintosh's unpublished "Lectures on Midwifery."
† Dr. Marshall Hall.

to grow corpulent. The operation of similar causes may, in other circumstances, lead to fulness of the vascular system, and to undue tendencies of the blood to particular organs. It is during the same period that females are greatly subject to scirrhus formations in the sexual organs, especially the uterus and mamma. In some instances,—as in one noticed by Sir Astley Cooper, and mentioned by Dr. Farre in his late lectures,—both the uterus and the mamma became scirrhous in the same patient.

That period which includes several years before the disappearance of the catamnnia, the space occupied by this change, and several years afterwards, may therefore, with great propriety, be termed "the first climacteric* period of female life"; and it is to be watched, for the reasons which have been amply detailed, and in the manner prescribed.†]

CHAPTER II.

DISPLACEMENT OF THE UTERUS.

SECTION 1.—RETROVERSIO UTERI.

The uterus, when healthily situated,—as you will soon find, if accustomed to make examinations,—is placed at the brim of the pelvis; with its fundus lying forward, above the symphysis pubis; and its mouth lying backward and below, in apposition with the middle of the sacrum;—the bladder being placed anteriorly, and the rectum behind. In the disease under consideration, however,—when the womb becomes retroverted,—a total change of position ensues. The fundus uteri falls down backward, and below the promontory of the sacrum; and the mouth lies forward, and rises above the symphysis pubis; so that more or less compression, both of the rectum and bladder, is produced;—the vagina being drawn upward, and carried forward above the front of the pelvis.

Symptoms of Retroversion.—Where the uterus is retroverted, if the pelvis be small, or if the uterus, though not morbidly developed, chance to be very bulky,—independently of any increase of its size beyond the virgin dimensions, it may give rise to a good deal of pressure upon the rectum, the bladder, and the parts contiguous; and, in this manner, it may distress much. More generally, however, where retroversion produces distressing symptoms, these will be found to be accompanied with an enlargement of the uterus;—the latter becoming, perhaps, as big as the head of a full-grown fœtus. This

* From κλιμαξ, *a gradation.*

† Dr. Marshall Hall's "Commentaries on some of the Diseases of Women"; Part III; Chapter 5.

enlargement of the uterus results, most frequently, from pregnancy; occasionally, however, from scirrhosity, from polypus, or from a collection of hydatids. When, from any of these causes, the uterus is enlarged in size, it may distress the patient greatly. The rectum is so obstructed, that it is said the fæces will scarcely pass along; and it may be necessary to have recourse to injections, in order to remove its contents. The bladder, too, and the urethra may be so embarrassed, that there may be a difficulty in introducing the catheter; and accumulations of urine may take place in the bladder in such quantity, as to give rise to disruption of that organ; or, at least, to injury of its structure;—so much so, that acute inflammation, or fatal chronic diseases, may ensue. Nor must I forget to mention, that the womb, continuing to grow in the retroverted position, must make pressure on all the parts which are lying among the bones of the pelvis; and, in so doing, must give rise to more or less irritation of various kinds;—according to the functions and other properties of the parts compressed.

[In the year 1754, Dr. William Hunter was, in the following manner, first made acquainted with its occurrence:—A poor woman in London, about four months advanced in pregnancy, was suddenly seized with retention of urine. She sent for Mr. Walter Wall, a medical practitioner, who passed the catheter, and relieved her; but the impediment continued; and as it was again necessary to employ the catheter, Mr. Wall, on this occasion, made an attentive examination;—with a view to discover the nature of the obstruction. He passed his finger up the vagina; the course of which, instead of being upwards and backwards towards the sacrum, was upwards and forwards against the pubes. He could not feel the cervix uteri; but he discovered a tumour at the posterior part of the vagina; which, on the introduction of the finger into the rectum, was found to lie between that intestine and the vagina. The lower portion of this tumour being projected towards the pubes, the impediment to the evacuation of the bladder was supposed to be occasioned by its pressure on the urethra. Retroversion of the uterus had been already spoken of on the Continent; and the cervix uteri was described as being thrown forward against the pubes, and the fundus to have fallen into the hollow of the sacrum. Mr. Wall, finding that the case of his patient corresponded with this description*, endeavoured to replace the uterus; but without success. He then sent for Dr. William Hunter; who, upon examination, found the relative state of the parts to be that which has just been described. On raising the tumour, the urine dribbled away. Dr. Hunter attempted to restore the uterus to its natural situation, but failed. There was obstinate constipation; and, in a few days, the patient died. On examination after death, the bladder was found distended, the cervix uteri was

* This complaint was first described by Mons. Grégoire, in his Medical Lectures, given at Paris in 1746. Mr. Wall was one of six English students who attended these Lectures; and the circumstance seems to have escaped the recollection of them all, until it was revived by the present case.

turned upwards and forwards against the symphysis pubis, and the fundus had fallen downwards and backwards into the hollow of the sacrum; where it was so impacted, as to be dislodged with difficulty. This case, being the first of the kind which had been noticed in this country, excited great interest. Dr. Hunter gave a public lecture on the occasion, over the body of the patient; in which he recommended puncturing the membranes in order to procure abortion;—a project which has never, happily, been carried into effect. Another case of a similar kind occurred shortly afterwards. The patient could neither pass urine nor fæces. Attempts were made to empty the bladder by means of the catheter; but without success. It was proposed to puncture the bladder above the pubes; but the patient would not submit to that operation. At length she felt something burst. It proved to be the bladder; and, in a few hours afterwards, the patient died. The displacement of the uterus was found, after death, to be similar to that just described.*]

Causes.—There are different causes to which this retroversion of the womb may be ascribed. Whatever enlarges the uterus within limits,—so as not to make it too bulky to undergo the retrovertive movement,—seems to dispose to the disease; and hence it is about the third or fourth month of pregnancy,—when the womb becomes as large as the head of a full-grown fœtus,—that retroversion is most prone to take place; and the like effect is apt to be produced when,—from scirrhus, a polypus, a mole, or a combination of these affections,—equal bulk is acquired. A cause which tends much to the retroversion of the uterus, and which, perhaps, is brought into operation in four cases out of five, is the accumulation of urine in the bladder. When the bladder becomes very much loaded with urine, it makes pressure on the uterus behind; and sometimes, when the pressure is great, it may, alone, produce retroversion. In retroversion of the uterus, besides these two causes, there is yet a third which sometimes operates; and that is, the sudden action of the abdominal muscles. Women labouring under retroversion of the uterus, will often tell you that they have had a fall; or that they stumbled, and made a strong effort suddenly to recover themselves; or that the attack was occasioned by a violent fit of laughing, or coughing. I should suppose it rarely happens, that the mere action of the abdominal muscles alone, unaided by a distended bladder, gives rise to retroversion of the uterus; but where there is an accumulation of urine in the bladder,—so as to produce, by pressure, a disposition to retroversion,—the sudden action of the muscles may complete the displacement. Lastly, retroversion of the uterus is sometimes, though not frequently, to be ascribed to enlargement of the ovary. A dropsical, or scirrhous ovary, may give rise to retroversion; and, in these cases, just as the bladder overlays the uterus, so also may the ovary. A lady, labouring under ovarian dropsy, was recommended to take a ride in an open carriage every day, for the improvement of her health;—taking the air, as much as possible,

* Dr. Gooch's "Compendium of Midwifery"; Pages 117 and 118.

without occasioning fatigue. In one of these excursions, the vehicle chanced to be turned over, and she was thrown out with violence;—her abdomen striking, with great force, against a stone that was lying by the road-side. On her return home, a very copious secretion from the kidneys ensued, with great abdominal pain; and, in the course of a few days, she recovered, and found herself entirely liberated from the dropsy. Some time afterwards, she entered into the marriage-state, and died with an irreducible retroversion of the uterus, about the fourth month. Inspection was made; when it clearly appeared that, in consequence of the fall, there had been a rupture of the ovarian cyst, and a flow of water into the peritoneal sac; whence it was absorbed and effused by the kidneys. The remains of the cyst, falling on the uterus, carried it down below the promontory of the sacrum; and becoming retroverted, it was fixed, by inflammatory adhesion, in the retroverted position. While this unhappy lady remained unmarried, she felt but little inconvenience; but marrying, and enlargement of the uterus taking place, and the womb (in consequence of adhesion) not admitting of replacement, a fatal pressure of the contiguous parts ensued. Here, then, are the principal causes which give rise to retroversion of the uterus;—the enlargement of the ovaries; the strong and sudden action of the abdominal muscles; the distention of the bladder, from the over-accumulation of urine; and the enlargement of the uterus itself;—provided it does not acquire so large a bulk, as to disable it from undergoing the retrovertive movement. Of these causes, by far the most common is the over-distention of the bladder;—first, I believe, noticed by Dr. Denman. The womb is most prone to retroversion, when it is about as large as the head of the full-grown fœtus.

Varieties of Retroversion.—You are not to suppose, as some seem to imagine, that retroversion of the uterus occurs during pregnancy only; for retroversion may be produced, independently of gestation. Hence, as the history of the two cases is very different, it becomes convenient to divide the cases into two kinds;—those in which you have gestation as the cause of the enlargement of the uterus; and those in which the retroversion of the uterus is wholly unconnected with pregnancy. First, let us speak of the more frequent, and therefore of the more important, retroversion, which occurs in the earlier months of gestation.

Retroversion complicated with Pregnancy.—When the womb is retroverted, it not uncommonly happens, that the resulting retention of the urine becomes complete; for,—the enlarged uterus bearing on the neck of the bladder and on the urethra,—a total closure ensues. In this case, the patient often tells her adviser, that she has been placed in some situation of restraint; and that afterwards, on retiring and trying to evacuate the contents of the bladder, not a drop of the secretion would pass away. This has occurred, perhaps, for hours before you see her;—the accumulation of urine having continued ever since; so that there is a great deal of pain and heat of the abdomen, with forcing and fluctuation; which may be felt

as distinctly as in a case of ascites*. Indeed, the efforts may be as great as those of parturition; and may very much resemble them. I wish you to understand, however,—and very important it is that this should be known,—that, in the retroversion of pregnancy, you have not always, nor I think generally, these complete retentions of urine; for often where the uterus is retroverted, the retention is partial. Your patient, as before, has been placed in some situation of restraint; and on retiring she finds, as before, that the secretion does not flow in a full stream; though a few ounces may, perhaps, come away;—not however without much pain and difficulty. From this time, a partial retention continues. Day after day, the fluid is sparingly emitted; but never in such quantity as to empty the bladder completely; till by-and-by, perhaps, the secretion begins to steal away involuntarily. Or she may have strong efforts to pass the urine even against her will; and, with every effort, a small gush may be produced; or there may be a continual dripping; and yet, notwithstanding all this, an accumulation of water may go on very gradually; so that several pints,—nay, several quarts,—may be accumulated. At this time, there may be œdema of the lower limbs; especially if your patient be in a state of gestation. The case is exceedingly deceptive. You find that the legs are œdematous; that the abdomen is large, as in the case of ascites; that it is fluctuating with distinctness; and that the patient, instead of having a *retention* of urine, supposes herself, on the contrary, to labour under *incontinence* of urine. The retention of the secretion may be the last disease which you suspect; and you are inclined rather to ascribe all the symptoms to ascites, ovarian dropsy, dropsy of the ovum, or other causes. If you err, nothing is done; and the bladder may burst. Even when the bladder is emptied, chronic disease is to be expected; or there may be a fatal inflammation, or a miscarriage. In cases of this kind, the urine may continue to accumulate for three or four weeks together. Nearly two gallons have been known to collect.

A woman labouring under symptoms like ascites, a practitioner proposed, I think, the operation of tapping. There was, however, some obscurity about the case;—a great deal of pain, more especially. An accoucheur being in consequence called in, a catheter was introduced; and urine was drawn off to the amount of seven quarts (nearly, therefore, two gallons). The urine had been accumulating in the bladder for two or three weeks, in consequence of a retroversion of the uterus.

Diagnosis.—You may in general suspect that retroversion of the womb exists, if your patient tells you she is unable to pass her water in a plenary stream, and in large quantities at once; or that she cannot pass it at all; although, a few weeks, a few days, or perhaps a few hours before, this function was performed well enough. You may moreover suspect the case, if the patient complain of a great deal of central pain (by which I mean pain about the hips, the

* From *ασκος, a bottle*;—alluding to the protuberance of the abdomen.

thighs, the symphysis pubis, and the sacrum), joined with occasional bearings-down; and provided, also, the rectum appears to be obstructed; so that the contents are not expelled at all; or, when expelled, are flattened;—for this is said to be a symptom of the disease; though I have myself not given attention to that symptom. These symptoms should the rather excite suspicion, if the woman have been placed in a situation of restraint; and if she be in the third or fourth month of pregnancy.

Only to be discovered by Examination.—All these symptoms, however, can create only a suspicion of the nature of the disease. It is by examination, and by examination only, that it is certainly ascertained; when it may be recognised by the following marks:—The abdomen you will always find of a large or swollen size, and fluctuating very distinctly; especially where the retention has been of several days' standing, and where an accumulation of water in the bladder has been gradually proceeding during the whole time. On examining internally, you will find a large swelling;—a tumour filling the pelvis. The vagina lies before it, and the rectum behind it. The os uteri, in general, is not to be felt, or not to be felt without a good deal of difficulty; when it is found to lodge in front of the pelvis, above the pubes. On emptying the bladder, you further know the disease by ascertaining that the womb is not in its healthy situation, above the symphysis pubis;—the observation being made with facility, on account of the relaxation of the coverings; and by your observing, moreover, when the tumour is pushed from the pelvis, that it may be felt in its ordinary place. It has been asserted, that you may always recognise retroversion of the uterus by the situation of the os uteri; and that if the uterus be retroverted, the os uteri will always be found lying forward and upward, above the brim, in front; but this is a mistake. The occurrence is sufficiently frequent to render the diagnostic worth your attention; but it is far from being the sole or principal one by which you are to judge;—first, because, when the neck of the uterus is very flexible (as it is sometimes), you may have a retroversion of the body only;—the uterus doubling backwards upon its own cervix, and the os uteri remaining nearly in its former situation; or, secondly,—which is a great defect in the diagnostic,—where you have an enlargement of the ovary, this viscus will sometimes fall down and tilt the uterus;—so as to place it with the fundus upon the promontory, and the mouth upon the symphysis; insomuch that the mouth of the womb will stand much in the situation in which it would be placed, if the retroversion were of the ordinary kind. It is, therefore, here, as in most cases, by a combination of all the symptoms, and not by any single symptom alone, that your opinion must be guided; and when you find the abdomen fluctuating; the pelvis filled with a tumour, with the vagina before it, and the rectum behind; and when, on emptying the bladder, and raising the swelling, you find it takes the situation of the uterus;—then, and not till then, can you say, with certainty, that the disease is the one under consideration.

Treatment.—In treating retroversion of the uterus, before you attempt to put the womb into its proper place, it should be your first object to evacuate the bladder thoroughly;—first, because if the bladder is full, and lying over the cavity of the pelvis, it will obstruct the pelvis so much, as, perhaps, to render the reduction of the uterus impossible;—there will not be room for its reduction; and, secondly, because even if you were to overpower the resistance, and replace the uterus, yet, by forcing the womb into the abdomen, you might tear the bladder, and, in that way, destroy the patient. Dr. Cheston was once called to a case of retroversion, where a large accumulation of urine had taken place, and where the catheter could not be introduced. Anxious, of course, to avoid the need of tapping the bladder (a very grave operation), he and others attempted to reduce the retroversion without previous evacuation; but, fortunately, they did not succeed. I say "fortunately"; because, if they had succeeded in urging the tumour above the brim of the pelvis, disruption of the bladder would most probably have been the consequence. Failing in this, of course they were obliged to have recourse to their surgery; and the bladder was tapped. It is remarkable that, in this case, after the urine was withdrawn by means of the trocar and canula, the uterus of itself returned into its proper situation; and though Cheston (who was a very able man), and others in company with him, could not succeed in replacing the uterus by manual effort, yet it returned spontaneously after the bladder was emptied. Here, then, is one of the first steps to be taken. Let the bladder be thoroughly evacuated by means of the catheter; for it will rarely happen that any tapping can be required, if the catheter be committed to proper and dexterous hands.

Ordinary Mode of Reduction.—When this has been accomplished, you may then place your patient in the usual obstetric position;—on her left side, close to the edge of the bed; with the shoulders forward, the loins posteriorly, and the abdomen facing a little towards the bed. This done, you pass you fingers (say all the fingers of the right hand) into the vagina, so as to lay them upon the body of the uterus; and at this time,—provided the patient can bear it, which may often be the case,—you place the thumb in the rectum, and thus get the uterus between the fingers; after which, with gentle pressure, and often (I believe) without the least difficulty, you may raise the womb above the brim of the pelvis. This may be easily done, if you have drawn off eight or ten pints of urine, or even two or three; because the abdominal coverings become so exceedingly flaccid, that they make no more obstruction than if the body were laid open. In this way then,—with the fingers in the vagina, and the thumb in the rectum,—the womb may often be replaced without any force; but should you fail in this attempt, under gentle efforts, I should then recommend to you an excellent practice, advised by Denman. This consists in keeping the bladder thoroughly emptied;—letting your patient drink but little; causing her to perspire as much as possible; and introducing the catheter two or three times a

day. The bladder being kept empty, the woman is placed with the pelvis inverted; for which purpose she ought to take a position on the knees and elbows. The more time she passes in this posture, the better;—it may be necessary to use it for hours together. She is not to give way merely on account of the fatigue; but is to continue it as long as the replacement may require. The bladder being emptied, sometimes the womb becomes replaced. The time is various. A minute may be required, or hours; but I think I may venture to add, that it pretty certainly returns at last. To this method of treating the disease I am exceedingly partial; because it requires nothing more than the introduction of the catheter, and the abstraction of the urine;—no introduction of the hand into the vagina;—no entrance of the fingers into the rectum;—no force;—no contusion;—no laceration!

Other Modes of Treatment.—But it sometimes happens,—and I will put this case for our consideration,—that in neither of these modes can replacement be obtained. You have tried them both. You have emptied the bladder;—you have pressed with the fingers;—you have placed the pelvis in the inverted position; yet, day after day, the inversion continues. Where this is the case, I would recommend you to allow the urine to accumulate afresh, to the amount of two or three pints;—afterwards abstracting it by the catheter, and then, placing the patient on her knees and elbows, in order that you may have the full effect of gravity to help you,—again endeavour to replace the uterus by means of manual operation. There are three ways in which we may endeavour, in these cases, manually to replace the uterus. In the first place, we may content ourselves with merely placing in the vagina the fingers of the right hand (more or fewer of them); pressing the womb; and endeavouring, at the same time, to urge the fundus above the brim; in the next place, placing the fingers in the vagina, and the thumb within the rectum, so as to get a double bearing on the uterus,—we may attempt, by this double action, to carry the uterus above the brim; or, lastly,—if Dr. Hunter is to be our guide,—one of the fingers of the left hand may be passed into the rectum, so as to get a bearing on the fundus uteri, which lies on the front of this bowel; one or two fingers of the right hand may then be rested upon the os uteri; and, the bearings being obtained, the os uteri may be drawn downward when the fundus is elevated; and, in this manner, we may endeavour to urge the fundus above the promontory of the sacrum. This last mode, recommended by Hunter, appears plausible enough, when tried on machinery; but I am persuaded that, in most instances, it would be found to be very inapplicable in practice. In the first place, it requires the use of both hands; and the one must embarrass the other. Then, too, it requires you to get hold of the os uteri, and bear downwards if you *can*; but what if you can *not*? You may have a difficulty in reaching the os uteri; or it may become slippery from mucus; so that, after your utmost endeavours, you may be unable to retain your hold. In future practice, after due experience, you must choose for yourselves among those

three methods of performing the manual reduction. For myself, however, I decidedly prefer the second method of operating;—by placing the fingers in the vagina, and the thumb within the rectum.

Treatment after Reduction.—When, in one or other of these ways, you have accomplished a reduction of the uterus, direct your patient still to continue in bed for two or three weeks. If there is any disposition to a return of the retroversion, you should advise her to place herself upon the knees and elbows, once or twice in the day, for an hour or more at a time; and you may direct her also to empty the bladder repeatedly in the course of the twenty-four hours;—never suffering any large accumulation to take place. Under this practice, the uterus may be expected to remain ultimately in its situation above the brim; because, in the course of a fortnight or three weeks, in the case of pregnancy, the uterus grows and enlarges so rapidly, that it becomes too bulky to admit of displacement. Add to this caution, that after the bladder has been evacuated, and the womb has been replaced, you should always be on the watch for inflammation of the bladder or of the abdomen; for such inflammation may not unreasonably be expected to occur.

Treatment in Cases where Reduction is Impossible.—What is to be done in those cases of retroversion of the uterus, now and then to be met with, in which a reduction of the retroverted position is attempted, but cannot be accomplished? Your treatment here must vary, according to the effects of the pressure. If the urine can be drawn off by the catheter, or passed by the ordinary efforts, and if the uterus does not compress the rectum with that degree of force which prevents the discharge of its contents, it is unnecessary for you to interfere. Meddlesome midwifery is bad; and you should rather trust to the natural powers. As the womb enlarges, it may rise out of the pelvis more or less completely; and thus, day after day, the compression may become lighter and lighter; until, at last, it is removed altogether. It does not follow, therefore, because a womb remains retroverted, that the woman must necessarily die; and, consequently, in attempting reduction, you ought to be careful not to use the higher degrees of force; as the case is not sufficiently desperate to justify it.

Puncture of the Bladder.—But it may now and then happen, where the womb remains retroverted, that,—under the pressure which it makes on the contiguous parts,—neither the rectum nor the bladder can be cleared of its contents;—as in Dr. Cheston's case, formerly noticed*. If the obstruction of the bladder be complete, and the accumulation of urine large, it is peremptorily necessary that something should be done; otherwise rupture of the bladder, and death, may be expected. In such cases, it has been proposed to tap the bladder; and, now and then, this practice would seem to be proper enough; and may, perhaps, be the only effectual mode of proceeding in some cases.

Symphysotomy.—It has been proposed further, if the reduction of

* See Page 677.

the womb be prevented solely by a deficiency of room, that we should divide and open the symphysis pubis*. Cruikshank, I think, recommended a measure of that kind. I am not aware that it was ever done in cases of this description; but if the case were well chosen, I can conceive it might be of use to the patient. At all events, it would render the introduction of the catheter more easy; and the room in the pelvis somewhat greater. Alarming as the operation is, it is far from being a fatal one. Nevertheless, as I have never myself seen this operation performed, and (indeed) know of no case of retroversion in which it has been attempted, I do not venture to recommend it.

Tapping of the Uterus.—In a case of retroversion, where the catheter could not be introduced, or the rectum emptied, I should myself feel inclined to consider the propriety of tapping the uterus; which might, perhaps, be found, on the whole, to be as desirable an operation as the tapping of the bladder, or the dividing of the symphysis pubis. I should not take a great trocar and canula, as if I were going to tap in a case of ascites;—wounding a great many vessels, and perhaps occasioning death; but I should prefer an instrument of a very small size; by which I could perform a sort of acupuncture†; which, I am told, has been tried upon the hearts of animals, without necessarily endangering life‡. Perhaps an instrument constructed on the principle suggested, might be introduced into the uterus without much danger; and then if a contrivance were fixed upon the other end of it, so as to bring away the fluid by a kind of suction, a good deal of the liquor amnii might perhaps be drawn off; and if the uterus were evacuated of the liquor amnii, there would immediately be a considerable reduction of its bulk; and perhaps, at length, an expulsion of the ovum. The womb might be tapped either from the vagina, or from the rectum. Vaginal tapping would, I conceive, be preferable. But I want experience here.

Destruction of the Ovum.—In retroversion of the uterus, it would not, perhaps, be impossible to introduce some small, yet strong instrument, into the cavity of the uterus, along the mouth and neck;—

* See Pages 376 to 379.

† From *acus*, "a needle"; and *punctura*, "a prick."

‡ No bad effects arise from driving the needle through blood-vessels; as the parts close after its passage. It has even been driven into the heart and the brain. Acupuncture is resorted to in rheumatism, paralysis, gout, deep-seated inflammation, and all functional diseases. It probably acts, as Dupuytren considers, by applying an immediate stimulus to the affected parts. Dr. Duncan denies this; because little sensation is excited; but there may be *irritation* without *sensation*. The Japanese employ it with the view of drawing off "peccant airs"; to which they think all diseases are referrible. They consider there are, in the human body, three hundred and fifty parts into which the needle may be passed with impunity; and in order to hit these parts with accuracy, they practise on images. Cloquet and others say that acupuncture acts by drawing off nervous energy; but I do not think it likely. The needles *do* exhibit galvanic phenomena; but they do the same in *healthy* as well as in *diseased* parts; and *ivory* needles (which do *not* exhibit those phenomena) will do as well for acupuncture as *metal* ones. Some consider that the success of the operation depends on its influence on the mind; as animal magnetism probably does.—*Dr. Fletcher.*

so as to break up the structure of the ovum; and, in that way, to give rise to its expulsion. It is very easy to conceive, that if the os uteri could be felt, and if an instrument with which the ovum could be broken to pieces could be carried into it, expulsion of the ovum might ensue. All these expedients are, more or less, hazardous. They are to be had recourse to only in those cases where there is no other hope;—the woman's bladder being in danger of laceration; and this it is which justifies us in making attempts not without risk.

Retroversion during Delivery.—But besides retroversion of the uterus (as I have here been considering at large) as the result of pregnancy, it now and then occurs either independently of gestation, or with circumstances very different from those which we have described. It may happen that the womb becomes retroverted in the earlier months; and so it may continue throughout pregnancy;—so that in the end of gestation, when delivery commences, the retroversion may continue still. What is to be done in these cases? A retroversion of this sort is recorded by Dr. Merriman,—a very solid and prudent practitioner; and the result of it is to prove, that the less the accoucheur interferes, the better. When first we examine internally, in these cases, we find no os uteri whatever; for it lies above,—out of reach; and the first impression made on the mind is, that the Cæsarian operation must be had recourse to; but if the practitioner suffer the woman to take her pains, the os uteri becomes gradually more and more expanded; and, as it enlarges, the inferior lip approaches nearer and nearer to the brim of the pelvis in front; till, at length, a segment of it can be felt in the region of the symphysis pubis. This segment descends and enlarges more and more; till, at length, the child's head,—not without much difficulty and pain, however,—comes within reach; and the child is born, probably (if not in all cases) dead;—the mother escaping, though not without difficulty. From all this it appears, that in retroversion of the uterus, either in the earlier or latter months, it does not necessarily follow that you ought to distrust the natural efforts.

Retroversion after Delivery.—I have sometimes found retroversion of the uterus occurring after delivery; and, on the whole, that accident, though not perhaps very frequent, may easily occur; for after delivery the womb is about as large as the head of a full-grown fœtus; and where the bladder has been suffered to become overloaded,—after laborious labour, for example,—it is liable to become retroverted. The case being ascertained, introduce the catheter, and draw off the urine. As the womb is becoming less and less every day after delivery, and making a continually decreasing pressure, it is not necessary that any thing should be done, so long as no symptoms press. If, indeed, after emptying the bladder, you can replace the womb with little effort, this ought to be done; but if your attempts to reduce the uterus fail, content yourselves with emptying the bladder when needful, and watching the symptoms with vigilance.

Replacement might, perhaps, be obtained (as in ordinary retroversion) by placing the patient on the knees and elbows, as formerly

recommended; but the propriety of this practice, during the first few days after delivery, may admit of a doubt.

Retroversion independent of Pregnancy.—When the womb is enlarged from scirrhus, polypus, a mole, or hydatids,—by the two former, more especially,—it may acquire the size of the fœtal head, and become retroverted; and thus you may have a retroversion of the womb occurring in unmarried women, independently of pregnancy. In this case, however,—owing to the slow growth of the uterus, except in cases of hydatids,—the symptoms of pressure may supervene in a very gradual manner; there being much irritation about the bladder and rectum; joined with obstruction of the urethra, more or less complete; and this, perhaps, for weeks or months together, before the nature of the disease is ascertained. In these cases it will, of course, be your main object to replace the uterus, if this can be effected; and to accomplish this you must proceed in the same manner as if you were attempting to replace the retroverted womb when pregnant. Of course the replacement of the womb leaves the original disease of the uterus where it found it.

The womb varies much in its virgin-bulk in different women; for in some it is three times as large as in others;—varying in magnitude much in the same manner as the most prominent feature of the face. Now, if it so happen that the womb is very small, and that retroversion has taken place without impregnation, the pressure which it occasions may be so inconsiderable, that the nature of the accident remains unsuspected; but when the womb, though unimpregnated, chances to be of large size, and when (more especially) the pelvis is small or contracted, considerable pressure may be produced; and we are first led to investigate its nature in consequence of irritation and obstruction of the bowel and the bladder; when it is soon recognised by the characteristics before given. The treatment of this case must proceed on the same principles as that of retroversion associated with pregnancy.

Prognosis.—With respect to the prognosis of retroversion, I have to remark, that where the womb is replaced, the patient in general does well enough; provided you proceed on the principles prescribed; yet it is not impossible that miscarriage may take place after a reduction. In two or three instances I have known this. Inflammation of the bladder of the *acuter* kind may occur; and you may have a *chronic* disease of that organ. Where there is a good deal of inflammation, your patient may die of exhaustion; and you may find that some officious hand has thrust a catheter through the back of the bladder into the peritoneum, and that the escape of the urine into the peritoneal sac has destroyed the patient.

The bladder, in some rare cases, may be burst open. I possess a very beautiful preparation, which shows the retroversion of the uterus, with disruption of the bladder. The uterus is as large as a child's head; and above the retroverted uterus is the bladder, which has been ruptured. It is remarkable, that in this rupture of the bladder,—which has arisen from its over-distension,—it is not the front (that

part of the surface which has no peritoneal covering), but it is the posterior surface (invested by the peritoneum), which is the region of the rent. It was this which first led me to propose that, where a rupture of the bladder takes place in any case, but especially in retroversion of the uterus, we should not give the patient up for lost; for if there is reason to believe that the bladder is burst into the peritoneal sac, we might make an opening into the peritoneum,—say above the symphysis pubis; by which we might discharge the urine; and then injecting distilled water, of the temperature of ninety-eight degrees (Fahrenheit), we might wash the viscera, so as perhaps to prevent a general peritonitis. This done, we might draw the bladder up to the opening in the abdomen, and close the rent by ligature. This operation I have performed on several rabbits. In one or two experiments I brought the bladder out, tied it up, and took away about one quarter of it; namely, the whole of the fundus; and yet the animal did perfectly well. This operation I have never had occasion to try on the human subject; but in a case otherwise desperate, I should be inclined to recommend it. I may remark here, that since I have suggested this method of closing the bladder by ligature, Mr. Travers has performed the operation on the stomach. There was a slight wound in the organ; he boldly tied up the aperture; the thread came away; and the case did perfectly well. The ovary also may be dropsical and ruptured, as in one case which I saw myself; and this may assist in destroying the patient;—so that although these retroversions are, on the whole, by no means very dangerous, it does not always follow,—even when the womb is replaced with skill,—that the woman will ultimately do well. Those cases are more dangerous and unfavourable, where the retroversion of the uterus is connected with some other disease;—enlargement by hydatids, or schirrosity, or polypus; for when you relieve the retroversion, you are curing only that part of the disease which depends upon the displacement; while the original affection still continues in all its force.

SECTION 2.—ANTEVERSION OF THE UTERUS.

The womb, when healthily situated, is placed obliquely; with its fundus forward, its mouth backward, the fundus lying a little (and but a little) above the level of the brim, and the mouth and neck a little below it. Now, it is said, that sometimes a change of position may take place; so that the fundus comes forward, and the mouth recedes towards the sacrum; and which altered position writers have denominated "anteversion* of the uterus." But the truth is, that the womb is *almost* ante-verted *frequently*;—the fundus being pushed down below the symphysis pubis. Repeatedly, in making examinations, have I perceived it in this position, between my fingers; so that, in my opinion, these anteversions of the uterus can scarcely be

* From *ante*, "before;" and *verto*, "to turn."

looked upon as extraordinary and morbid. I might say, with truth, that they are perfectly healthy; and notwithstanding some one or two cases which have been put upon record*, I look on this as a variety of disease on which it is unnecessary to dwell.

[Of this accident I have never seen an instance *during gestation*; and, from the nature of the case, it must then be very rare; but I have met with it, from enlargement of the fundus uteri, in the *unimpregnated* state. The symptoms are, weight in the lower part of the abdomen, a desire to make water, but difficulty in doing so, the existence of a tumour near the pubis, the direction of the os uteri to the sacrum, and some impediment to the passage of the fæces, with bearing-down pains.†]

[Sometimes difficulty in parturition arises from obliquity of the uterus, in various directions. The French are very minute in their notice of these different directions. Some women have very pendulous abdomens; and if a woman has had many children, or one child with a large quantity of liquor amnii, the abdomen is much increased in size. In such pendulous abdomens, the uterus falls down with its fundus forward; but you let the woman, when in labour, lie on her back; and then the head advances in the right axis. The spine and other parts at the back of the pelvis, will not, in ordinary cases, admit of *posterior* obliquity of the uterus; but it is not right to

* Chopart and Baudelocque relate a case of anteversion in the second month of pregnancy. Boivin and Duges saw a case in which the fundus uteri inclined forward, lower down than the cervix, and in which reduction seemed impracticable; yet nature alone, during the progress of gestation, accomplished the cure. The same authorities say, they have had frequent occasions of observing, after parturition, a decided inclination of the fundus uteri forward; the condition of the womb being intermediate between obliquity and retroversion. The causes, moreover, assigned by Boivin and Duges as producing anteversion are the following:—1. Congestion, in consequence of repeated efforts; as in a laborious business. 2. Vomiting; as in the case (combined with incipient pregnancy) given by Chopart. 3. Difficult defæcation. 4. Accumulation of fæces in the sigmoid flexure of the colon. 5. Morbid attachments resulting from inflammation of the uterus and peritoneum. 6. Any physical efforts which may act powerfully on the womb or its connexions. The treatment is very simple. First evacuate the urine, and then the cure may be attempted by the use of leeches to the groin and pudendum; baths; enemata; fomentations; narcotics; lying upon the back, and raising the pelvis a little upon a pillow;—this position being continued for several weeks, or even months. Where the uterus is light, sensible, and little congested, the pessary may be applied. The kind of pessary generally used, in cases of anteversion, is the cup-and-ball;—having a deep cavity to receive the cervix uteri. The proper position of the uterus is restored by pushing up the fundus, and drawing down the cervix:—either with the finger or with an instrument. It is then to be preserved in its place, by keeping the patient on her back, and by pressing, as deeply as possible, upon the hypogastric region with one hand, while the pessary is introduced with the other. The cervix uteri is made to enter into the cup, by repeated movements from before and behind, while the finger ascertains its position. Being perfectly adjusted, the instrument is still further introduced, and placed in the axis of the vagina. The *bung-shaped* pessary may answer for the treatment of less important cases. In others, more slight, a small sponge passed into the vagina, behind the os uteri, when very prominent, has served to support the uterus.—*Boivin and Duges's Treatise; Pages 63 to 65.*

† Dr. Burns's "Principles of Midwifery;" Ninth Edition; Page 290.

say, that the latter case *never* occurs; for there are no bounds to the diversities of Nature; and I cannot think that all the eminent practitioners mentioned by Merriman, were deceived on this point. I can imagine that, at an early period of pregnancy, the fundus uteri may be tilted under the promontory of the sacrum. Another kind of displacement, is when the os uteri is forced out beyond the external parts. Here you must apply pressure at every pain; and when the os uteri is thus prevented from advancing, it opens; and the head protrudes. One author says this occurs more in abortion, or premature labour, than in parturition at the full period of pregnancy. I thought this not likely; but, after some years, I met with it in two cases.*]

[The distended bladder pulls up the neck of the womb, and the vagina which is united with it; but as the bladder fills up the space which ought to be occupied by the uterus, the latter falls over into the space between the vagina and the rectum. This can only occur between the third and fourth months of pregnancy; for *before* that period there is room for the uterus, when drawn up by the bladder; and *after* that period the uterus is in the abdomen, and not in the pelvis. The child cannot be born if the uterus be retroverted. It may either become part of the mother (as a mole), or acquire a shell of bone, or putrefy; in which case the soft parts are absorbed;—causing hectic fever, under which the patient often sinks; and the bones are discharged by ulceration.†]

CHAPTER III.

RECTO-VAGINAL AND OTHER PELVIC TUMOURS, OCCURRING INDEPENDENTLY OF PREGNANCY.

In the pelvis, we sometimes find various tumours of different sizes; some as big as a pullet's egg, and some as big as the head of a full-grown fœtus. These tumours I divide into two kinds;—the recto-vaginal; and those which are *not* situated between the vagina and the rectum.

Tumours not Recto-Vaginal.—Respecting those tumours which are not situated between the rectum and vagina, and which occur independently of pregnancy, I have few useful practical observations to make; and therefore I shall pass over them lightly; merely observing, that they sometimes grow from the promontory of the sacrum; sometimes from the sacro-sciatic ligaments; occasionally

* Dr. Mackintosh's unpublished Lectures.
† Dr. Fletcher's unpublished Examinations.

from other parts, so as to obstruct parturition, and cause great pain and inconvenience during delivery. The difficulties and management of these cases, I took occasion to consider at large, when treating of "anomalous" labours*.

Recto-Vaginal Tumours.—But more generally, where tumours form in the pelvis, they are of the recto-vaginal kind. Water, intestines, and (above all) an enlarged ovary, may lodge in this part. There are various causes from which the ovary may become enlarged;—from dropsy, for example; from scirrhus; from extra-uterine gestation; or the like. When the ovarian enlargement takes place in that manner, the tumour falls down between the rectum and vagina, I think I may say "frequently"; and may give rise to much inconvenience. If it make but little pressure on the pelvis and bladder, it may not require much attention; and even when the woman is very uneasy, and greatly distressed by it, if it become larger, so as to get its bearing above the brim of the pelvis, a spontaneous cure of all the symptoms may be obtained. But where it so happens that the pelvis is small, and the ovary large, and the parts irritable,—the tumour lying in the hollow of the sacrum, between the vagina and the rectum,—very violent symptoms may be produced; and those symptoms, of an anomalous kind, may be worth a little study on our part. In the first place, there is a great deal of irritation about the rectum; and your patient may be supposed to labour under hæmorrhoids. There may also be a good deal of obstruction in the bladder; so that the urine may be intercepted, or may pass with difficulty;—a catheter being required. Nor must I forget to mention, that there may be a great deal of pain felt in the back, and about the symphysis pubis; together with a shooting down the thigh;—the patient saying that she feels a ripping-pain, running (perhaps) in the course of the nerves; especially the anterior crural, and the great sciatic. From recto-vaginal tumours, lastly, the patient may be paralytic in the lower limbs; and one limb may be weaker than the other. I will not say all muscular power goes from the leg; but the muscular power may be reduced. In different cases, the degree of paralysis varies. It may be so slight, that the patient scarcely perceives it; or it may be so considerable, that she is obliged to lie on the sofa, and to be lifted to bed. Where you have these symptoms occurring,—want of power in the lower limb, nervous pains, obstruction of the bladder, and obstruction of the intestine,—there is good reason for suspecting that there is some tumour or other in the pelvis; and if you make a careful examination, of course the disease is ascertained easily enough.

Treatment.—In cases of recto-vaginal tumour, it should be your first object to press the swelling above the brim of the pelvis,—if this can be accomplished without much effort; and you must proceed precisely on the same principle as in the case of a retroverted womb. If you cannot place the recto-vaginal tumour above the

* See Pages 436 to 440.

brim, you must leave it in its situation;—palliating the symptoms, by keeping the bladder empty; and advising the patient to use that sort of food and drink which will not require much evacuation. In these cases, I know of no effectual mode of relieving the paralytic symptoms, or the pain which the patient has in the lower limbs; though the latter may be somewhat palliated by means of bleeding anodynes.

Spontaneous Rising of the Tumour.—When these recto-vaginal tumours become large, they not unfrequently rise spontaneously above the brim; so that the disease in this manner cures itself; and it sometimes happens that,—as recto-vaginal disease has been advancing, though neither the sufferer nor her adviser have known what was the matter,—the disease gives way. I have, more than once, seen patients labouring under much abdominal intumescence, and an ovarian dropsy; whose first symptoms, though attributable to this cause, have been clearly misunderstood. This, therefore, you should mention, because it is a great encouragement to patients. The larger the tumour, the more likely it is to quit the pelvis; or, at all events, so to alter its bearings, that the symptoms arising from compression may be effectually relieved.

Pregnancy in such cases Dangerous.—It is in the highest degree dangerous for a woman to become pregnant, while she labours under a large recto-vaginal tumour. If she does, the high probability is, that both herself and the child will perish. If she be single, there will, of course, be little danger. If married, she ought to be upon her guard;—abstinence being her best security. There are other ways in which she might guard against pregnancy; but which I do ont think it proper to mention publicly. This delicate subject I have touched on before.*

Illustrations.—I have in my possession various preparations, illustrative of this affection. One is a preparation of the uterus enlarged from scirrhosity, and retroverted. It produced all the symptoms of a recto-vaginal tumour; but they came on more gradually; because the growth of the scirrhus was not so rapid, as that of the uterus under pregnancy. Another preparation (for which I am indebted to a very excellent young gentleman, the late Dr. Thomas Cox) is a specimen of tubercular scirrhus and polypus combined. Such a womb, becoming retroverted, must give rise to the symptoms of this disease.

See Pages 31 and 368.

CHAPTER IV.

DESCENT OF THE PELVIC VISCERA.

When the pelvis is large, and the vagina lax, as well as from other causes particularly noted hereafter, the viscera in the pelvis are apt to descend; and the vagina, the bladder, the womb, or the other viscera, sometimes come forth*.

Different Degrees of Descent.—The descent of the parts within the pelvis may occur in different degrees. Sometimes you find them lying in sight between the limbs;—forming a large swelling there, as big as the closed hand, or as large as the head of a full-grown fœtus. In other cases, they descend merely to the perinæum; on which they rest within;—occasioning this part to swell, and form a rounded tumescence, when the patient urges. Sometimes the descending parts lie considerably above;—the mouth of the uterus sinking merely two or three inches below the level of the brim; and the viscera of the pelvis generally, or the uterus in particular, pushing towards the outlet of the pelvis; but without getting a bearing on the external parts.

Principal and Proximate Causes.—It is to a variety of causes, operating more or less in combination, that these descents may be attributed. Where a pelvis is of small size, it is by no means impossible that the viscera may come down; but they are much more liable to this displacement, if the pelvis be of great capacity. When the vagina is closed in the natural degree, there is little risk in these descents; but if there be much vaginal relaxation,—whether this arises from mucous discharges†, or from floodings, or from frequent childbirth, or from other causes,—this dilatation contributes greatly to the descent of the viscera; for the smallness of the vagina is a principal security against these troublesome displacements; and, indeed, the naturalist might (I think) reasonably enumerate the small size of the human vagina,—as compared with that of many other of the mammiferous‡ females,—among the indications that our race was designed for the erect posture, and has not *usurped* that position;—in the way that some speculators have contended.

* Sir C. M. Clarke has described the following diseases, as characterized by the presence of a mucous discharge from the vagina;—1. Procidentia Uteri. 2. Procidentia Vesicæ. 3. Procidentia Vaginæ. 4. Inversio Uteri.—A. L.

† The mucilage of the body is the most abundant of the secretions;—amounting, according to Haller, to eight pounds daily; but most of it is absorbed, instead of being discharged. It consists of water, mucus, albumen, soda, muriate of soda, and phosphate of lime. Silicated potash is the best test for it. Nitric acid and chlorine are also used. As a general rule, all the *se*cretions are alkaline, and all the *ex*cretions alkaline. That the alkali present is not ammonia, is known by the tests acting when the solution is hot. The mucilage of the nose is to be regarded as a *se*cretion rather than an *ex*cretion;—not being intended by nature to be voided. The latter is necessary, however, in cold climates, and after the use of errhines.—*Dr. Fletcher's unpublished Examinations.*

‡ From *mamma*, "a breast"; and *fero*, "to carry".

Elongation of the Broad Ligaments.—Add to these causes, an elongation of the broad ligaments; which may become stretched so far, as to allow of a more extensive movement of the womb; which they ought to retain in connexion with the sides of the pelvis. Add, moreover, a certain aptitude of the parts, acquired by frequently descending; for if the woman have once laboured under procidentia* of the bladder, womb, or vagina, the descent of the parts, often repeated, seems to form and adapt them to the change of position; so that, for a length of time afterwards, if not throughout the remainder of life, there is always more or less tendency to yield to the impulse. Hence, among the more immediate causes of this descent of the pelvic viscera, you may enumerate these three as of principal and proximate operation;—the conformability of the parts, derived from a frequent descent; the elongation of the broad ligaments; and the relaxation of the vagina;—especially when they are acting in co-operation with an over-largeness of the pelvis.

Weight of the Uterus.—If the womb becomes heavier, this, no doubt, tends to bring on a prolapsus; and we find, accordingly, that when the womb is enlarged from the puerperal state,—being as large and heavy as the head of a full-grown fœtus,—or when it is enlarged from scirrhus†, polypus, or other causes, descents are apt to occur. These are more especially incident to women immediately after delivery; when the largeness of the vagina, and the increased weight of the uterus, are found to concur; and you will find, accordingly, that most women who have had a numerous and patriarchal family, if they rise early,—within the fourth, or fifth, or sixth day,—complain (more or less) of symptoms indicating a prolapsus of the uterus.

Action of the Abdominal Muscles.—When the pelvis is large, and the softer parts are greatly relaxed, independently of any very strong action of the abdominal muscles, procidentia uteri may be produced; but a principal cause of these descents,—acting in co-operation with those already enumerated,—is the strong action of the muscular parietes; to which action many women, from various causes, are subjected. Repeated vomiting, and much coughing‡ after delivery, with urgings produced by diseases of the rectum or of the bladder,

* From *procido*, "to fall down".

† In its latent, or *first* stage, scirrhus is hard, cartilaginous, and yellow; with membranous crura internally, shooting in all directions; and interstices between these crura or septa filled up with greenish vesicles. In the crude or *second* stage, scirrhus is rugged, nodulated, and painful; but not on being handled. In the *third* stage, it is an open cancer. Carmichael thinks that cancers are living animals; and Baron that they are transmuted hydatids. Meckel says that they always occur first in sebaceous and mucous follicles; and they are certainly most common in those parts of the body where these follicles are the most abundant.—*Dr. Fletcher's unpublished Examinations.*

‡ "Coughing," as well as "blowing the nose," depends on the forcible action of the diaphragm, assisted by a contraction of the glottis in the one case, and by closure of the nostrils in the other. There is first a resistance to the passage of the air; and then a forcible expiration. We cannot cough after the operation of tracheotomy has been performed.—*Dr. Fletcher's unpublished Examinations.*

—all have a tendency to bring on descent of the womb. So where women (as in the lower circles of life) are accustomed to carry great weights on the head, or are employed in washing, wringing, basket or tub-lifting, or the like, prolapsus is a disease to which they become very obnoxious.

Remote Causes.—On the principles here laid down, you may explain the operation of various remoter causes, in producing this affection. After floodings and miscarriages, women may be very liable to the disease; because these miscarriages* and floodings have a tendency to relax, and lay open the parts. In like manner, early rising after delivery; coughs, vomitings, and urgings (during the puerperal state, more especially); a life of labour, like that of the black population in the West Indies; pregnancy of the earlier months, particularly in those women who have borne many children; the relaxation of weak health;—these may all operate, more or less remotely, in producing this disease; which is more common after the age of twenty, or five-and-twenty; but from which children themselves are not altogether exempt.

With a view to our further observations upon this obstinate and distressing affection, the descent of the pelvic viscera, it may be divided into different kinds;—those cases in which you have a descent of the bladder; those in which you have a descent of the womb and viscera generally; and those in which the vagina descends;—not to mention here, some other varieties of prolapsus, of smaller interest.

SECTION 1.—DESCENT OF THE VAGINA.

You sometimes meet with a great deal of relaxation and elongation of the vagina;—so that this part may come forth, laterally, in front, or posteriorly;—the rectum, or bladder, respectively, issuing with it, more or less.

Causes.—[The anterior part of the os sacrum is of a concave form; and in this concavity the rectum lies. In the ordinary state of collapse or emptiness of this intestine, and even when the quantity of fæces in it is not very considerable, the space at the back part of the pelvis will be sufficiently large to receive it without inconvenience. But,—partly from the state of constipation into which the generality of women are disposed to fall, from habits of false delicacy; and partly, perhaps, from the sedentary life which they too often lead,—the lower part of the intestinal canal sometimes becomes so distended, as to make the posterior part of the vagina approach nearer to the anterior part of the pelvis; and in this way the diameter of the

* Before the sixth week of pregnancy, miscarriage is called "misconception"; between that period and the sixth month, "abortion"; and after that time, and before the ninth month, "premature delivery". The discharge consists of blood and mucus. As it arises from over-action, employ venesection, laxatives, opiates, and rest in the horizontal posture. Hippocrates never bled pregnant women;—from a fear of producing miscarriage.—*Dr. Fletcher's unpublished Examinations.*—We take this opportunity of referring to his "Physiological Classification of Diseases", published as a Chart by Butler, St. Thomas's-Street, Southwark.

vagina may be much diminished. This extreme distention of the rectum, at length diminishes or takes off the power of contraction upon its contents; and the strength of the sphincter muscle is increased by its frequent resistance to the contraction of the intestines and abdominal muscles. At length, when,—by the operation of purgative medicines, or by the natural strong efforts of the intestines, or by manual assistance (which is sometimes required),—the lower bowel is emptied of its contents, the pouch formed by it and the posterior part of the vagina continues;—so as to form procidentia vaginæ. If, in such circumstances, the fore-finger of the surgeon is passed into the anus, and carried forwards, it will be directed into the pouch so formed. This disease appears sometimes to be produced by piles*;—acting in the same manner as habitual costiveness. Such a state of parts, being once produced, will continue; unless proper means are employed to cure the disease.

The complaint may also be produced by cysts,—belonging to diseased ovaries,—falling down into the hollow between the rectum and the posterior part of the vagina. In one case where this happened in labour, the author† was consulted, under a supposition that the prolapsed part was the bag of membranes, formed by the amnion and chorion; and attempts had been made to break them. The case was terminated by opening the child's head; by means of which operation, the life of the woman was saved. After the labour, the cyst went up again into the cavity of the abdomen; and the vagina, being no longer pressed down, regained its natural situation.

No effect, in this disease, is produced upon the shape of the os uteri; because the cervix of the uterus is hardly at all connected with the rectum; and the cellular membrane between the vagina and rectum is very loose, and readily permits the vagina to project.

* Cullen has four species of hæmorrhoids:—1. Tumens (external; from tumours). 2. Procidens (external; from prolapsus ani). 3. Fluens (internal; with external swelling, or prolapsus ani). 4. Cæca (with pain and swelling of the anus; without discharge of blood). He thinks they are produced by ecchymosis, under the mucous membrane of the anus; and that the levator ani not acting so quickly as the sphincter, the mucous membrane is corrugated, and the blood ecchymosed. I think he is right. Morgagni says they are varicose veins; and Cruveilhier that they are a new, or false erectile tissue. They are too quickly formed to favour this opinion. An electuary is given;—consisting of equal parts of sulphur, cream-of-tartar, and electuary of senna. Apply astringents (such as alcohol, sulphate of zinc, conium, &c.); or apply leeches, or scarify; or, lastly, excise. A ligature is painful, and not safe; for it is liable to cause all the symptoms of strangulated hernia. Dr. Munro says that, in order to prevent hæmorrhage, you should cut beyond the base of the tumour, in the sound tissue. Aloes very often produces them. Even the biting across of an aloetic pill, has sometimes brought them on, in a person peculiarly liable from idiosyncrasy. "Ward's Paste" is made of black pepper, honey, and elecampane. It seems to be stimulant and laxative. "Hæmorrhois *fluens*" occurs most in females, from amenorrhœa, pregnancy, &c.; and in those who stand or ride much; as well as in old age. Here employ laxatives. The blood discharged is arterial; is the produce of *active* hœmorrhage; and is preceded by a slight fever. Its dark colour is attributed, by some, to the influence of hydrogenous gases in the intestines.—*Dr. Fletcher's unpublished Examinations.*

† Sir Charles Mansfield Clarke.

When the patient is in the horizontal posture, the tumour made by the prolapsed vagina is somewhat smaller than when she is erect; but it never goes away altogether. Its size is sometimes as large as a hen's egg.*]

Symptoms.—Small at first, the descent at length becomes considerable; and then there protrudes a sort of fleshy mass; which, till examination is duly made, you may suppose to be polypus, or the result of a descent of the womb or the bladder. It is only where the disease has been of some continuance, that it forms tumours of larger size;—as bulky as a pullet's egg, for example. In the earlier stage, the tumour is very small;—perhaps as large as the ball of the apex of the fore finger; forming,—at the back or front of the vagina, or laterally, or in all the three positions at once,—protrusions by no means uncommon; and which, unless they exceed in size, may be looked upon as natural to the part. But these tumours may show a disposition to increase; and then they begin to attract attention; and, as the patient conceives that some intumescence is forming, she is very often afraid lest it should be the commencement of some more formidable disease,—particularly cancer; on which account it is important you should be able to recognise it.

Necessity of a careful Examination.—When, from the description given, it is suspected that some graver disease is forming, you ought to make an examination; and where this is carefully instituted, the nature of the affection may be sufficiently ascertained. Yet I may remark, that when the vagina comes down but a little way,—forming a tumour not larger than the first joint of one or two fingers,—you are liable to overlook it in making your investigation. A woman says there is a swelling; which she conceives to be polypus, or prolapsus, or scirrhus. At all events, she is satisfied that there is a tumour; and you examine, and say she has none. Still your patient is dissatisfied; and you examine again, but find none. The reason of this is, that if the examination be made somewhat suddenly and carelessly, and particularly where the woman has had a large family, the protruding part may be pressed back unperceived; as it yields readily under the entrance of the index-finger; and in that way the deception may arise. If you are, therefore, incompetent to the nice investigation of these points, and are not on your guard against this particular fallacy, the existence of this protrusion is liable to be overlooked; but if the investigation be conducted with all due care and caution, the nature of the affection may be easily ascertained.

Treatment.—[In curing this disease, the practitioner is to direct proper means to keep the rectum empty, and thus to remove one of its causes; afterwards he is to endeavour to restore the tone of the intestine. Without attending to the first of these objects, the second cannot be accomplished; and unless the tone of the bowel is restored, the mere emptying of it will be useless.

* Sir Charles Mansfield Clarke, on some of the Diseases of Females; Part I; Chapter 9; Pages 142 to 145.

Purgatives.—Purgatives given by the mouth, and glysters thrown into the rectum, are the means by which the first of these objects is to be attained. If piles are present, the class of resinous purgatives* is to be avoided. Castor-oil, or a solution of some saline purgative in infusion† of senna, should be given in frequently repeated doses; till the intended effect is produced. The glysters may be made of any of the farinaceous‡ decoctions, or of broth, and some expressed oil.

Evacuation of the Rectum by Manual Operation.—As, in some instances, the rectum is so much distended as entirely to have lost its power of action, neither glysters nor purgatives will be of any avail. The glyster-pipe, as it passes into the rectum, will be blocked up by fæces; and purgatives will only bring a larger quantity of fæces down; and thus add to the bulk, already too great. Nothing remains in this case but to empty the rectum by manual operation; in doing which, all the delicate feelings of a practitioner are to be sacrificed to the patient's good; for however disgusting the operation may be, if necessary, the practitioner is bound to perform it. The following is the mode of doing it. The patient being placed upon her left side on a bed, her knees being drawn upwards, the forefinger of the right hand of the surgeon, covered with oil, is to be introduced into the vagina. A marrow-spoon, or the small end of a common table-spoon, warmed, and covered with oil, is then to be introduced into the rectum; and by means of it, assisted by the finger in the vagina, the fæces are to be scooped away. A large glyster§ is then to be thrown up; and if any feculent matter should be lying in the sigmoid flexure of the colon, it will be brought down into the rectum; whence it may be easily removed.‖]

If the vagina come down in a greater degree,—so as to give rise to an obvious swelling as large as a pullet's egg,—I believe the only, or the most effectual mode of giving relief, is by means of an egg-shaped pessary;—that form being by Nature destined for such canals.

* Purgatives are of three orders:—1. Laxative; such as cassia-pulp, tamarinds, figs, prunes, manna, mulberries, grapes, sulphur, treacle, calomel, &c. 2. Cathartic; such as jalap, castor-oil, rhubarb, and the five following; which (as an assistance to the memory it is mentioned) may be given in ounce-doses:—(1.) Sulphate of Magnesia. (2.) Sulphate of Soda. (3.) Phosphate of Soda. (4.) Tartrate of Potash. (5.) Tartrate of Potash and Soda. 3. Drastic; such as gamboge, elaterium, scammony, croton-oil, colocynth, &c. Saline purgatives operate on the *upper* part of the intestinal canal; resinous purgatives and sulphur on the *lower*. Colocynth acts on the *whole*. Elaterium, gamboge, cream-of-tartar, and Epsom salts, produce liquid stools.—*Dr. Fletcher's unpublished Examinations.*

† An *infusion* is made by *maceration*; a *decoction*, by *boiling*. The former is generally preferable; for the latter is likely to destroy the aroma; and the extractive principle is often changed by heat;—becoming oxidized, insoluble, and consequently inert. Hence the *infusion* of bark, and of senna, is better than the *decoction*; but the latter has the advantage of speed in preparation.—*Dr. Fletcher.*

‡ From *farina*, "flour."

§ An ounce of soft-soap dissolved in a pint of warm water, forms as good a glyster for the purpose as can be employed.—*Sir C. M. Clarke.*

‖ Sir Charles Mansfield Clarke, on some of the Diseases of Females; Part I; Chapter 9; Pages 146 to 148.

"Sequere naturam." * In the lower ranks of life, an egg itself,—boiled hard, and properly supported,—may be introduced; or you may recommend one of the balloon-pessaries, invented (I believe) by a very ingenious practitioner, Mr. Pointer of Camden Town; and sold by Thompson of Little Windmill Street;—instruments which seem to be very well adapted for the purpose. If the parts descend in a slight degree only, you may then endeavour to cure the disease by means of astringents†;—solutions of alum, sulphate of zinc, preparations of copper, and of galls; to be used as injections and washes of various strength, according to the effect produced; but I fear that much is not to be expected from them. If there is much inflammation, leeches, fomentations, and poultices, will afford relief; and I would fain persuade myself that, in some cases, if the woman be strictly confined to the horizontal posture, say for five or six weeks after parturition, a radical cure of this disease might be obtained; for, under this condition of the genitals, the vagina is very prone to contract. In making this observation, however, I may remark, that I have one patient who has laboured under the severer form of this disease for a considerable time, and who has been delivered two or three times, without obtaining effectual relief. It is true, she has never submitted completely to the discipline of the long-continued horizonal position; but I could not perceive, in her case, that the state of the vagina after child-birth produced any obvious tendency to constriction of the part. In diseases of the vagina, bandages and compresses may be of service.

SECTION 2.—DESCENT OF THE BLADDER.

The next disease to which I request your attention, is the descent of the urinary bladder; which may occur in different degrees. In some extremer cases, the bladder lies forth between the limbs of the patient;—forming a tumour there, larger when the bladder is full, smaller when it is empty, and generally about the size of an orange; and admitting the introduction of the catheter into its cavity.

[This disease, like the former, will be most likely to occur when the vagina is relaxed (as after childbirth); and women who have borne many children, are the most liable to the complaint; but it may happen at any period of life. It is the posterior part of the bladder which descends; or that part which lies behind the entrance of the urinary passage.

Symptoms.—The greater number of patients whom the author‡ has seen labouring under this disease, have been subject to violent coughs; which may, therefore, probably have had some share in its production.

* "Follow nature."

† Astringents differ from evacuants only in the stage of the process at which their effects are manifest; for all medicines must constrict the blood-vessels at first; and alum and kino, if given largely, purge. Acetate of lead is the most prompt astringent; and it is purgative in a large dose. Resins, balsams, and turpentine, act on the mucous membranes of the urinary passages. Some physicians are fond of the uva ursi. Kino and catechu act on the intestines.—*Dr. Fletcher.*

‡ Sir Charles Mansfield Clarke.

The symptoms of the disease, in some respects, resemble those of procidentia uteri*; but some of the latter are wanting; and others not present in procidentia uteri, are met with in this ailment. The weight of the part induces the woman to complain of a bearing-down; —not, however, to the same extent as in procidentia uteri. It is a curious circumstance, also, that this sense of bearing-down is, in some women, greatest in the horizontal posture. In the night, therefore, the patient is greatly annoyed by this sensation; which is frequently coupled with a perpetual desire to make water. When any urine is contained in the bladder, the patient is much more uncomfortable; as the size of the tumour is much increased when the bladder is full; and *vice versâ*. The tumour seldom goes away entirely; because some urine generally remains in the bladder, even immediately after the woman supposes that she has emptied it; for it appears that those muscular fibres of the bladder which form the pouch or tumour, have not the power of contracting, so as to expel the whole of the urine. A mucous discharge often attends the disease; but the quantity varies. In a few cases it is very profuse.

The peculiar symptom which marks this complaint, is a pain referred to the navel; with a sense of tightness there. This pain is greatest when the bladder contains the largest quantity of urine; and, as it parts with its contents, the uneasiness diminishes; till at last, when it is empty, or nearly so, the symptom goes off altogether. The superior ligament of the bladder runs from the fundus of the bladder to the navel, to which it is attached; and perhaps a stretched state of this ligament (the remains of the umbilical arteries), or the effect produced by the dragging upon the navel itself, may account for this symptom. This pain at the lower part of the abdomen, extending to the navel, has been considered as symptomatic of disorder in the bowels; and the disease has been treated by purgatives. This class of medicines for a time relieves the patient; because, during the action of these remedies, the bladder is nearly emptied of its contents. Moreover, less urine is secreted by the kidneys. The good effect of these medicines is, however, only temporary; for the symptoms will be re-produced when the purging is discontinued.

The distinguishing mark between "procidentia *vesicæ*" and "procidentia *uteri*", is the absence of those gastric symptoms which attend the latter†. Although the stomach sympathizes with the bladder under many states of disease arising from altered structure or disordered actions, it is by no means so frequently affected by disorder of the *bladder*, as by that of the *uterus*; and very rarely, if ever, is it affected by the mere *displacement* of the bladder. But if, in consequence of displacement, the bladder should become affected by disease, then the complaint is no longer to be considered as a simple case of procidentia of the bladder.‡]

* See page 678.

† See Page 699.

‡ Sir Charles Mansfield Clarke, on some of the Diseases of Females; Part I; Chapter VIII.; Pages 131 to 135.

By these characters, the higher degree of this disease may be readily discriminated;—the tumour varying in bulk according to the quantity of the secretion, and admitting the catheter into its interior. It sometimes happens, that the descent of the bladder is in the slighter degree only; and then no tumour lies out under the eye; but there is merely a tumour in the back part of the symphysis pubis. When the bladder is full, this swelling is very large;—blocking the vagina up. When it has been emptied by the introduction of the catheter, it becomes much smaller. If you pass up the instrument, you may distinguish it within the cavity of the swelling (an excellent character of the disease); and, under voluntary urging, the swelling is found to increase considerably in its size. By these marks the disease may be easily known.

Diagnosis.—Sometimes, instead of a mere descent of the bladder, invested by the vagina, you have a descent of the uterus also; so that if you examine the bladder in front, and introduce the catheter, and if you then push your examination further, you may palpably distinguish a very hard substance; which,—by its feel, its form, its situation, and (above all) its mouth,—is known to be the uterus. The cautious introduction of a small sound into the uterus, renders the diagnosis still more complete. If the disease is carefully investigated, and you ascertain the various characteristics here enumerated, you may distinguish it with facility from all other affections; but if you make your inquiries in a very careless manner, you are liable to confound descent of the urinary bladder with descent of the uterus, with inversion, with polypus, or with that descent of the vagina which I before described to you*. But I do not pretend to teach diagnosis to those who *yawn* over disease!

Treatment.—When the bladder descends a great way,—so as to form a tumour between the thighs,—the only effectual mode of relieving the disease, is by introducing something into the vagina;—such as an egg-shaped pessary; or even one of the *round* pessaries, adapted to the capacity of the dilated parts, as ascertained by a trial of instruments of different diameters. If the bladder have not pushed down, so as to make its appearance externally, a pessary may not be necessary; and, in married women especially, it is desirable that this instrument should not be used. When the descent is beginning in this manner, it should be our principal indication to keep the bladder empty, and to tell the patient to abstain from all urging;—a rule to be observed with the utmost strictness; as the infraction of it must increase the descent. Lotions of alum, of sulphate-of-zinc, of sulphate-of-copper, of galls, and so on, are recommended;—of various strength, according to the effect produced; and if a patient becomes pregnant, I should recommend (as before) that she should be confined to the horizontal position for a few weeks after delivery; in order to allow of the vagina contracting, and thus giving the bladder a more effectual support.

* See Pages 690 to 694.

SECTION 3.—DESCENT OF THE UTERUS.

Varieties.—As women are liable to the descent of the vagina and of the bladder, so they are still more frequently liable to a disease of which, no doubt, you have often heard;—I mean, prolapsus of the uterus. Sometimes it lies out under view; sometimes it comes down nearly to the outlet of the pelvis; and occasionally it prolapses one or two inches only;—lying but little below its ordinary level; yet, not unfrequently, occasioning the most troublesome inconvenience. Hence the disease has been divided into three varieties;—relaxation, prolapsus, and procidentia. When the womb protrudes, the disease is called "procidentia"; when it remains at the outlet, "prolapsus"; when it scarcely subsides below the level of the brim, it then constitutes what is denominated a "relaxation."

Procidentia Uteri.—*Causes.*—[The immediate causes of this disease are:—1. Relaxation of the broad and round ligaments above. 2. A want of due tone in the vagina below. By the first, the uterus is permitted to fall; by the second, the uterus is allowed to be received into the cavity of the vagina. Whatever is capable of producing a lengthened state of the ligaments, or a relaxed state of the vagina, may become the occasional cause of the complaint. Weakness of the system may be looked upon as a cause of this complaint; and therefore it is occasionally met with after long diseases, which have diminished the strength of the patient. Profuse hæmorrhages, taking place from any part of the body, may act in the same way.

Frequent after Delivery.—But the most common cause of procidentia uteri, is the long continued erect posture of the body, at an early period after delivery; and, in some cases, after abortion. To this cause the majority of the cases are to be attributed; for, at this time, not only the immediate causes of the disease are present, but the uterus weighs eight or ten times more than an unimpregnated uterus; and it is carried down by its own weight. The long confinement of a patient to a warm bed, after delivery, may be productive of considerable debility; but sitting up, in the erect posture, is still more injurious. The use of the chair is now very much laid aside; and the best practitioners direct their patients to remain in the recumbent posture upon a sofa, or on the outside of the bed. The advantages of a horizontal posture and coolness are thus combined. This posture should be observed until the uterus has nearly regained its unimpregnated size; which will be between the third and fourth week after delivery; at which time it may be presumed that the ligaments and the vagina have acquired their former strength. In this place a question may arise:—"What becomes of women in the lower ranks of life, who have not the means of giving up this time to the recovery of their local strength?" These women are liable to this complaint; and suffer from its effects very frequently. Because they are not generally found to complain, it is not to be supposed that they have not cause for complaint; nor, because they are not seen confined to a bed, is it to be thought that there is no

necessity for confinement. They are often great sufferers; but they suffer in silence; and their humble station often precludes them from obtaining relief. Women liable to violent coughs during the time of their confinement after childbirth, are especially the subjects of procidentia; owing to the pressure made by the abdominal viscera upon the uterus, in the occasional strong action of the diaphragm and the abdominal muscles, at a time when the vagina can afford no resistance. Single women are not exempt from procidentia of the uterus; and it is a curious fact, that the complaint is less frequently cured in them, than in those who are married.

Symptoms.—These arise partly from the effects produced upon the circumjacent parts by the change in the situation of the uterus, and partly from sympathy. It may be a matter of surprise, that a very trifling change in the situation of the uterus, should produce those inconveniences which attend some of the cases of this disease; but this surprise will be lessened by the recollection, that, in other parts of the body, any derangement of the natural order or structure occasions much distress. A small tumour upon the inside of the eyelid, will cause great pain; and will produce a plentiful effusion of tears. A trifling obstruction in the lacrymal* duct, will be attended with a constantly weeping eye. A polypus of the nostrils will interfere with the power of smelling and swallowing, produce a considerable discharge of mucus, or even occasion suffocation. One tooth projecting beyond the rest, will irritate the cheek, and sometimes render the speech inarticulate; and a relaxed or elongated uvula, will sometimes produce a permanent sensation of choking.

At the commencement of this ailment, the woman complains of pain in the back; and this symptom sometimes continues for a great length of time without any other. Pain is also felt in the groins; extending towards, and terminating in, the labia. There is a sense of fulness in the parts; and an increased discharge of transparent mucus from the vagina. As the disease proceeds, the pain in the back is described as the pain of dragging. The patient now has a sense of bearing-down, or of weight;—feeling, as she expresses it, as if every thing were dropping through her. The discharge increases in quantity. The pain in the groins arises, probably, from the round ligaments being stretched; and that in the back, perhaps, from an elongation of the parts connecting the uterus with the parts behind. As soon as the erect posture is changed for the recumbent position, these symptoms go off.

Strangury, although not a constant attendant, sometimes is present; and annoys the patient until the procidentia is cured.—A lady, whose constitution was weak, and who had borne several children, was attacked by pain in the groins. She had a discharge of mucus from the vagina, and was affected by a frequent desire to make water;—voiding very little at each attempt. She had employed poppy-fomentations and opium, and had taken some oily purgatives, without experiencing the least good effect. Upon fur-

* From *lacryma*, "a tear."

ther inquiry, it appeared that the pain in the groins left the patient at bed-time; and that at the same time the frequent inclination to make water went off. This led to an examination of the parts; by which a procidentia uteri was discovered. The whole plan of treatment was now changed. She used an astringent injection; took some cinchona, with sulphuric acid; and confined herself to the sofa. By pursuing these means, the strangury and all the other symptoms left her, as her strength was restored; without the use of any mechanical means.

The pain in the back which attends procidentia of the uterus, should be distinguished from that which is met with in cases of separation of the joint between the ilium and the sacrum, after some cases of labour. It has been remarked, that the pain in the back arising from procidentia, is greatest when the patient is erect; and that it subsides in the horizontal posture. In the case of separation of the joints just alluded to, the patient has great difficulty in standing, or perhaps cannot stand at all; is uneasy even in the recumbent posture; and is incapable of moving in bed, without great pain and difficulty.

Disorder of the Stomach.—In procidentia uteri, the symptoms arising from sympathy between the stomach and the uterus, are very distressing. The appetite becomes irregular, or is totally lost; the stomach and bowels lose their tone; and there is a great sense of distention in the abdomen, arising from air*; which may be heard when moving from one part to another. The spirits flag; every employment becomes irksome; and life itself is considered as scarcely desirable. There are, however, a variety of shades in the degree of this sympathy. The diaphragm is sometimes affected by spasm; and hiccup† is produced.

Quantity of the Vaginal Discharge.—The quantity of the discharge

* Hunter shewed that air might be secreted by arteries; and Baillie, that it was caused by inflammation. Davy found that the air in the first part of the intestinal canal, consisted of oxygen and nitrogen; and of nitrogen alone in the last. It is not to be looked on as the product of fermentation; for it sometimes occurs when there is nothing to ferment; as in the uterus, the peritoneum, and the pleura.

† "Hiccup" is a spasmodic sigh. "Gaping" is a convulsive sigh, combined with a depression of the lower jaw; which descends from sympathy between the portio dura and the phrenic nerve. It occurs in diseases of the diaphragm. "Hooping" depends on inspiration combined with a contracted glottis. A "groan" is an inverted hoop;—*ex*piration, with a contracted glottis. It often does not indicate pain; but a convulsive action of the muscles of the larynx. A "scream" is an acute groan;—the proper arytænoid muscles contracting the rima glottidis to a very great degree. Hydrocephalus causes screaming, from the convulsions spreading to those muscles; and not from pain. The patient may even be unconscious; as in hysteria, where the scream is not caused by the passions, as usual, but by other causes. The *constriction* of the vocal cords (by the thyro-arytænoid muscles), instead of their *approximation* makes the difference between "speaking" and "whispering". "Sobbing", "laughing", and "crying", are convulsive actions of the abdominal and laryngeal muscles. "Snoring" is from a tremor of the velum pendulum palati; and is an approximation to paralysis. It occurs after fatigue.—*Dr. Fletcher's unpublished Examinations.*

from the vagina varies;—being in some cases very profuse, in others slight. The appetite being diminished, digestion impaired, and the secretion from the parts greatly increased, considerable weakness of the system is produced; and the vessels of the uterus, partaking of the general debility of the frame, permit blood as well as menstruous fluid to escape from their cavities: so that the patient may, at the same moment, labour under two diseases;—menorrhagia and procidentia uteri. One is the effect of the other; and the former does not admit of relief by the usual means, unless attention be paid to the latter.*]

I have seen several cases in which the vagina has formed a large cyst; which lay forth between the limbs. This cyst contained, not the womb merely, but in part the bladder, the small intestines, the ovaries, and perhaps the rectum; for where you have procidentia, it very rarely happens that the womb alone descends. Generally the other viscera come with it; in a larger or smaller mass.

Diagnosis.—A case of this kind, if you are incompetent, you may mistake for polypus, or for inversio uteri;—not to mention a large descent of the bladder only†; but when you examine the tumour with care, you will frequently discover on its surface the rugæ of the vagina more or less conspicuous; you will find, also, that you can introduce a catheter into the tumour, provided the bladder be come down; and perhaps, on passing a finger into the rectum, it may descend into the back of the cyst; and, above all, at the lower part of it the os uteri may be found. Sometimes the os uteri is so conspicuous, that you can see it at a first glance; but you ought to be aware that, at other times, it appears under the form of a very minute aperture;—the usual tubercle being wanting. If you are doubtful whether this is or is not the aperture leading into the cavity of the uterus,—suspecting it to be nothing more than a mucous follicle,—take a blunt-ended probe; and, with gentleness, slide it into the reputed opening;—so as to ascertain the fact. If you have all these characters, or a great part of them combined, you need be at no loss to ascertain the nature of the disease;—a large tumour formed between the limbs; consisting of the various parts mentioned; more or less rugous on its surface; admitting the catheter, if the bladder have descended; admitting the finger somewhat, when it is introduced into the rectum; and containing the uterus, which may often be felt very distinctly at the lowest part of the tumour;—the os uteri being more or less conspicuously observable in the most dependent part; and containing an orifice which leads into the cavity of the womb.

Health of the Patient.—In procidentia of the uterus, it is remarkable that the health of the patient often suffers very little. Indeed it has been observed, with truth, that the general health is often much worse in those cases in which there is a mere relaxation, than

* Sir Charles Mansfield Clarke, on some of the Diseases of Women; Part 1; Chapter 5; Pages 72 to 82.

† See Pages 694 to 696.

in those cases of procidentia which we have just been considering; in which the vagina and uterus lie forth under view.

Treatment.—When procidentia uteri is clearly ascertained, it ought to be your first object to replace the parts, if this be safe and possible; but this cannot always be accomplished. If this practice be inadmissible, you had better have some defence, or shield, in order to cover the tumour; and to prevent it from suffering injury from a blow, fall, or other violence. Moreover, the woman ought to have a well-adjusted suspensory bandage, for the purpose of supporting and preventing enlargement of the swelling; because, if it be left for years without a suspensory support, it may become increasingly larger; till, at length, the patient can hardly sustain the inconvenience. There is a good deal of excoriation not unfrequently observed; and which, I apprehend, arises from irritation of the urine. Much aqueous drink, by diluting the urine, might probably materially palliate this inconvenience; but a more effectual relief is derived from the use of the catheter, or by passing the fluid while seated in a warm bath. The patient may learn to pass the catheter for herself.

Pain and Fever consequent on Reduction.—The principal impediment to the replacement of the uterus, in these cases, arises from the inflammation which may be occasioned by reduction, when they have been lying forth for months, or years; and where, as in cases of large and inveterate hernia, the parts above have got into a state to resist them. Sometimes, too,—as Dr. Clarke has, I think, acutely observed,—when inflammations have been going on in the different parts, adhesions have taken place internally; so as to form bands, and entangle portions of intestines;—thus obstructing and give rise to the symptoms of incarcerated hernia. In general, however, when you have procidentia of the uterus, you may replace the parts easily enough. You place the woman in the recumbent position; you introduce the catheter; you get a general bearing on the tumour, and press it backward and upward;—as if you were urging it upon the promontory of the sacrum; for if you press it directly upwards, you will bring it to bear on the symphysis pubis. After the parts have been replaced in this manner, a pessary is introduced, in order to prevent a second descent; and, perhaps, the most convenient form of the pessary, in these cases, is the globular, or oviform*; for, by means of its broad surface, it gives to the descending parts a very considerable bearing. But you find, sometimes, after you have replaced the uterus, that a great deal of pain and fever are produced; so that you begin to be alarmed lest abdominal inflammation should ensue. Now, if these symptoms be considerable, you had better take away the pessary; and let the parts come down again. Bleeding from the arm, leeches to the abdomen, fomentations, poultices, relaxation of the bowels,—in a word, all the ordinary remedies for milder inflammations, appear to be indicated here. If symptoms

* From *ovis*, "an egg"; and *forma*, "resemblance."

are slighter, and the pulse do not rise above one-hundred, or one-hundred-and-five, in the minute, I should then feel inclined to suffer the pessary to remain;—taking care to empty the bladder, and keep it empty; so that more room might be left for the uterus. As before, you foment the abdomen, apply leeches, and (perhaps) take away a little blood from the arm. If the symptoms arising from the pessary have been so violent, that it should be deemed necessary to take away the pessary, and suffer the parts to come down again, I should not therefore totally abandon my attempts; but in a few weeks afterwards, perhaps, I should resort to the pessary again;—leaving it in for two or three hours, or till the same symptoms began to appear; then again removing it; and introducing it afresh, after they had subsided. Thus, applying the pessary longer and longer every time, I should hope to habituate the parts to receive the viscera; so as, in that manner, to effect a permanent replacement.

Pain and Sloughing attendant.—In most cases where the difficulty arises from want of room, where the parts have been descended for years, and where the parts are lying out, in this way, under sight, they are sometimes affected with a great deal of inflammation throughout; with fever, and with deep-seated pain. It is asserted, that sloughs have taken place; and that women have recovered after losing the uterus. Nor have I much difficulty in believing this; though such cases are in a manner unique. Were I to meet with an inflammation of this kind, I should treat it in the same way as an inflammation of any other viscera;—bleeding largely from the arm; giving digitalis; fomenting the parts; and, perhaps, applying leeches; which you might very conveniently do, as the womb lies beyond the external organs. Topical cold might be of service. By all these, and the ordinary antiphlogistic means, inflammation might be got under; and then, if I found the womb could be replaced without giving a great deal of pain,—as if adhesions were torn through by the operation,—I should endeavour to replace the parts.

You will often, in these cases,—as observed before,—meet with excoriations of the tumour; perhaps in three or four places; and to be attributed to irritation of the urine. By keeping the urine from the surface,—as before recommended,—and general means, and by applying some stimulant and astringent remedies,—such as are used in cutaneous diseases,—cures I believe may, in general, be easily obtained.

[Prolapsus uteri is *perfect* where the organ wholly protrudes; *imperfect* where only a fold of the vagina comes down. It occurs from relaxation of the uterine ligaments, from child-birth, or from great width of the pelvis. The nature of the protrusion is known by the os uteri being at the bottom. It is to be treated by astringent lotions applied to the vagina, after the womb has been reduced; and by pessaries. The *ancient* pessaries were *medicines* introduced into the vagina. If not reduced, the uterus inflames and ulcerates;—the ulcers having a dirty appearance, and an unhealthy discharge.*]

* Dr. Fletcher's unpublished Examinations.

Prolapsus Uteri.—A more frequent disease than *procidentia* uteri, and therefore still more important to be known, is, that in which you have the *prolapsus* of the uterus;—the womb coming down to the external parts, but not beyond them.

Symptoms.—The woman tells you, she feels as if her interior were descending; with a great deal of pain in the back, above the sacrum, and in the hips and the thighs. Sometimes she complains of irritation of the bladder;—so that the water has to be passed ten or twenty times in the course of the day; and sometimes there is irritation of the rectum. At night the symptoms are worse; because the womb comes down in the evening;—the patient having been about during the day; and, more especially, the patient passes the water more easily in the morning than in the evening. There are few diseases which are better characterized than this prolapsus of the uterus; and the great majority of the cases may be readily ascertained by the following characteristics:—aching of the back; irritation of the bladder; bearing-down; relief of the symptoms by the horizontal posture; aggravation of the symptoms by being long in the erect position. These are the principal symptoms marking the disease.

Vaginal Examination Necessary.—Although, however, prolapsus of the uterus may be generally made out by the verbal description of it, this will not always be the case; and should the affection be doubtful, it is to be ascertained by examination. If you are in the habit of examining those parts, the moment you touch them the disease becomes known. These examinations are better made in the evening, than in the morning; for if you were to examine the patient in the morning, you would find the womb almost in its place; whereas, in the evening, it has descended considerably; so that the displacement is easily recognised. Add to this character the laxity of the vagina; which, in its upper half, is much more capacious; so that, perhaps, you might put a pullet's egg into it there; though the lower part of it may be tenser. Add to this, too, a bearing on the rectum, which produces irritation; and if you introduce a catheter into the bladder, you will find the passage more or less distorted;—your catheter moving about, and perhaps twisting round completely; being thrown out of the ordinary line.

Treatment—The best and most effectual method of treating this disease, is by means of a pessary. This is a form of disease which a well-adjusted pessary will effectually relieve; and there are persons who, for ten, fifteen, or twenty years together, have worn a pessary. Either a *ring*-pessary, or a *globe*-pessary, may be employed. For married women the *ring*-pessary is, on the whole, the best; and the *ball*-pessary for the unmarried; but you will find it necessary to make your observations upon the feelings of the woman; for some will find themselves easier with the ball, and others with the ring. Before you resort to this mode of treatment, however, you may try what may be done by confining your patient to the horizontal pos-

ture; either on a sofa or on a bed; and by directing her to abstain from all urging, when there is an action of the bladder or rectum,—particularly the bladder; the irritation of which may be considerable;—occasioning the patient to pass her water ten or twelve times a-day. Astringents should be used, by means of a long-necked syringe, or an elastic bottle. Sulphate of zinc, or alum, may be thrown into the vagina;—the strength of the solution being increased daily. You may begin with a drachm to a pint of water; and then two to a pint; then three, four, five, and so on, till you get a saturated solution, if necessary.

Relaxation of the Uterus.—There is yet a third variety of this disease, to which I beg your particular attention; for it is the most common of all;—perhaps the most obscure and most troublesome. I refer to that variety of the disease, in which the uterus comes down but a little way (say an inch or two) into the pelvis.

Symptoms.—In these cases, you often find your patients very irritable and nervous. They have a great deal of dyspepsia, acidity of the stomach, nausea, and vomiting. Very frequently, the bowels are more or less disturbed; and, more especially, inflations of the bowels are apt to occur; so that, if the women are married, they think they are with child, and ascribe it to pregnancy. You can hardly fail to recognise the disease by the following symptoms:—general relaxation of the system; disorder of the chylopoietic viscera; continued uneasiness, and pain in the back (ascribed to the upper part of the sacrum); a sensation of bearing down, as if the interior part of the body would pass away (a principal symptom); irritation of the rectum; irritation of the bladder; the passage of urine ten or twelve times a-day; and often more or less of a discharge of mucus from the vagina, as if the patient were labouring under the disease which I shall hereafter describe to you, under the name of "leucorrhœa".

Indications furnished by Examination.—If there is a doubt, that doubt is to be set at rest by making careful examinations. Where you find the disease to exist, you will observe the upper part of the vagina to be very much relaxed, and the womb to protrude; and where you introduce the catheter, you will find there is a tendency to an obstruction, and a distortion of the urethra. As before, the best time for making this examination is in the evening, rather than in the morning; because, if you are inexperienced in making those observations, you might be deceived, were you to institute a morning examination.

Treatment.—Where there is a relaxation in a slight degree, one of the first steps to be taken, is to improve the general health of the patient. For this purpose, you may use blue-pill in small quantities, laxatives*, tonics† (more especially the lighter bitters), and nourishing diet; but the most effectual mode of relieving her will be, if she is an inhabitant of a large city, by sending her into the country, or

* See Pages 286 and 693. † See Page 525.

to the sea-side, as soon as possible. After she gets there, her health will soon improve; and she will get rid of the disease;—at least, for a time. In these cases, it is a great advantage to lie in the horizontal posture, as much as may be without injuring the health; for all confinement, instead of improving the health, makes it worse. Further: as relaxations, where they are encouraged, are apt to terminate in procidentia, or prolapsus, you should direct your patient to abstain from all forcing; for the more the forcing, the more the parts descend; and the more likely she is, in the course of a few months, or a few years, to have a prolapsus. Astringent * remedies deserve a full trial; for there is no doubt of their being likely to be of service. Of the astringent fluids, those before enumerated are some of the best;—alum, and the sulphate-of-zinc being the principal. Always increase the strength and frequency, according to the effect produced; otherwise you will do no service. It might be worth consideration, whether *powdered* astringents might not be of use, if they were introduced with a little care; which, perhaps, might be done by the patient herself; and I think powdered galls, for example, would furnish a very powerful application. They would have the advantage of lying in the vagina more permanently than a wash; which runs off as soon as it is injected. In a case that occurred at this hospital†, I made a trial of resin,—common resin‡, in a very fine powder. It was a case, not of prolapsus, but of procidentia; and the uterus was replaced after the application of the powder. It is certain that the womb did not again come down so easily, after the application of the resin, as it had done before; but whether this arose from any effect that had been produced by the astringent on the part, or whether it arose from the mere roughening of the surface, was not clear. It was applied in this way for a few days; and it occasioned no inconvenience whatever. As the girl left the hospital, there was no further opportunity of observing its effects.

When women labour under a slight descent, the bladder is frequently obstructed; so as to render it necessary to introduce a catheter. But sometimes the use of this catheter may be superseded,—and (especially when you are at a distance) it is very desirable that it *should* be superseded, if possible,—by the patient lying, for half an hour or more, in the horizontal position, with her hips a little raised above the level of the shoulders; and then trying to pass her water; or sometimes,—by getting a bearing with the finger upon the mouth of the uterus,—the patient herself, if she be intelligent, may replace the uterus; and, in this manner, obtain a passage.

If the relaxation of the uterus, then, is of the slighter degree, it should be your principal object to mend the general health; to keep the patient in a horizontal posture; to restrain all unnecessary efforts and forcings; and to use astringents actively. As to the obstruction of the bladder, it may be relieved either by the use of the catheter, or by taking means to bring the uterus into its proper place. A pessary should be your last resort.

* See Page 446. Guy's. ‡ Resina Flava.

Prolapsus after Delivery.—It sometimes happens that the womb comes down *after delivery*; and this forms a variety of the disease that deserves remark. When a prolapsus takes place, and the womb lies out between the limbs, it forms a large tumour, as big as the fœtal head; and it is very easily known, by your finding the os uteri so large that you could pass your finger into it;—the child's head having just passed through it. Yet I have been told of two cases, in which the practitioners were so ignorant, that they did not recognise the disease. In one case, the womb was cut away with a penknife; and the woman died from collapse. In the other case, there was a great deal of handling of the uterus; and that seemed to occasion death. The manner of managing these cases of prolapsus of the womb, after delivery, is very simple. The bladder should be emptied; the womb should be returned to its place; and the woman may be kept in a horizontal position, with the hips a little elevated, for six or eight weeks together. If she submits to this, there is a fair hope of becoming permanently cured of the disease;—at least, in some cases.

Prolapsus in the Latter Months.—During the latter months of gestation, the womb does not usually come down; for it is so large that it gets a bearing on the rim of the pelvis, and there is not room for it to descend; yet it does so happen sometimes, where there is a very large pelvis, and the womb not very bulky, that it comes down so far, that the os uteri may be seen externally.

If the woman be in the end of pregnancy, or if the womb descend during delivery,—provided the os uteri came into sight through the external parts,—I suppose it would be your duty to dilate the os uteri with your fingers; and, in this way, accelerate the birth of the child as much as possible; but if it descend a little way merely, I should not meddle with it (meddlesome midwifery being bad); but would leave the woman to her own resources.

If, in the *latter months*, the womb were lying externally and between the limbs, if it could not be put back, I should recommend the bringing on of delivery, by puncturing the membranes; and then, when parturition came on, I should, as before, assist in dilating the os uteri. A case of this kind occurred to the illustrious Harvey. In his case, it was proposed to extirpate the uterus; but I certainly prefer the induction of parturition.

Prolapsus in the Earlier Months.—It is by no means unfrequent, however, for the womb to descend in the first three or four months; and a case of this kind is very readily made out by the ordinary symptoms. There is aching in the back; a bearing on the rectum; a bearing on the bladder, with an obstruction of the urine; and when you examine, the case is observable at once.

If the womb comes down in the *earlier months*, the practice is very simple. When the patient is most troubled with the symptoms, she may lie in the horizontal posture for a little; she may lose blood from the arm, if she be in much pain; and, in the course of a few weeks, the womb becomes so large as to get its bearing

upon the bones of the pelvis, and the disease is cured. A woman was sent up from Gravesend to this Hospital*. I examined her; and found the case to be prolapsus uteri. She was ordered to lie in the horizontal posture. She was in the third month of pregnancy; and as she lay on the bed in the hospital, the uterus rose; got its bearing on the bones; and, at the end of a week, the disease was effectually cured.

It rarely happens,—I never myself saw such a case,—that, in the descent of the earlier months, the womb remains in the pelvis;—blocking up the cavity, making pressure on all the parts, and giving rise to symptoms of severe obstruction. You relieve it by introducing the catheter; and when you have emptied the bladder, and not till then, you venture to urge the womb above the brim. This, I say, you should not do till the bladder has been previously evacuated; for if it were overloaded, say with six or seven pints, and you were to urge the uterus upwards in the first place, you might have a great deal of difficulty in pressing it backwards; and if you succeeded, you might burst the bladder.

Can a Radical Cure be effected?—It has been asked whether a *radical* cure cannot be accomplished. If it could, it would certainly be very desirable; but, in the present state of our knowledge, we are not possessed of sufficient information to enable us to effect that cure.

Extirpation of the Womb.—It has been proposed to cut into the vagina, and take the womb away altogether. I do not believe that extirpation of the womb would always be either impossible, or fatal; yet it is too dangerous an operation to be thought of for the purpose of ridding the patient of the disease; besides which, if the prolapsed womb were troublesome, and were extirpated in consequence, the probability is that other parts would descend,—that the bladder or intestines would come down. I can, therefore, by no means recommend that operation; which was proposed by the French.

Cohesion of the Sides of the Vagina.—It has also been proposed to bring on an inflammation of the vagina, for the purpose of giving rise to constriction or cohesion. Every man of obstetric practice must be aware, that the vagina is sometimes shut up in the middle, by constriction, to an extent which renders it impossible to introduce even a catheter. Now and then, it even happens that this disease attacks not only married women, but the unmarried, and about the time the catamenia cease to flow; and, in such a case, the patient might sometimes obtain a radical cure commodiously enough, if this state of the vagina were induced. But we have it not in our power to occasion it at pleasure. It has been proposed to bring on inflammation by injections; and to have the parts replaced before adhesion or constriction takes place. Dr. Hamilton had under his care some two or three cases in which he made this trial; but without success. In the other Hospital†, in a case of procidentia, I once introduced a pessary with large apertures;—one that might be called "the *lantern* pessary"; but not to be recommended to your use.

* Guy's. † St. Thomas's.

This pessary being passed up, and there being a good deal of forcing, parts of the vagina were drawn through the large holes; a great deal of irritation was in consequence produced; and these parts sloughed away. Of course I removed the pessary the moment I observed this; and the woman completely recovered. But mark! Notwithstanding there had been so much inflammation of the vagina, and though the patient had been confined to the horizontal posture afterwards, to give her a chance of a radical cure, no such cure was in that way produced. Yet there is a case recorded by Burns, I think, in which, a silver pessary being used, a great deal of inflammation was occasioned, and brought about a radical cure. To bring our observations to a point, therefore: in women past the age of the catamenia, it is very desirable that we should try to cure the disease radically; and I think, though in our present state of knowledge we do not seem to be in possession of the means of accomplishing it, yet that this cure is well worth the consideration of a man of talent and industry; for I am not without hope that it might be obtained. There is another mode in which a radical cure may be attempted; and that is, by strictly confining the patient, after delivery, to the horizontal posture, for six or eight weeks. I suppose this will fail in the majority of cases; but in some few cases it seems to succeed splendidly. Mr. Redfern, formerly associated with this class, had the care of a lady who, for four years together, had laboured under a descent of the uterus beyond the exernal parts. She became pregnant; she was confined to the horizontal posture, after her delivery; and for some time afterwards (a year or more),—the time he afterwards knew her,—she had no further appearance of the disease.

Illustrative Preparations.—I have various preparations illustrative of the subject. The first is a preparation of prolapsus vaginæ; in which, the front and sides being disposed to come down, the disease is exhibited in the slighter degree. The next preparation exhibits laceration of the perinæum; which disposes to the descent of the womb, by laying the vagina open; and which may be set down among the causes productive of prolapsus. The next preparation is one of prolapsus uteri.

The next preparation is one of the uterus in the puerperal state; which will prove that,—the uterus being heavy, and the vagina relaxed,—the former is very apt to come down. This descent, of course, produces a large tumour between the thighs. I have also several preparation-casts, showing the descent of the different parts in different degrees.

SECTION 4.—TREATMENT OF DESCENT OF THE UTERUS BY THE PESSARY.

By pessaries you are to understand certain instruments which are introduced into the vagina; with the view of supporting the uterus, the bladder, the vagina itself, and the parts adjacent; and of these instruments there are various forms and modifications. Of the different

kinds of pessaries which have been commended to use, the principal consist of the "*ring*-pessary", the "*ball*-pessary",—the "*sponge*-pessary", and the pessary which is mounted upon a *stem*.

Ring-Pessary.—The ring-pessary, on which I shall first make a few remarks, consists of a circular plane of various material;—silver, ivory, caoutchouc, or box-wood, for example. It is thick at the edges, thinner toward the middle, and contains a central aperture, large enough to admit the point of the fore-finger, but not larger;—lest the uterus should force itself through the opening; and, in that way, become strangulated. The accoucheur should be provided with a succession of these pessaries;—consisting of different sizes, rising above each other in diameter. When he is about to introduce the instrument, he first makes a careful examination of the vagina;—to which there can be no objection; as it is necessary for him to interfere manually with the part, in order to introduce the instrument. Having effected this, he places by the bed-side three or four of the pessaries;—such as appear, on comparison, to be best fitted to the vagina. Of these he selects one; lubricates it abundantly; and then either places the woman in the recumbent posture, or else advises her to lie upon the left side, in the usual obstetric posture. This is, perhaps, on the whole, fully as convenient; and more agreeable, it may be, to female delicacy. These preliminaries arranged, he lays hold of the pessary; and, planting it in the pudendal entrance, he rolls it upwards and backwards with a sort of rotatory motion, along the surface of the sacrum, towards the promontory of this bone;—with as little force and compression as may be. The plane of the instrument, at this time, lies parallel with the sides of the pelvis; but when he has reached the upper part of the vagina, he places the plane in apposition with the mouth of the uterus; which then rests upon it as on a shelf, and thus obtains an effectual support. These instruments, however, are very apt to turn edge-ways. If the pessary be too large, it can easily be removed at the pleasure of the patient; and a small pessary is easily replaced, when necessary, by one of larger diameter. When you pass up the pessary, you ought to tell your patient that the first size will not, perhaps, properly fit the vagina; and that she must not be disappointed, therefore, should a change become necessary. It is exceedingly easy to remove the pessary. You pass the finger into the vagina; lay it in the central aperture of the pessary; and then roll it downward;—careful not to injure the vaginal orifice. The great nicety of introduction, consists in carrying it upwards and backwards; and not against the point of the pubic arch. I have said you are to carry it upwards and backwards towards the promontory of the sacrum; because, if you carry it directly upwards, you will occasion a great deal of pain; and, at the same time, the instrument cannot be introduced, as it must fall into collision with the symphysis pubis. In all women, the ring-pessary may be employed. It is an excellent form of pessary for general use; but for married women it is more especially accommodated; as it does not materially obstruct the vagina.

Ball-Pessary.—The next variety of pessary on which I propose to comment, is the ball;—of silver, ivory, box-wood, or various other materials. Box-wood is generally preferred. It is hollowed by the turner, in order to make it lighter; and, at the two poles, there are apertures of small size,—perhaps the more numerous the better,—to allow the discharge of the catamenia;—should the period of menstruation be not yet passed. With this instrument should be connected four ties (of strong red tape, for example); which, by giving a bearing, may facilitate its abstraction from the vagina. When using the ball, you ought to be provided with a succession of three or four different sizes. Then, placing the woman (as before) either recumbent, or laterally,—the left side being the more decorous posture,—and the instrument (as before) being placed in the vaginal opening, roll it upwards and backwards, towards the promontory of the sacrum. Some little pain may be expected, on passing the orifice of the vagina; but the admission of the instrument becomes more easy, as it advances along the canal; for, as I formerly observed to you, the vagina is often far more capacious in the upper part, than below. If you wish to remove this instrument, it may be done by laying hold of the tape and drawing down; but should the tape give way under your efforts, what are you then to do? In this conjuncture, you may have recourse to an instrument which I have used in the Hospital*; and which is to be managed precisely in the same manner as you would manage the obstetric forceps. The blades are separable, like those of the obstetric forceps. They are to be applied to the ball; and being then brought into operation, the ball may be abstracted more easily than by the action of the tape. These pessaries are admirably adapted to prevent the descent of the female parts; because the parts get a broad bearing upon the instrument. These instruments are of easy introduction; and are much employed by the surgeons among the black population of some of our plantations.

Thompson, of Little Windmill-Street, sells a pessary resembling in principle the ball;—the contrivance, I believe, of Mr. Pointer; and which may be called a "*balloon*-pessary." It is no longer in one diameter than in the other. It consists of a sort of canvass-texture, firm, and covered over with common Indian rubber. This instrument is easily introduced and easily removed. If the removal be obstructed, all that is necessary is to make a small aperture in the instrument; when it will collapse, and come away with ease. Thompson recommends that we should employ the white of eggs for its lubrication, in preference to oil; which has a tendency to dissolve the caoutchouc.

Sponge-Pessary.—A piece of sponge, introduced into the vagina, may be used as a pessary; but unless judiciously managed, it operates but badly; because, if not well fitted in size, it tends to dilate like a sponge-tent;—so as to increase the original cause of the disease.

* Guy's.

But if the capacity of the vagina be well examined, and the sponge cut down, and formed into an oviform shape, it may be accommodated to the cavity; and may be used in those cases more especially where, from the irritability of the parts, the pessaries before recommended cannot be employed. Dr. Haighton was partial to this variety of pessary (condemned by some); and thought he found advantage from it. He recommended tapes to facilitate its removal; and was of opinion that some advantage might be derived from imbuing the instrument, daily, with some astringent lotion (that of alum for instance);—the strength of which lotion should be gradually increased. The patient ought to be provided with three or four of these sponge-pessaries; and every day the one that has been in use should be removed, to undergo a thorough ablution, and to be introduced on some future day. If the vagina be prone to contraction, the pessary may be cut smaller and smaller, with scissors. Dr. Haighton thought that, by using the pessary in this way, we might not merely support the parts (as by the ordinary instrument) but might reasonably hope, now and then, to produce some constriction of the vagina;—so as to obtain, perhaps, a radical cure of the disease.

Stem-Pessary.—There is yet one other variety of pessary, which is sometimes used; and that is the pessary mounted on a stem. There are different kinds of it; for a ball, a ring, or any form you please, may be mounted in this manner. Of the employment of this pessary, I have seen very little; having advised it only in one or two instances; and those did not remain under my own eye; so that I could not fully observe the result. In general, I know that stem-pessaries are not needed; and, unless needed, they should not be employed. The cases best adapted for their use, are those in which the perinæum is torn open, or in which the vagina is relaxed extraordinarily; insomuch that no ordinary pessary will remain. In general, the sciatic ligaments alone give a sufficient support to the pessary (to the ball, more especially); so as to render it unnecessary to employ the instrument with a stem. Cases, however, may occur,—especially with laceration of the perinæum,—in which a stem-pessary may be usefully employed. Of those pessaries there are different forms.

Sir Charles Clarke's Stem-Pessary.—Of the different kinds of stem-pessaries, perhaps one of the best is that recommended by Dr. Clarke; and which he has described in the following language:—"In the first place, a pessary is to be chosen of the size which the case requires; and a small slip of brass is to be attached to it by its two ends; leaving a space between the instrument and the centre of this piece of brass. A belt of leather, long enough to go round the patient's body, is also to be prepared; and to the middle of it, behind, a brass wire, as thick as a common quill, is to be attached by a screw. This wire is now to be properly bent; and, the pessary being introduced into the vagina, the wire is to be passed between the pessary and the piece of brass attached to it; and being brought up between the thighs, it is to be attached to the fore-part of the circular strap. The reduced parts are by this means supported by a

pessary; and this is kept in its place by the unyielding piece of metal." *

A stem-pessary of this kind I have tried; and it answered very well, one inconvenience excepted; which was that, in the case referred to, much distress was occasioned by the softer parts being apt to get between the iron-stem, or wand, and the staple;—causing a painful compression; and the rather, because those parts are very sensible.

Another stem-pessary, which I tried on a patient of this Hospital†, labouring under procidentia, was found to answer very well. It consists of a ball elevated upon a stem of pewter‡. The ball may be passed up to the os uteri; and the stem, being incurvated, is brought up to the belt before mentioned §; and fixed there, at a proper elevation, by means of a screw and socket. This stem may be adjusted in two ways;—being accommodated to the bandage either in front over the symphysis, or between the nates behind. The great advantage of this sort of pessary is, that it may be adjusted to a great nicety, to the liking of the patient. If she wishes to throw it higher, she can do so; if she wishes to lower it, this may be done; and if she is uneasy in any way, she can move it from one side to the other, or bring it from her person altogether. All this obsequiousness depends, mainly, on the flexibility of the stem; which, however, is so stiff, that while it obeys your pressure, it nevertheless retains the curve you give it. From the trial given to this instrument, I have reason to belive that, on the whole, it is by no means a bad one.

General Remarks on the Use of Pessaries.—Whatever pessary you use, there are different modes in which they may be employed. The patient may wear them for years together, without removal during the whole term; for, finding the part well supported by it, she becomes habituated to the instrument, and learns at length to bear it with contentment. Or, when preferred, the pessary may be employed only in the daytime; and if a woman is tolerably well, and more particularly if she is a married woman, it may be better to wear it in the day time only. It may be regularly introduced in the morning, and regularly removed in the evening, like a part of the dress. If your patients are wanting in intelligence,—having more heart than head,—the less you rely upon their skill the better; and I should, in that case, certainly perfer the use of a pessary to be left undisturbed for months together. Where pessaries are left in this manner, however, they ought to be watched; and if there are pains and discharges, and other alarming symptoms,—which may excite a suspicion that some other disease is forming,—the instrument must be abstracted, and the state of the parts ought to be investigated with care. In such cases, sometimes, the vagina has become in-

* Sir Charles Mansfield Clarke, on some of the most important Diseases of Females; Page 127.

† Guy's.

‡ Pewter consists of tin alloyed with lead, antimony, and various other metals.

§ See the previous page.

flamed and irritated; and it seems not injudicious to confine the patient, with strictness, to the horizontal posture for a few weeks afterwards; as there is a reasonable hope that, under all this action, the vagina may become constricted; so that a radical cure may be obtained.*

Variations in the Size of the Pessary.—The size of the pessaries varies with the different capacity of the vagina. Some may require a larger, and some a smaller pessary. When a *ball*-pessary is to be used, the size required may be ascertained by means of hard eggs, or lemons;—an instrument being afterwards chosen accordingly. The egg itself,—designed by Nature for these parts,—is not a bad pessary. The tale of Leda gives us classical authority for its employment†. The larger pessaries are proper when intended to be of permanent use; the smaller, when they are to be removed, like a part of the dress. The smallest pessary which will support the parts is the best.

Bad Effects of their Use.—In general, pessaries, if well adapted, may remain for years without producing any ill effects. Sometimes, however, I have seen bad consequences; and the following are some of the more important;—obstruction of the bladder; obstruction of the rectum; bruises; inflammation; ulceration; thickenings; —insomuch, that the very walking of the patient becomes painful to her. Sometimes the rectum has been laid open, by ulceration, into the vagina. I once saw a case, in which a very large pessary had been introduced; the rectum opened in consequence; the woman died (I had almost said "happily"); and thus became relieved from her misery. The *ball*-pessary, when too large, may occasion much tumescence and pruritus of the parts below, just within the passage; the cause of which symptoms may not be understood. The removal of the instrument relieves them at once.

Patients objecting to their Use.—Pessaries are very excellent remedies, where they are well adjusted to the parts; but Denman has remarked, with good reason, that many women lose the advantage of the instrument because of their impatience; or because, to use a female expression, they become "fidgetty." If you introduce an instrument that does not exactly fit, they will not allow it to remain; —they will not allow another to be tried;—they are displeased, and petulant, and child-like;—for there is a good deal of resemblance between the temper of women and that of children. They fall into a pet; and as we can hardly forbear petting them, what with the folly of the patient and the compliance of the surgeon, my lady pouts, and loses her advantage. At the time when you propose the instrument, you had better tell your patient, at once,—"This in-

* See Page 707. 'Adhesion of mucous surfaces from inflammation is *fortunately* very rare; or great fatality would ensue from the occlusion of the various passages of the body.—N. R.

† Leda was the wife of Tyndarus, King of Laconia. She was embraced by Jupiter, in the form of a swan; and produced two eggs; the one containing Pollux and Helen (who afterwards give rise to the siege of Troy), and the other Castor and Clytæmnestra (afterwards the wife of Agamemnon).—N. R.

strument is really an excellent contrivance, but I know it will be of no use to you." "Of no *use* to me?—Why?" "'Why?' Because you will not allow me to try it sufficiently! There will be a little trouble attending it; and I know you will become fidgetty, fall into a pet, and prevent a fair trial." This brightens the lady's eye a little; gives a glow to the complexion; raises a small emotion of indignation; and puts her on her metal,—to use a phrase of the *manége*.* Her heart is excellent at bottom; but she does love a little perverseness, and is determined you shall prove a pseudo-prophet; and thus,—thanks to your management, and a taste of John Abernethy,—the instrument gets fairly tried! A squeeze of the lemon has sometimes a very agreeable flavour! Recollect, however, that even the accomplished Lady Townly occasionally gave a little too much!

Conclusion.—*Ball*-pessaries are, perhaps, best adapted to the unmarried; *ring*-pessaries to the married; *sponge*-pessaries to those who are very irritable; *stem*-pessaries to those cases in which no other form of pessary will remain. The *larger* pessaries are fit for permanent use. Pessaries used in the day only, should be smaller. The smaller the pessary the better; provided the parts are duly supported. A compress and bandage will, in many slighter cases, supersede the pessary; and the same contrivance may be a useful help in supporting a pessary. Pessaries of a size well adjusted to the vagina, may occasion pain during the first few hours; and ought not on that account, to be too hastily removed.

CHAPTER V.

INFLAMMATION OF THE UNIMPREGNATED UTERUS†.

[The uterus is very subject to inflammation after parturition; this, however, has been considered in another part of this work‡. But here it is to be remarked, that inflammation,—either simple or combined (in different degrees) with irritation,—may attack the uterus in the unimpregnated state; and if I can call the attention of the

* Riding-School.

† Sir Charles Mansfield Clarke has placed this affection among those which are characterized by a "white mucous discharge"; which, he says, is opaque, and of a perfectly white colour; resembles, in consistence, a mixture of starch and water made without heat, or thin cream; is easily washed from the finger after an examination; and is capable of being diffused through water,—rendering it turbid. It is most important to be able to distinguish this discharge from pus, which it in some degree resembles; as, through such a mistake, both the practitioner and patient have been led to fear the existence of some formidable disease.—A. Lee.

‡ Dr. Burns's "Principles of Midwifery".

young practitioner early to this formidable disease, I shall have performed what will amply reward me for writing this work *.

Causes.—The disease may attack the young, and especially the married; or those who are more advanced in life;—particularly about the time when the menses become irregular. One of the most frequent causes is exposure to cold (by light dress, for instance) during the menstrual period; but the use of strong injections, or any other irritation of the uterus, may excite it. It is very apt to be brought on by a long walk, or other exertions, in delicate or irritable females during menstruation; and then the attack is very sudden.

Symptoms.—There is a constant pain in the lower part of the abdomen, or near the pubis; and sometimes extending to the back and groin. This pain is permanent, but not unbearable, although most uncomfortable. It is aggravated by pressure above the pubis, and also by attempts to make water; and sometimes also in going to stool, for which there may be frequent abortive calls. The cervix is sensible; and sometimes acutely so in one spot, when touched; and, generally, the position is lower than it ought to be. The pulse is generally accelerated, and the skin hot; but sometimes the pulse is feeble, and the skin cool; or the feet and hands cold, the bowels rather constipated, and the stomach irritable. There is great thirst, with a dry hard tongue; and any attempt to sit up, often produces syncope. Violent and even bearing-down pains, come on in paroxysms;—not, indeed, of very long duration; but often repeated at short intervals. These, together with the other symptoms, render it impossible to mistake the case. If the disease make its attack during menstruation, the discharge is immediately checked; if in the interval, it does not come on at the usual time unless the disease be removed. Retroversion or anteversion of the womb may also take place; in which case suppression of urine is added to the other symptoms. Headach, globus hystericus, and other sympathetic but not essential symptoms, may add to the distress.

It lays the Foundation of Organic Disease.—It is of the utmost consequence to remove this disease early, and at once. Not that it proves rapidly fatal, unless the inflammation extend to the intestines or peritoneum †; but because it lays the foundation of organic disease in the uterus; which no art can afterwards cure. It is, indeed, impossible to say how many cases of chronic inflammation (as it is called), or of troublesome enlargement, or of scirrho-cancer of the uterus, may be dated from an attack (perhaps an ambiguous one) of inflammation; and which, with all its train of evils and disasters, might have been prevented by attention to that primary cause.

Treatment.—When there is fever, the lancet ought not to be

* Dr. Burns's "Principles of Midwifery".

† Even in this case, the patient may live for many weeks; and, after death, I have found the uterus enlarged and suppurated; the round ligament swollen in the inguinal canals; and the intestines not only matted, but adhering to the peritoneum lining the abdominal parietes.—*Dr. Burns.*

omitted; but it must not be pushed far; as it seldom completes the cure. Leeches, to the number of eighteen or two dozen, applied to the pubis or the lower part of the back, are of decided efficacy; and may require to be repeated, either there or to the top of the sacrum and groin. Some of the French surgeons prefer their direct application to the uterus, per vaginam. They think that their external application is hurtful. The hip-bath is useful; and then the application of a poultice to the hypogastrium. It has been objected to the bath,—both in this and other uterine diseases,—that it tends to draw more blood to the part. I look on this more as a theoretical opinion, than as one founded on experience. Whatever sooths, generally does good. The bowels are to be freely opened; and when the symptoms have abated, opiates (alone or combined with diaphoretics) are proper. The continuation of the paroxysms of pain, is best prevented by anodyne clysters. Constant but slight pain, remaining after the use of these remedies, will require the application of a blister above the pubis.

When the mucous membrane is the chief seat of the inflammation, a purulent secretion takes place; and may be confined, for a considerable time, within the cavity of the uterus, which becomes enlarged. This is to be ascertained by the history of the case; and if a spontaneous discharge do not take place, relief may be obtained by introducing a small bougie into the os uteri, and through the cervix. This is at least safe, if done gently. The use of the hip-bath, and the application of warm poultices to the hypogastrium, accelerate the progress of the case, and give relief.

Softening of the Substance of the Womb.—Sometimes as a consequence of inflammation (more or less distinctly marked), but occasionally without any very distinct indication of uterine disease, we may find part, or the whole of the womb softened; and its substance very easily torn. This is met with both in the gravid and in the unimpregnated state; and in the latter we often find pus, either infiltrated into the substance, or contained in numerous but small abscesses. More rarely, it is contained in a kind of deciduous membrane, lining the cavity of the uterus. It also is found in the veins. The causes of this disease, and its nature, are not yet well understood; and its existence is not certainly known till after death. A modification of this ramollissement affects the *mouth* rather than the *body* of the uterus;—converting it into a black and putrid mass. I think it is rare as a primary disease; for usually there is an affection of some of the neighbouring parts. In such cases as I have seen, the substance of the uterus has been more vascular than natural; the mucous coat thickened, but not injected; and, near the os uteri, dark in colour. Either one or both lips have been gangrenous; and sometimes, in the cervix, one or more small cavities are seen filled with black fluid.

Chronic Inflammation of the Uterus.—An insidious inflammation of the whole uterus, or of the cervix, is not uncommon. It may be called "a chronic inflammaiion"; and sometimes follows the acute

form, but oftener comes on more slowly. There is more or less pain in the uterine region; varying from a mere feeling of weight, heat, or uneasiness, to actual pain. When the uterus is considerably enlarged, there is always more or less prolapsus, or anteversion, or retroversion, or lateral obliquity, in different degrees, and attended with the usual symptoms*. There is a discharge of white mucus; which sometimes becomes puriform, and often mixed with blood; or there may be considerable hæmorrhage. The countenance becomes sallow or unhealthy; the appetite is impaired; and the digestion suffers. Very often, the most prominent symptom is pain in some part of the abdomen, distant from the uterus; most frequently in the vicinity of the liver. The strength declines slowly; there is little fever; but often a complication of hysterical and anomalous affections. Examination discovers the uterus to be enlarged, but not indurated. The cervix is more or less increased in circumference. The os uteri is soft, open, and tender to the touch, particularly at one spot; and its lips sometimes feel rough, as if the skin were abraded. If examined by the speculum, the colour is generally found redder than natural; or the vessels are seen more numerous; which is not usually the case in scirrhus. The disease, for a time, seems to be of a simple nature; for, on cutting the uterus, its substance does not seem materially altered in texture, though increased in quantity; but in process of time, change of organization takes place; —too often that of scirrho-cancer. Bearing in mind, then, the formidable consequences of continuance, we must, in all doubtful cases, make an early and careful examination per vaginam; and if we find any symptom or indication of the existence of this disease, we must use early means for its removal. So long as there is any thing like increased activity of the vessels, and increased sensibibility, we may hope to obtain benefit by the application of leeches to the groins, or to the uterus itself; and by the regular use of mild saline laxatives, the tepid salt-water hip-bath, and light diet; with abstinence from stimulants of every kind, and a state of as much rest as is compatible with health. The injection of a continued stream of warm water into the vagina, has been advised by Gardien; but it has not been used by others. All concomitant symptoms must be attended to, and relieved by the appropriate means; and pain is to be allayed by an opiate or by cicuta†. We view this affection as a slow but simple inflammation; and we employ the usual plan for its removal;— resting confident that, if we succeed in this, we remove also the swelling.

Treatment.—In this stage,—which may continue longer than is generally supposed,—no medicines have the power of producing direct absorption, and thereby lessening the size. If we subdue and remove the inflammation, or the existing action, we remove that

* See Pages 671 to 688, and 697 to 708.

† The introduction into the vagina of five grains of extract of cicuta, at night, may give relief. Pain about the groin is relieved by leeches; or by a blister kept open by savin-ointment.—*Dr. Burns.*

which has caused and kept up the swelling; and the absorbents, by the power of nature alone, will do their part of the duty. It is thus that, in many other local inflammations, topical bleeding, or venesection when required, speedily removes swelling; and it is thus that, in certain dropsical affections, the lancet, in a few days, produces a perfect absorption; while the vessels had, till then, remained uninfluenced by the most powerful medicines. But we must not push this doctrine too far; or carry the leeching, &c., beyond the bounds of utility and safety.

When the disease has become still more chronic, the chance of removal is less, for the texture is more altered; but still we may succeed. If the cervix uteri be felt thickened, but not indurated, and the pain be not of the stinging kind, or the constitution much broken down, we may still attempt the removal. If asked how, the natural reply would be,—"By promoting absorption"; and then we should look into the Materia Medica for the list of alteratives, and the medicines which are there mentioned as calculated to excite absorption. But there are no medicines of any decided virtue in this way, in so far as tumours are concerned; or which excite the absorption of a tumour without acting, in an equal degree, on every other part of the body. Those which seem to act directly on a tumour, often do so by destroying or removing that condition which kept up the local disease; and thus permitting nature to go on with absorption. Mercury does this in a venereal bubo*; and in certain affections of the testicles it promotes absorption, either by destroying the remaining inflammatory action, or by acting injuriously on the new formed substance, and rendering it unable to live, or thrive. It may excite the new substance more than it can bear with impunity; and then we get rid of it. Iodine, if it have any effect on bronchocele, acts in the same way. We must, therefore, in the case under consideration, trust to *general*, and not to *specific* remedies. The great rule of practice is to lessen the determination of blood to the uterus, and to diminish inordinate action. We may still, if we gain any ground, employ leeches, so long as these do not debilitate or injure the system; and they have of late been applied to the os uteri. We avoid all stimulants; and therefore enjoin a strict diet. We allay sensation and sooth, by the use of the tepid hip-bath, and perhaps anodynes†. We use means for improving the health without exciting the system; and particularly we direct our attention to the state of the bowels. By keeping up their action, and increasing that of the kidneys, we sometimes promote general absorption; and if we have previously so far removed the inflammatory condition of the tumour, but left it in a kind of ambiguous state, this plan may prove beneficial. On this principle the use of saline mineral waters‡ may be resorted to. Muriate-of-lime has been extolled as an alterative;

* From *βουβων, the groin*; where a bubo is generally situated.

† See a list of them at Page 297.

‡ A complete list of Mineral Waters, saline and otherwise, will be found at Page 655.

but it is only in this way that it acts, when it does any good at all. Mercury (on the principle already noticed) may also do good, but its effects should be carefully watched; for if it do no good, it does harm; and may exasperate a tumour which might have otherwise remained quiet. Iodine has been recommended by Dr. Ashwell, when the cervix and os uteri (which are glandular) are affected. He gives it internally; and also rubs the part itself (from the vagina) with an ointment composed of two scruples of hydriodate of potash, and an ounce-and-a-half of simple cerate. The size of a nutmeg is to be used at a time. If the body of the uterus be the seat of disease, he expects no benefit from it.

Some women who have borne several children,—more especially if of a strumous* constitution,—have the uterus rather bulky; with its lips swollen, and perhaps fissured; but they are not preternaturally hard or tender. Such a state is often attended with a feeling of bearing-down, and with leucorrhœa. Irritating applications should be avoided; and the general health improved by mild tonics, cold bathing, &c.

Wounds of the uterus are dangerous in proportion to the inflammation they excite.†]

Hysteritis.—[Inflammation of the womb is characterized by pain in that organ, increased on touching the os uteri; and by pains in the loins, &c. The stomach is affected;—as in all diseases of the uterus, the kidneys, and especially the spleen. It is distinguished from peritonitis by the absence of pain on changing the posture, and by suppression of the lochia.‡]

CHAPTER VI.

IRRITABLE UTERUS.

Its Nature.—[The disease which I§ have ventured to call "irritable uterus", is a painful and tender state of that organ; neither attended by, nor tending to produce, change in its structure. It is now between fifteen and twenty years, since I began to notice this disease; and since then I have seen several cases every year. At first it puzzled me much. I had not seen it described in books. I took it for chronic inflammation, which would end in disorganization, probably of a malignant kind; but experience, whilst it taught me that it was a very intractable disease, taught me also that it was not a disorganizing one. I became familiar with its obstinacy, and less apprehensive about its result; for I know cases which have lasted upwards of ten years, and in which the structure of the uterus is as

* Probably from στρωμα, *congestion.*
† Dr. Burns's "Principles of Midwifery"; Ninth Edition; Pages 100 to 105.
‡ Dr. Fletcher's unpublished Examinations.
§ Dr. Gooch.

unaltered now as it was at the beginning of the disease,—as far, at least, as can be determined by examination during life. Although I often find it still an intractable disease, and wish I had a shorter and surer mode of cure to communicate, yet I think it worth describing;—in order that practitioners may recognise it when they meet with it; that they may know what they are to expect in its obstinacy, and what they need not apprehend in the result; what will do harm, what will do good; and the mode of treatment which, however unsatisfactory to the medical attendant and his patient, will slowly but ultimately conduct most cases to recovery.

Symptoms.—*Pain.*—Pain in the lower parts of the abdomen and loins, attends various diseases of the unimpregnated uterus. It is the chief symptom in painful menstruation; but there it occurs only during the menstrual period, and is quite absent during the rest of the month. It is the most distressing symptom in the descent of the uterus (prolapsus)*; but there it occurs only in the upright posture and exercise; ceases on lying down, and on replacing the organ; and is prevented by supporting the latter in its natural situation. It attends most of the diseases of structure to which the uterus is liable; but the change of structure, which may be ascertained by examination, distinguishes the nature of the pain. A patient who is suffering from "irritable uterus", complains of pain in the lowest part of the abdomen, along the brim of the pelvis, and often also in the loins. The pain is worse when she is up and taking exercise, and less when she is at rest, in the horizontal posture. In this respect, the pain resembles that of prolapsus uteri; but in the latter, if the patient lies down, she soon becomes quite easy; while, in the complaint of which I am speaking the recumbent posture, although it *diminishes*, does not *remove* the pain. It is always present in some degree, and severe paroxysms often occur; although the patient has been recumbent for a long time.

Tenderness of the Uterus.—If the uterus be examined, it is found to be exquisitely tender. The finger can be introduced into the *vagina*, and pressed against its sides, without causing uneasiness; but as soon as it reaches and is pressed against the *uterus*, it gives exquisite pain. This tenderness, however, varies at different times;—according to the degree of pain which has been latterly experienced. The neck and body of the uterus feel slightly swollen; but this condition also exists in different degrees;—sometimes sufficiently manifest, sometimes scarcely or not at all perceptible. Except, however, this tenderness, and occasionally this swelling, or rather tension, the uterus feels perfectly natural in structure. There is no evidence of schirrus in its neck; the orifice is not misshapen; and its edges are not indurated. The patient, finding her pain greatly increased by rising and walking, soon learns to relieve herself by lying on the sofa; and, at length, spends nearly her whole time there. Notwithstanding this precaution, there is always a considerable degree of uneasiness; which frequently increases to severe pain.

* See Page 703.

Generally accompany Menstruation.—These paroxysms generally come on either a few days before menstruation, or (as is the case in many instances) a few days afterwards. If the paroxysm be properly treated, it subsides, in a few days, to the ordinary and more moderate uneasiness. While this uneasiness is felt in the substance of the uterus, the general circulation is but little disturbed. The pulse is soft, and not much quicker than natural; but it is easily quickened by the slightest emotion. In a few instances, however, there has been a greater and more permanent excitement of the general circulation. The degree in which the health has been reduced, has been different in different cases. A patient who was originally delicate, who has suffered long, and has used much depleting treatment, has been (as might reasonably be expected) the most reduced. She has grown thin, pale, weak, and nervous. Menstruation often continues regular; but sometimes diminishes, or ceases altogether. The functions of the stomach and bowels are not more interrupted than might be expected from the loss of air and exercise. The appetite is not good, and the bowels require aperients; yet nothing more surely occasions a paroxysm of pain, than an active purgative.

Such are the leading symptoms of this distressing complaint. To embody them in one view: let the reader picture to himself a young or middle-aged woman, somewhat reduced in flesh and health, almost living on her sofa for months, or even years;—owing to a constant pain in the uterus, which renders her unable to sit up and take exercise. The uterus, on examination, is found to be unchanged in structure, but exquisitely tender. Even in the recumbent posture, it is always in pain; but is subject to great aggravations, more or less frequently.

Causes.—The causes to which this disease has been attributed, and after the application of which it has occurred, are generally considerable bodily exertions at times when the uterus is in a susceptible state. In one patient, it came on after an enormous walk during a menstrual period; in another, it was occasioned by the patient's "going a-shooting" with her husband, not many days after an abortion; in a third, it came on after standing for several hours many successive nights at concerts and parties; in a fourth, it originated in a journey in a rough carriage over the paved roads of France; in a fifth, it was attributed either to cold or an astringent lotion, by which a profuse flow of the lochia* was suddenly stopped, followed by intense pain in the uterus; in a sixth, it occurred soon after, and apparently in consequence of, matrimony. But although the disease followed, and was apparently excited by, these several causes of irritation, yet the patients had previously manifested signs of predisposition to it. They were all sensitive in body and mind; and many of them had been previously subject to the ordinary form of painful menstruation. The disease seemed to con-

* The lochia are not a secretion; but a distillation from lacerated vessels.—*Dr. Fletcher.*

sist in a state of the uterus similar to that of painful menstruation; only permanent instead of occasional.

Prognosis.—Long-continued pain in an organ so liable to malignant diseases, invariably leads to the apprehension of disease of structure; to ascertain which, repeated examinations generally take place; but nothing is discovered, except exquisite tenderness, and slight swelling, or rather tension. The disease does not terminate in change of structure. The fact, also, that many of these cases, after having lasted for years, end in entire recovery, is a sufficient proof that it is a disease only of *function*. Few such diseases, however, yield so slowly to remedies. Even in those which end in complete recovery, there are often long intervals in which the progress towards amendment is most unsatisfactory and dispiriting. By complete repose in the recumbent posture, and proper remedies, the painful paroxysms become slighter, and return at longer intervals; the stationary uneasiness becomes gradually less, and at length ceases altogether; and, at the end of a few months, the patient is left free from pain, but more or less enfeebled. No disease, however, is so liable to relapse. The patient,—feeling easy, but finding herself feeble, and supposing that air and exercise are necessary to the recovery of her health,—rises and goes about again; and, after a short interval of caution, throws aside her fears; engages in walks, drives, and gaiety; or takes a journey to the sea, for the recovery of her health. This conduct commonly occasions a complete relapse; and the patient and her attendant are again involved in their former suffering, apprehensions, and difficulties.

Pathology.—What is the nature of this disease? It is not acute inflammation; for that would run a far shorter course, and end in certain known consequences. It is not chronic inflammation; for that is a disorganizing process, and slowly but surely alters the structure of the organ in which it goes on. Both in chronic inflammation, and in the disease which I am describing, there is a morbid state of the nerves, indicated by pain; and (sometimes, at least) a morbid state of the blood-vessels, indicated by their fulness; but the substances effused by chronic inflammation show, that in this there is something additional in the actions, and consequently in the state, of the vessels. The disease which I am describing resembles a state which other organs are subject to; and which in them is denominated "irritation." Thus surgeons describe what they call "an irritable tumour of the breast"*. It is exquisitely tender; so that an ungentle examination of the part leaves pain for hours. It is always in pain; but the pain is greatly increased every month, immediately before the menstrual period. Although apprehensions of cancer are entertained, it never terminates in disease of structure. It is represented as a very common disease. Mr. Brodie describes a similar state in the joints†. It occurs chiefly amongst hysterical females. It is attended by pain; is at first without any tumefaction; but the pain

* See Sir Astley Cooper, on Diseases of the Female Breast.

† Sir Benjamin Brodie, on Diseases of the Joints; Page 338.

increases, and is attended with a puffy, diffused, but trifling swelling. The part is exceedingly tender. This assemblage of symptoms lasts a long time, and is often a little relieved by remedies. It occasions great anxiety; but there never arise any ultimate bad consequences. "The disease", says Mr. Brodie, "appears to depend on a morbid condition of the nerves; and may be regarded as a local hysteric affection." These painful states of the breast and of the joints, appear to be similar to that which I have been describing in the uterus;—similar in the kinds of constitutions which they attack;—similar in pain; in exquisite tenderness; in resemblance to the commencement of organic disease; and in proving, ultimately, to be only diseases of function.

Indications of Treatment.—The mode of treatment which I have found most useful,—tardy as may be its efficacy in most cases, and vain as it has been in some,—consists, first, in subduing pain; and, secondly, in restoring the general health. The difficulty is to know when to discontinue the former indication, and when to aim at the latter;—while aiming at the former, to select and proportion the means to the circumstances of the case; and when aiming at the latter, to take care not to occasion a relapse of the pain, by the means employed for the restoration of the health. The remedies for subduing pain, are the horizontal posture, narcotics*, warm hip-baths, and occasional local bleeding; to which may sometimes be added mercury and counter-irritants†.

Repose.—In all those cases in which the *pain* is perpetual, *repose* should be perpetual. The patient must abstain, not only from foot and carriage-exercise, but from the upright posture; which, even for short intervals, is often sufficient to counteract the cure. As soon as she is dressed in the morning, she should be placed on the sofa, with her shoulders as low as the pelvis; and in that posture should remain the whole day. At first it is tedious; but she soon learns to amuse and occupy herself in that position;—to write, read, work, and draw. This posture, more or less strictly observed,—the degree of strictness being soon taught by the sensations of the patient,—is absolutely necessary for the completion of the cure. It is necessary not only till all pain has ceased, but for some time afterwards; and even then must be relinquished with the utmost caution, or rather timidity.

Blood-Letting.—The next measure is to draw blood. When the general circulation is undisturbed, as is most frequently the case, *local* is preferable to *general* blood-letting; for it gives more relief, and occasions less weakness. Cupping affords decidedly more relief than leeches. The most convenient part for the application of the glasses, is the upper part of the sacrum; but I have often found them more efficacious when applied to the part to which the pain is referred. Leeches afford more relief when applied to the hæmorrhoidal vessels, or between the labia pudendi, than to the loins, or the lower part of the abdomen. The quantity drawn must depend on circumstances. The best guides are the state of the constitution, the

* See a Note at Page 297. † A list will be found at Page 429.

duration of the disease, and the relief afforded. The less the constitution is injured, and the shorter the duration of the disease, the larger ought to be the blood-letting; because the less likely is it to be injurious, and the more likely is it completely to remove the pain. On the contrary, when the disease has lasted long, and the patient is much emaciated and enfeebled, the *more* likely is it to be injurious, and the *less* likely is it to extinguish the pain. Hence the blood-letting ought to be moderate. These, however, like all general rules, admit of exceptions. Twelve ounces of blood is a large local blood-letting; and seldom requires to be repeated to the same amount. I have known four ounces afford all the relief which this remedy was capable of effecting. But the pain, if only diminished, will increase; and if removed, will return sooner or later. The blood-letting, therefore, requires to be repeated; and the question is whether to defer it until the return or increase of the pain, or to anticipate this return or increase. I think the latter is preferable, when the period of recurrence can be nearly calculated. Both reason and experience show, that a mode of treatment which prevents an organ from resuming its morbid action, is more likely to remove it permanently, than one which permits the action to recur, and then removes it. The subsequent bleedings, however, ought not to be so large as the first; and, as it may be necessary to repeat these several times, it is important to discover the minimum of blood which will afford relief.

In determining the extent and the frequency of the blood-lettings, not only the pain, but likewise the state of the constitution ought to be taken into the account. When they afford decided relief to the part, and inflict no material injury on the constitution, their propriety is unquestionable; but, in many cases, after the disease has lasted long, and the body is emaciated and enfeebled, the relief afforded by blood-letting is so slight and temporary, and the debility it occasions is so great, that it must be discontinued altogether. The next remedy which I have mentioned, is a narcotic. Of such medicines the most useful consist of one-third camphor, and two-thirds extract of henbane*, or of hemlock†, or of poppy‡; divided into pills of five grains; of which pills one may be taken two or three times a day. Or about ten grains of extract of poppy, dissolved in an ounce of gruel, may be injected into the rectum every day, immediately after the bowels have acted. The solution of poppy, if retained, remains in the rectum till the next evacuation of the bowels; and until that time seldom ceases to sooth. If, however, this should not be the case, the injection may be repeated during the day; and, as it is removed every time the bowels are evacuated, it should always be replaced by another injection.

Purgatives.—Narcotics and want of exercise almost always occasion constipation, which requires aperient medicines; but these must be of the most unirritating kind§. A purgative sufficiently active to

* "Extractum Hyoscyami."
† "Extractum Conii."
‡ "Extractum Papaveris."
§ A list will be found at Page 286.

operate several times, almost always aggravates the pain; and a long course of such medicines,—as I have sometimes seen employed from the belief of disorder in the liver,—has produced great and long-continued mischief. That is the best aperient which will act only once, plentifully, and without pain; and those which have most frequently acted in this way, are the solution of sulphate-of-magnesia in infusion-of-roses, castor-oil, electuary-of-senna, and sulphur. Of one of these, a quantity sufficient to produce the effect which I have described, should be taken every other day.

The horizontal posture, small local blood-lettings, and narcotics, are the remedies generally useful; and to which, after a long illness, and the vain trial of other remedies, I have most frequently been obliged to attribute all the good that had been done. There are others, however, sufficiently efficacious to deserve to be known and tried.

Warm Bathing—One is warm bathing. The hip-bath, at the temperature of ninety-six degrees, for half-an-hour, every or every other night, is sometimes very efficacious; though, at other times, it affords no perceptible relief, and greatly increases the languor and debility. But the kind of warm bathing which affords most relief, and occasions least debility, is the partial steam-bath. The flannel-sack should be drawn up to the præcordia, so as to enclose the abdomen and lower extremities; and these may be exposed to the action of the steam, for half-an-hour every other day.

Mild Mercurials.— Another remedy is a mild course of mercury. From three to five grains of blue-pill, or compound calomel-pill*, mixed with five grains of extract of henbane,—taken every night for several weeks, or every other night for many weeks,—have sometimes, without affecting the gums, occasioned a very regular action of the bowels; and during its influence, the periodical aggravations of pain have not recurred, and the permanent pain has diminished, and at length ceased altogether. While the mercury has had this favourable influence over the local disease, it has occasioned no material injury to the constitution. This has been its effect chiefly when the health has not been much reduced, and the disease has not lasted very long. On the contrary, in other cases, in which the body has been previously debilitated and emaciated, mercury, although it had a favourable influence over the local disease, occasioned so much wasting, weakness, and nervousness, as to compel me to discontinue it. Mercury requires to be employed with the utmost circumspection; and its effects, in each individual case, ought to determine whether it should be persisted in or discontinued.

External Irritation.—Another remedy, which is often useful, is external irritation. This may be produced by small blisters, of the size of a watch, allowed to heal, and then renewed; and so on, for many successive blisters. Or a caustic issue, the size of a dollar, may be made; dressed with savine-ointment; and slightly touched,

* The "Pilulæ Hydrargyri Chloridi Compositæ" of the New Pharmacopœia.

once or twice a week, with lunar caustic*. The best place for the issue, is the upper part of the sacrum; the best place for the blisters, is the seat of the pain. These artificial irritations, however, in sensitive constitutions, sometimes excite great disturbance without any equivalent benefit; and ought to be employed with caution;—especially the caustic issue.

The practitioner can do no harm, and must do good, as long as he confines himself to the employment of the recumbent posture, mild narcotics, warm hip-baths, and unirritating aperients; but with blood-letting and mercury he must be more cautious. I have seen many cases in which the pain was rather aggravated than relieved by bleeding; the patient rendered weak and irritable; and the effect of the remedy was unmixed injury. In the employment of such remedies as bleeding and mercury, therefore, the intelligent practitioner will, after a little time, be better guided by his own experience of the case than by any general directions. In the treatment of all diseases, whether acute or chronic, when the remedies are affording little benefit,—when the *constitution* rather than the *disease* seems to be yielding under them, it is a good rule to desist from them. This is a rule of common sense above the rules of art, and to which the latter ought to be subservient. I know no man whose knowledge of his profession is so exact, and whose opinion of a case is so infallible, that he may dispense with this rule.

Chalybeates.—Lastly, there is a stage or class of these cases, which is chiefly benefited by restorative means; especially chalybeate waters. When the disease has lasted long, is not relieved by the above treatment, and is accompanied by broken health, cold extremities, and a pale complexion, I have known the disease cured by the waters of Tunbridge Wells or Bath;—the patient gradually losing her pain, regaining the power of sitting up and going about, and acquiring a more healthy appearance. The plan, however, requires great caution; for where the jar of a carriage brings on pain, the journey will often do great mischief; and the chalybeate waters, which in some cases are so efficacious, are in others clearly pernicious. The probable effect of a journey, may be known by a few drives; and the effect of the waters ought to be carefully watched. Their influence on the pain and on the pulse is the best guide.

I have thus described the best remedies with which I am acquainted, for the treatment of this distressing and often intractable complaint. In my hands the result has been, that some who had been previously ill for several years, recovered after a few months, and continued well, by strictly avoiding, for a long time, the exciting causes. Others, after a far longer treatment, experienced the same recovery; and this recovery was rendered permanent by the same long-continued caution. Others, on the contrary, after sooner or later recovering, have laid aside caution; indulged in unrestrained exercise and exertion; and have experienced a relapse, as severe

* The "Argenti Nitras" of the London Pharmacopœia.

and tedious as the original attack. Lastly, in some cases my best efforts have alleviated, but not removed the disease; and I have had the mortification to see the patients, at the end of several years, little better than they were at the beginning. The older I grow, however, the fewer instances do I see of this hopeless condition of the disease; and some of which I had begun to despair, have slowly but ultimately recovered. I think it an important fact, that in the cases which remained uncured after many years, the patients had, for the relief of their pain, gradually accustomed themselves to a daily enormous allowance of opium.*]

CHAPTER VII.

SCIRRHUS OF THE UTERUS.

Varieties in the Form of the Os Uteri.—In the same manner as there is much variety in the features of the face, so also there is much variety in the make of the os uteri, in different individuals. In some women the os uteri is very small, firm, and flat; in others, again, very large in size, soft, and projecting. Sometimes, especially in those who have borne children, the aperture which leads into the uterus is so capacious, that one or two fingers may pass through it; and sometimes it is so small, that you can scarcely ascertain its existence, except by carrying up some instrument (such as a blunted probe), and which may generally be slipped into the uterine cavity. In general, the surface of the os uteri is tolerably smooth, but not always; for a sort of inequality may be felt;—sometimes arising from rugosity of the inner membrane investing these parts; and sometimes, perhaps, from lacerations of the uterine substance, which have occurred during parturition.

Of the os uteri, there are three forms which are most frequently observed in practice;—the one, the flat os uteri; the other, the os uteri formed into a rounded tubercle, and penetrated by a circular aperture; the third, the os uteri projecting, like a tubercle, into the vagina; and divided by a transverse fissure, so as to become separated into an anterior and posterior lip†; for the fissure never stretches from before backward.

SECTION 1.—NATURE AND VARIETIES OF SCIRRHUS.

Definition.—[It has been proposed by Mr. Abernethy, in his Treatise upon Tumours‡, that those tumours which have been

* Dr. Robert Gooch, on some of the most important Diseases of Women; Pages 299 to 316.

† See Page 752.

‡ "An Attempt to form a Classification of Tumours, according to their Anatomical Structure. By John Abernethy, F.R.S."

designated "scirrhus", and which have in their more active state been termed "cancer", should be included under the general head of "carcinoma", and that the disease should be divided into two stages:—1. Carcinoma. 2. Ulcerated Carcinoma. This he considers to be advisable; because other tumours which are hard, although indolent, have been entitled "scirrhus".

To be clear and precise in terms, is important in all sciences; but in none more than in physic; which has for its object the preservation of human life. Of less, but still of considerable consequence, is the endeavour to sooth the minds of those who are afflicted with disease. All tumours which have the character of hardness, have been called "scirrhus"; and scirrhus has been considered as the forerunner and first stage of cancer. But many tumours which are scirrhous, that is to say *hard*, have no disposition to acquire an ulcerating state; or, at least, have that disposition only in a trifling degree. It is the intention here to follow the distinction above alluded to; and to consider the first stage of cancer under the head of "carcinoma".

In Dr. Baillie's excellent work on Morbid Anatomy, are given three plates. One contains two figures of "scirrhous enlargement" of the uterus; which disease sometimes acquires a very considerable size; so as to become as large as the uterus at the sixth month; and this form of the disease (he says) is very little liable to ulcerate*. The second plate contains two figures of "fleshy tubercle" of the uterus; and the third contains three engravings of "malignant ulcer" of the uterus; which always begins at the cervix of the uterus, and which is very fatal. There is an ulceration of the os uteri of a distinct kind from that just mentioned, although equally fatal. This will be described in a future part of this work†; under the head of "purulent discharges", by the name of "corrodingulcer of the osuteri".

The cases described by Dr. Baillie, under the title of "scirrhus uteri" and "tubercle of the uterus", the author‡ means to consider together, under that of "fleshy tubercle of the uterus"; for in both the uterus has tubercles, either arising from its surface externally or internally, or imbedded in its substance. In both, few (except mechanical) symptoms, are present; and in neither does ulceration take place. In both, the tubercles are found at a distance from the cervix of the uterus; and both sometimes continue for many years, without producing much inconvenience.

* The author has never met with a case in which ulceration has taken place in this kind of tumour. Indeed, Dr. Baillie's expression proves that this is very rare. In a conversation between Dr. Baillie and the author upon the subject of this passage in the Work on Morbid Anatomy, the former remarked, that he had never known ulceration take place in the large tubercles of the body or fundus of the uterus; and that he employed the term "*rarely*", because it might possibly hereafter occur to others, though it had never done so in his own experience.—*Sir C. M. Clarke.*

† Sir Charles Mansfield Clarke's "Observations".

‡ Sir Charles Mansfield Clarke.

Cervix Uteri first Attacked.—This disease attacks, in the first instance, the *cervix* of the uterus only; and the author* lays great stress upon this observation. All other tumours, differently situated, although hard in their texture ("schirrhous" as they have been called), are of a different character, and have different symptoms and terminations. In the dead body, they may have some resemblance to carcinoma; but they are never found ulcerated. Inflammation may take place in or near them, and matter may form; but when the first takes place, they suppurate from their centre, and not from their surface; and when they appear to ulcerate upon the surface, it will probably be found that the ulceration is confined to the parts in the immediate neighbourhood, upon which pressure has been made by the tumour itself.

Characters of True Carcinoma.—Carcinoma particularly affects glandular parts; and the cervix of the uterus being the most glandular part of the organ, that is probably the reason why it becomes more liable to this disease than any other part of this viscus. When carcinomatous tumours are cut through with a knife, they offer a good deal of resistance, and sometimes appear as hard as cartilage. The cut surface presents an appearance of white lines, which run pretty regularly with regard to each other; but the directions of which vary, according to the shape of the tumour†. Tumours with irregular surfaces are liable to become active, or to call forth action in parts in their vicinity; and this latter circumstance may depend upon the inequality of the pressure made by them. But all tumours having unequal surfaces, are not necessarily of this kind; and *certainly* are not, when distant from the cervix of the uterus. The "fleshy tubercle of the uterus" has, not uncommonly, a ragged surface; but this tumour never ulcerates.

Tumours resembling True Carcinoma.—Tumours of a large size have frequently been called "scirrhous", because they are hard in their texture; but the true carcinoma seldom becomes very large. In the collection belonging to the author*, there is a tumour of the uterus of a very hard structure, and which weighed fourteen pounds‡; but such tumours do not possess, even in their advanced stages, the character of cancer; nor are they attended, in their early state, by the symptoms characterizing carcinoma; or by those corresponding changes of structure in the neighbouring parts, by which that disease is attended.

Whenever slow inflammation takes place, and continues in a part of firm texture,—which inflammation does not terminate in abscess,—an extravasation of coagulating lymph into the cellular membrane takes place;—increasing the hardness of the part during life, and causing the appearance of white lines or bands after death. If filaments of nerves become involved in such a state of altered structure, occasional pain will be produced; but it by no means follows that

* Sir Charles Mansfield Clarke.

† See Dr. Baillie's "Morbid Anatomy."

‡ A section of this tumour is preserved in the Museum in Windmill-Street.

such a disease is carcinomatous;—that is, that ulceration will take place. Such a change most frequently happens when *glands* have taken on this change of structure; but it is to be observed, that when such a disease attacks muscles, or cellular membrane (as is sometimes the case in consequence of blows), or the "muscular structure" of the uterus, such a tumour undergoes no change, except an increase of bulk; and,—except in some cases, where violent accidental injury is done to the part, or an ill-advised operation performed,—never assumes a more malignant character. White bands or lines are found, it appears, in all cases of true carcinoma; but the existence of white bands or lines in tumours, does not prove that the disease could or would have taken on malignant ulceration *.]

Among the various diseases to which the womb is obnoxious, not the least important is the "indolent scirrhus"; and of those cases of scirrhosity there are three varieties, the knowledge of which is of practical importance to the accoucheur:—1. Diffused. 2. Tubercular. 3. Single.

Diffused Scirrhus.—In scirrhosity of the womb, we sometimes find that the whole substance of the uterus, together with the parts of the vagina which lie contiguous, are involved in a scirrhous disorganization of the *diffused* kind; spreading itself equally in all directions through the uterine substance; and under this diffused scirrhous disorganization, the uterus may enlarge gradually and greatly in its size. At first, perhaps, it becomes as large as a pullet's egg; then as big as the closed hand; afterwards as bulky as the child's head; and, ultimately, as large as the womb, at the end of a nine months' pregnancy, or even larger than that.

Tubercular Scirrhus.—In other cases, again, in place of this *diffused* scirrhosity, the parts are assailed with a scirrhosity of the *tubercular* kind; and here, perhaps, at the first formation of the disease, the general structure of the uterus is perfectly healthy to all appearance; but imbedded in its substance are the tubercles;—sometimes fewer, sometimes more numerous;—ten or twenty in number, or perhaps not more than one or two. At first, these tubercular scirrhi are not larger than peas; but, within limits, they may enlarge very considerably; so that, when the tubercles are numerous, the womb, in this variety of the disease, may become as large as in cases of diffused scirrhosity.

Single Scirrhous Tubercle.—There is yet a third variety of this affection; and which, in practice, it is necessary to distinguish from the two former. It is that in which you have a *single tubercle*, or only one or two tubercles of large size;—the rest, if any, being of diminutive bulk; so as to have but little influence over the symptoms of the disease. When the large tubercles are few, or single, they may be variously seated in different cases;—on the fundus, the mouth, the front, the back, or the sides. The womb sometimes enlarges exceedingly, under this form of the disorder;—indeed, no

* Sir Charles Mansfield Clarke's "Observations on the Diseases of Females"; Part 1; Chapters 13 and 14; Pages 184, 185, and 208 to 214.

less so than in the two preceding varieties. In these cases of a single tubercle, very much depends upon the seat of the disease. If the indurated mass be growing from the fundus of the uterus, or laterally, it may occasion but little inconvenience; but when seated in front, or posteriorly, it may distress the patient much; for in these situations, more especially if it lie low in the pelvis, it must urge and distress either the bladder or intestine; so that the patient and the practitioner are led to suspect a variety of diseases;—as, for example, hæmorrhoids, cancer of the rectum, ascarides, calculus, strictures of the urethra, irritable bladder, and many other affections.

Extension of the Disease to Other Parts.—Here, then, are three varieties of the disease; all, perhaps, essentially the same; but, with a view to practice, all properly distinguished from each other;—the *diffused* scirrhus; the scirrhus with *many* tubercles; and the scirrhus in which the tubercles are *few*. To this let me add, that in all the three varieties of the disease, but in the *diffused* scirrhus more especially, it is not to the womb only, or to the womb and the vagina, that the disease is confined; for it not unfrequently happens that, together with these parts, the ovaries, the tubes, the bladder, the rectum,—nay, in rarer cases, the liver and lungs themselves, are involved in the disorganization. Understand, further, that the disease is more likely to prove topical, when it takes the form of a *tubercle*; and more frequently spreads over the parts contiguous, when it appears in the *diffused* variety.

Illustrative Preparations.—I have various preparations illustrative of this affection, in its various states. The first is a specimen of the os uteri beginning to enlarge, from diffused scirrhus. The second also is a specimen of this disease in its diffused form. The surface of the uterus is rounded, very smooth, and equable;—very different from what we observe in cases of tubercular scirrhus in the advanced stage; for in them the uterine surface becomes irregular and tuberous,—bumpy, if I may be allowed a coarse but intelligible and significant expression;—a state of tumour which is the rather deserving of your notice, because it is very strikingly characteristic of the disease. There is a third specimen of single tubercle growing from the posterior surface of the uterus; and which would have ultimately troubled the patient much, by bearing on the rectum and the parts adjacent. The third is a preparation consisting of many tubercles. The disease is here in the incipient stage; but the womb must, at length, have enlarged to a great bulk, if the patient had lived sufficiently long. The fourth is a specimen of a solitary tubercle, of great bulk, formed on the womb anteriorly; and close by it stands a beautiful specimen of diffused scirrhous disorganization, of a rounded and equable form;—the whole mass being about as large as the womb at the end of a pregnancy of four months.

The fifth is a specimen of *diffused* scirrhous action; presented by my friend Mr. Workman, of Reading. It has acquired the size of a nine-month ovum. In this case there was a sort of fungous growth pushing forth into the vagina, and giving rise to very frequent and

copious bleedings; under which the patient eventually sunk. The next specimen is an interesting example of polypus concurring with scirrhous disorganization. This leads me to make another remark respecting the morbid anatomy of the parts; which is that, in scirrhosity, the disease may consist of scirrhus merely; or of scirrhus in conjunction with polypus, fungus, or other affections, in themselves more or less formidable; though these combinations are by no means very frequent. In these preparations it may also be observed that the state of the os uteri varies much in this disease. It may be large or small; with a contracted, or with a capacious opening; with induration, or with softening;—so that, although scirrhosity of the os uteri, and of the vagina, is a strong corroboration of the real existence of reputed scirrhus in the parts above, the contrary is not certain; and we must not hastily infer, because the mouth of the womb is healthy, that, therefore, there is the same soundness in those parts of the womb which lie above.

SECTION 2.—CHARACTERS OF INDOLENT SCIRRHUS OF THE UTERUS.

The characters of scirrhus of the uterus are, conveniently enough, divided into those which manifest themselves when the disease has been of long standing, and the womb has acquired a large size; and those characters which are observed in the earlier stages of scirrhous disorganization.

Diagnosis in Cases of Long Standing.—You will sometimes find patients coming to you with abdomens as large as if they were in the end of pregnancy; but, on a little investigation, they tell you that they have been labouring under the disease for years;—a clear proof that the enlargement is not from gestation; for with *extra-uterine* pregnancy, it is scarcely worth while to embarrass ourselves here. On further inquiry, you discover that it is not in the *upper*, but in the *lower* part of the abdomen, that the disease was originally seated; and, therefore, that the intumescence does not arise from an enlargement of the spleen, liver, or omentum; but of some part below. Probably, therefore, it is from an enlargement of the womb or ovaries; for an overgrowth of the kidney is exceeding rare. You will find, too, if you examine with great care, that the tumour is lying in the place of the gravid uterus in general; not obviously inclining more to one side than to the other. If the disease be of the tubercular kind, and of many masses, the uterus will have the tuberous form and feel; and if it be a diffused scirrhous disorganization, as in Mr. Workman's preparation, then the feel of the uterus will be precisely the same as it is at the end of pregnancy; except that it is harder. If, then, you find in the abdomen a tumour hard, circumscribed, of years' standing, and which, therefore, cannot be referred to pregnancy, you may be pretty well satisfied that it is from gestation; and this opinion will acquire additional strength, if you learn that the tumour formed originally in the region of the pelvis; and that it still lies centrally, in the region of the gravid womb.

Tuberosity of the swelling is a useful corroborative diagnostic; but a smooth and equable surface is no disproof of the disease. An indurated os uteri is a valuable sign of schirrhosity; but the womb may be scirrhous, although its mouth be sound.

Diagnosis in Recent Cases.—Patients labouring under scirrhus of the uterus, will sometimes call upon you much earlier;—when the tumour is not bigger than the fœtal head, for example; in which condition it may produce many distressing symptoms, although the tumour may not be very obvious to the touch. In these cases, perhaps, the patient tells you that there is a great deal of bearing-down, as if the interior would push forth; and she adds, perhaps, that she has no small irritation in the bladder, and pains of the hæmorrhoidal kind; andthere may be ripping or lancing pains along the limbs; though these are not common; and there may be a want of muscular power in the legs; with numbness, and other marks of pressure upon the nerves. As the inquiry proceeds, perhaps you are told that there is some swelling seated above and behind the symphysis pubis; perceived as the patient lies in bed; and compared, perhaps, to the fœtal head, or to a melon. When you meet with one of these rounded tumours in the region of the bladder, combined with irritation of the rectum, and bearing-down, and the other symptoms enumerated, you may always entertain a strong suspicion, that the patient labours under the disease we are now considering. But it is by examination, and by examination only, that the affection can be made out with certainty; and where the importance of the inquiry is deemed sufficient to counterbalance the inconvenience, you ought to proceed exactly in the same manner as in investigating a reputed pregnancy of four months. Directions on this point I shall presently communicate. If you feel the uterus hard and round, and large as the fœtal head, there can be little doubt respecting the nature of the affection; if this mass be tuberous, the proof is still more decisive; and if the os uteri be hardened, or the vagina thickened and indurated, there can be little doubt as to the real nature of the disease. Remember, however, that you must not decide too hastily; and you must not infer that you have a scirrhosity of the uterus, merely because the uterus is enlarged; for this enlargement may arise from a pregnancy of four months;—not always disclosed to the practitioner. It may arise, again, from a pregnancy of seven or eight months; and then,—the abdominal muscles, and the uterus, being very thin,—you may feel the head with considerable distinctness; and may mistake this for a scirrhous womb.

In some of these cases, the womb prolapses a little; and no os uteri can be felt as such;—the aperture being more contracted than ordinary. In such circumstances, if the uterine enlargement be inconsiderable, the case may be mistaken for a chronic inversion;—an error of which I have seen two instances. Errors like these, however, imply a want of due skill, or due attention in the practitioner. A blunted probe may, in these cases, be passed into the uterine cavity. If, however, you bear these errors in mind, and if you

examine with due care,—repeating the investigation, if necessary, at the end of one or two months,—your diagnosis may, I think, generally be established, and with certainty enough;—provided you possess the requisite dexterity.

Symptoms in Either Variety.—In all varieties of the disease,—whether of a *single* tubercle, of *numerous* tubercles, or of scirrhus of the *diffused* kind,—there may be mucous discharges or flooding *; or, occasionally, a regular flow of the catamenia. Frequently there are inflammations of the scirrhous mass. Sometimes there are ulcerations; but I add, with satisfaction, that those ulcerations, always formidable, are by no means frequent. Occasionally the urine is retained; especially in cases of the tubercular scirrhosity, where the growth is in front. Occasionally violent spasmodic pains are felt in the uterine region.

SECTION 3.—TREATMENT OF SCIRRHUS.

The treatment of this disease,—so far as it admits of that which is useful,—may be dismissed in very few words; for, in truth, there is little to be done. Some remarks, however, may be made with advantage.

Very Active Remedies not Advisable.—First, I should dissuade you from having recourse to any very active remedies, in order to occasion an absorption of the scirrhous deposit. Iodine may be thought of; but much purging, copious doses of mercury, conium, and other remedies of the active kind, should not be employed with this view; for there is no reasonable hope of removing the tumour in this manner; and if you injure the constitution by this rough practice, you leave the patient worse than you found her. But although you may lay it down as a rule, that you have it in your power *medically* to produce an absorption of the scirrhous matter, yet there seems to be little doubt that such absorptions may occur spontaneously. A very excellent writer and practitioner, Dr. Clarke, records a case of double tubercles, in which the masses wasted away, and the patient

* This mucous discharge is sometimes tinged with blood; particularly when the patient indulges in eating and drinking, or where the food taken has been of a stimulating quality. If the woman uses much exercise, pure blood sometimes comes away, in such large quantity as to produce great weakness, and occasionally syncope to an alarming extent. Generally, while there are discharges of blood in moderate quantity, the tumour remains almost stationary;—increasing little in size, and producing little or no uneasiness. The author has seen many instances of women, labouring under a diseased uterus attended by distressing symptoms, who, after having been attacked by large bloody discharges,—so as to make them faint in any other than the horizontal posture, and to bring on general anasarca,—have continued free from every symptom of the specific disease for many months. In some instances where the woman has died, it has been from weakness and the dropsical symptoms; and not from the symptoms belonging to the original disease. This is the reason why many cases of menorrhagia ending in dropsy are unmanageable; because they depend upon organic disease of the uterus; which is perhaps never known; or, if known, baffles the art of medicine.—*Sir Charles Mansfield Clarke's "Observations on the Diseases of Females"; Part I; Chapter* 14; *Pages* 219 *and* 220.

died under another disease; when, upon examining the uterus, there were the traces of the tubercles still to be seen; so as clearly to prove their previous existence in larger bulk. This shows that, now and then, the natural power is capable of accomplishing an absorption of the deposited matter;—an encouraging fact, though certainly of very rare occurrence. Let me add that, with scirrhosity of the uterus in its less extensive forms, impregnation is not impossible; and as the whole absorbent system is developed in the uterus by gestation, and afterwards excited powerfully on delivery, perhaps, now and then, a removal of the scirrhous material may be effected in this manner. I once met with a case which, to me, appeared to be of this kind; but as it occurred in my earlier practice, and was not investigated with sufficient nicety, I would have you receive it as apocryphal; for I should be sorry to add to the huge and cumbersome mass of pseudo*-phenomena, with which the whole healing art is overwhelmed.

Palliative Remedies.—What you are to do, therefore, in cases of this sort, will turn principally on palliation. Leeches, fomentations, and the antiphlogistic plan of the milder kind, may be proper when inflammatory symptoms occur; but where there is this extensive disease in the abdomen, I would not advise you to bleed largely from the arm. If there be, as there sometimes will, much spasmodic pain in the uterus, leeches, fomentations, and abdominal poultices, may be looked upon as useful palliatives; and after these have been premised, you may have recourse to anodynes;—either taken into the stomach, or used in the form of a suppository. Above all, when there is much irritation of the bladder and rectum, I would recommend you to ascertain whether the enlarged uterus is retroverted or prolapsed; for this is sometimes the case. The uterus, prolapsing, may descend a great way towards the orifice of the vagina; and may, in that manner, obstruct the bladder. Where this occurs, perhaps a pessary should be introduced. At all events, the uterus should be passed above the brim of the pelvis; and after this operation has been performed, the urinary passages may become pervious; so as to render the use of the catheter easy, or perhaps unnecessary. When the womb is retroverted, you may empty the bladder, and replace the uterus, in the same manner as in the retroversion of pregnancy;—an operation which has already been explained at large†. In general, remember that the less we interfere with indolent scirrhosity of the uterus, the better it is for the patient; and, above all, beware of salivation.

SECTION 4.—PROGNOSIS OF SCIRRHUS.

The prognosis of this disease you may look upon as, upon the whole, favourable; for though it rarely happens that women are cured of this disease, yet it is not (I think) often, that it speedily destroys life. So far, therefore, the prognosis may be deemed very

* From ψευδης, *false*. † See Page 677.

favourable;—compared with that of many other diseases of disorganization.

Effects of the Disease.—But although this disease does not commonly destroy life,—at least in a short space of time,—it greatly inconveniences patients by its bulk, its weight, and the displacement of the womb by prolapsus, retroversion, and pressure of the enlarged uterus upon the nerves and other parts. In some cases, too, the patient becomes obnoxious to floodings;—particularly if there is a fungous growth; and these floodings may shorten her life. Occasionally, too, inflammations occur. Indeed, they are by no means uncommon. Sometimes, though rarely (I believe), malignant ulcerations manifest themselves; and by them she may be destroyed. Add to this, that the disease may spread into the bladder, rectum, or parts adjacent. I have known it lay open the rectum into the peritoneal sac;—the fæces entering there; and suddenly destroying the patient with collapse, as from internal hæmorrhage. The body was inspected after death. Remember, too, that the disease may be accompanied with other affections; such as polypus, or spongy or fungous growths, well supplied with blood;—not to mention the concurrence of hepatic tubercles; so that, on the whole, though the prognosis is favourable, and though the patient is not generally destroyed,—or, at least, not *speedily* destroyed by this disease (which may be long protracted),—yet it is not without great evils; and now and then, the patient perishes unexpectedly by floodings, by ulcerations, by openings into the rectum, and occasionally, perhaps, by the extension of inflammation.

SECTION 5.—NECESSITY OF MANUAL EXAMINATION.

In scirrhus of the uterus, so long as the symptoms are not urgent, so long it is scarcely fitting to expose the patient to the inconvenience of examination; but should it be deemed necessary, in doubtful cases, to investigate thoroughly the state of the disease, a manual inquiry must then be made. It is true, indeed, that such surgical operations may be by no means agreeable to the feelings; but circumstances may be urgent, and it may be necessary to submit.*

Cause of the Abdominal Enlargement.—When a patient is labouring under a reputed uterine scirrhosity, of long standing and large

* If the delicacy of the patient should prevent her mentioning the symptoms belonging to the sexual organs, if she objects to an examination, or if the practitioner is content to prescribe for the patient without ascertaining the nature of the disease, it is probable that the medicines directed will consist of alkalies†, bitters, tonics, and aromatics. It is also likely that mercury may be given, to increase the biliary secretion. Such a mode of practice cannot fail to aggravate the symptoms; and to accelerate the progress of the disease, by increasing the activity and the strength of the circulation.—*Sir Charles Mansfield Clarke's "Observations on the Diseases of Females"; Part I; Chapter* 14; *Page* 223.

† The following is Dr. Duncan's list of Officinal Alkalies:—1. Potass. 2. Soda. 3. Ammonia. 4. Lime. 5. Magnesia. 6. Combinations of Soda, Potass, Ammonia, Lime, and Magnesia, with Carbonic Acid.

bulk, one of the first points to be determined is, whether the abdominal bulk arise from air, water, adeps, or a diseased growth of the viscera; or from two or more of these causes combined. Gaseous enlargements are elastic, yield exceedingly under well-directed pressure, and may be readily urged from one part of the abdominal cavity to another. The enlargements of dropsy may, in general, be recognised by fluctuation;—more obvious when the fluid is in the peritoneum; more obscure when it is encysted (whether in the bladder, the ovary, or the womb); but still in most cases distinguishable, unless the sac be unusually thick. Adipose enlargements are generally not confined to the abdomen; but equally affect all parts of the body; and may, therefore, be easily recognised;—so that if, on examination, we find a large abdomen, firm, hard, and unyielding, and not to be attributed to accumulations of water, air, or adeps, there is good reason for believing that the intumescence arises from some *solid* growth;—the abdominal mass consisting of solid material only; or of some large solid substance, in which a fluid may lurk.

Situation of the Abdominal Tumour.—When satisfied, from examination, that the abdominal intumescence arises from a solid growth, we ought next to ascertain whether this growth is seated in the upper part of the abdomen, or inferiorly. In women, solid enlargements of the liver, spleen, or omentum,—unless adipose,—are not common; and when they exist,—lying in the superior and middle regions of the peritoneal cavity,—they are very readily distinguished by their firm, hard, and unyielding character; and by our being unable to make a deep depression when the hand, applied in the region of the hypochondria, below the margin of the ribs, is pressed perseveringly towards the spine. Should the swelling be uterine and scirrhous, of course it will occupy the lower and middle parts of the abdominal cavity;—not reaching the pit of the stomach, till the disease has advanced to its last stages; and hence, on pressing the parts which lie in the scrobiculus cordis, we shall find that they yield readily under the action of the hand, dexterously applied; while the central parts, and those below, possess an unyielding solidity, even firmer than that which is produced by gestation.

Nature of the Enlargement.—It being ascertained, then, that there is a solid enlargement in the lower and central regions of the abdomen, it still remains to be known whether the growth is uterine, or ovarian, or a combination of the two affections;—a point which, in some cases, it is not very easy to decide. In general, however, when the enlargement is *uterine*, the mass will be found to lie equidistant between the wings of the ossa innominata; but should the intumescence chance to be *ovarian* in its nature, then,—on careful and dexterous investigation,—it will, I believe, in most instances, be found lodging more upon the right side than the left. Thus, then, by examining manually, we may, in most instances of scirrhous uterus, ascertain that there is a large solid growth in the uterine region,—of many years' standing (as we learn from the patient); and where this is the case, there can be but little doubt that this enlargement is of

the nature of an indolent scirrhus. It must be admitted, however, that the proof is not decisive; for,—not to mention pregnancy,—the womb may enlarge from other causes. But the latter are of rare occurrence; and I think I may add that, in the present state of knowledge, these would not prove of much practical importance. If large tubercles can be felt through the abdominal coverings, this will greatly help the diagnosis. If the mouth of the womb and the vagina feel scirrhous, there can be little further doubt. Scirrhosity of the womb and of the ovary may be combined. By emptying the bladder, placing the patient recumbent, and relaxing the abdominal muscles, the investigation may be much facilitated. The whole inquiry, however, requires tact.

Examination in Recent Cases.—But what is to be done in those cases in which we are called upon to decide respecting the existence of uterine scirrhus, in the first stages of its supposed formation;—when, for example, the mass is no larger than the head of the fœtus? In cases of this kind, the bladder,—previously suffered to become distended,—may (immediately before the examination) be emptied of its contents;—in order that the abdominal muscles may become more completely relaxed. The patient may then be placed on the left side, in the ordinary obstetric position; and one or two fingers of the left hand may be laid upon the mouth of the womb, while those of the right are applied immediately above the symphysis pubis, in the region of the bladder; where the upper hemisphere of the enlarged uterus may be felt; so that, the womb being interposed between the two hands, its bulk and firmness may be ascertained with nicety. In rarer and anomalous cases, the index of the left hand may be placed in the rectum, against the back of the scirrhous uterus, while the thumb is resting on the uterine mouth; and the right hand being applied, as before, above the symphysis pubis, the state of the womb may be investigated, even with greater exactness than before. By these means, a competent and dexterous examiner may almost always ascertain whether the womb is enlarged or not; and the more easily if the patient have borne children, and if (as often happens in cases of scirrhosity) there has been more or less wasting of the flesh.

Diagnosis furnished by these Examinations.—In making these examinations, if tubercles are felt through the abdominal coverings, or if the os uteri be large and hard, or if the vagina be scirrhous,—in this, as in the former case, these diagnostics are of no small importance in marking the character of the disease. In doubtful instances, the bulk of the uterus may be registered after a first examination; and a second inquiry may be instituted some two or three months after the first;—so as to ascertain what is of no small importance in the diagnosis;—I mean, whether the enlargement be *tardy* or *rapid* in its growth. In cases of this kind, it is not to be forgotten that the uterus may enlarge, not from scirrhus merely, but from a pregnancy of four months,—from hydatids,—from a mole,—or from a polypus; and, further, that an incompetent investigator may

feel the head of a fœtus, and mistake it, perhaps, for a large and scirrhous uterus. Of this error, I have seen two examples. Remember, however, that if the enlargement is from a pregnancy of four months, or from hydatids, it will increase rapidly; if from the head of a six or seven-month fœtus, the case will be speedily developed by delivery; or if, lastly, it depend upon a mole or polypus, sooner or later these substances will most probably be expelled; and, in the mean time, if we follow the treatment before advised, our error will lead to little practical inconvenience. Recollect that affections may be combined; and uterine scirrhus may be associated with a polypus, with pregnancy, or with various affections of the ovary, to be considered hereafter; and let your opinions be given,—not, indeed, with the mean and paltry reserve of ignorance, aping knowledge,—but with that philosophic caution which the essential obscurity of the case may require. Gross errors are sometimes committed in these matters; but these (as elsewhere observed*) are frequently rather to be attributed to the *artist* than to the *art*. We ought not, however, to undervalue our brethren, merely because they fail in this part of obstetric knowledge. A man may be a well-informed, judicious, and of course very valuable practitioner; and yet he may not have been in the way of acquiring that nicety of tact, which alone can give worth to his opinions, in inquiries of this kind.

CHAPTER VIII.

MALIGNANT DISORGANIZATION OF THE UTERUS.

The genital apparatus, in women, is liable to various disorganizations of a malignant nature; which disorganizations, agreeing with each other in many important points of treatment, may be conveniently classed together in one general view. Under these fatal disorganizations it happens, occasionally, that both the womb and the vagina, throughout their whole extent, become involved in the disease. More frequently, however, the superior parts of the vagina only,—to the extent of one-half, or one-third,—are affected in common with the womb; and, in some cases, the disease appears to be confined almost entirely to the uterus, or to the verge of the vagina immediately contiguous;—the parts below preserving their original healthy structure. In malignant disorganization, the parts adjacent to the scirrhous womb and vagina are also, I fear, too often affected with scirrhosity. The rectum and the bladder are more especially liable to become affected;—in consequence of the spread of the morbid changes by continuity. In general, however, I presume that these parts are not affected from the first; and we have reason to

* See Page 752.

hope, till anatomy has proved the contrary, that the womb and bladder will not become affected, till the disease has reached its middle or latter stages.

[It has been too much the custom with practitioners, to consider all the different kinds of ulceration taking place in these parts, as terminations of the disease called "scirrhus" or "carcinoma". This opinion has been strengthened by the fatal termination of such ulcerations. But there are two varieties of ulceration attacking these parts; which varieties, although both fatal in their consequences, produce symptoms differing very much from each other. In the second edition of Dr. Baillie's work on Morbid Anatomy, a disease called "malignant ulcer of the uterus" is described; and Dr. Baillie has the candour to state that, in his first edition, he confounded this disease with scirrhous enlargement;—considering them as varieties of the same complaint.

It has been the custom of the author*, during a period of sixteen years as a teacher, to describe two different kinds of ulceration of the uterus, both of which may be considered as malign;—the one under the denomination of "the corroding ulcer of the os uteri"†, the other under the name of "carcinomatous ulcer".‡]

SECTION 1.—NATURE AND VARIETIES OF THE DISEASE.

Enlargement and Thickening.—In indolent scirrhus, formerly considered§, the womb enlarges greatly in its size; but these great enlargements are not observed in the malignant disorganizations which we are now considering. This assertion holds so true, as a general principle, that I look on a large uterus as one of the best securities against malignant ulceration. In general, however, the vagina thickens exceedingly under this disease;—becoming as hard as cartilage; and the womb acquires a bulk nearly double its healthy dimensions. Whether this enlarged and altered structure is or is not really of the nature of genuine scirrhus,—like that of the mammæ,—I am not prepared to decide. Perhaps it is not. I never yet examined a uterus, in which the marks of a true scirrhous change were of that evident kind, which we may observe in cases of indolent and bulky scirrhosity: but, certainly, in these malignant ulcerations, the remains of the uterus are found to be harder than is consistent with health; and, the induration being unequal throughout its substance, there is a tendency to the formation of small topical masses, which remind one of scirrhous tubercles. These topical indurations, however, present an aspect very different from that of the indolent tuberous scirrhosity, formerly described‖; for they are more vascular, not so hard, and evidently not so well and so sharply defined. I may add, moreover, that under these malignant disorganizations, vaginal and uterine, the ovaries and fallopian tubes are occasionally attacked with

* Sir Charles Mansfield Clarke.

† See Page 745.

‡ Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part II; Chapter 3; Pages 185 and 186.

§ See Page 732. ‖ See Page 730.

indisputable scirrhus, diffused or tubercular; and, further, that in one instance (at least) of this disease, I had occasion to see several well-characterized tubercular masses, imbedded in the substance of the liver;—facts which certainly give additional strength to the opinion, that malignant disorganization of the uterus may, in reality, be nothing more than scirrhus.

Progress of the Ulcerative Process.—When induration and thickening occur, there is often no obvious ulceration at first; but the parts, when examined by the touch, feel hard, and irregular on the surface; and, in the midst of this scirrhous and disorganized mass, we frequently find a cavity of various size;—sometimes large enough to admit a pullet's egg, and sometimes not admitting the extremities of two fingers without difficulty. About this time, the parts become assailed with a sort of ulcerative action; under which the membranous lining of the parts breaks; and a surface is formed which bleeds under the touch, becomes ragged, and spreads over a various extent of surface;—sometimes as broad as the palm of a child's hand, or broader. It is not always, however, that a clear excavation exists in the midst of the scirrhus; for there sometimes grows from the diseased surface a loose fungous excrescence, very lacerable, frequently giving rise to flooding, and therefore to be touched with great caution. This excrescence, whether single or formed into separate and detached masses, may fill the cavity, or push forth beyond. The ulcerative action which assails the scirrhus, is usually of slow progress; it spreads gradually over the surface, and slowly penetrates into the substance of the parts beneath;—laying open, as it proceeds, the bladder, rectum, and peritoneum; and consuming, perhaps, one-third or two-thirds of the substance of the uterus.

Efflorescent Excrescences.—Again, instead of the destructive and wasting ulceration which we have here described, in these cases of malignant disorganization, we occasionally meet with efflorescent excrescences, small or large; seated sometimes on a thickened and indurated base, and sometimes on a healthy structure; occasionally tending to the peduncular attachment, and more frequently having a broad basis; sometimes covering a portion of the genital surface not broader than a shilling, and in other cases a space equal to the disc of a crown-piece.

Diffusion of the Scirrhosity.—Let me add that, along with the contiguous cervix, the whole os uteri sometimes enlarges greatly; and, at the same time, undergoes the scirrhous change and the ulcerative action;—the whole or the greater part of the vagina remaining sound; so that, on examination, the entire diseased mass bears a strong resemblance to an os uteri formed upon a very large scale. In malignant uterine ulceration, the ovaries and fallopian tubes may be affected with well-marked scirrhus, either diffused or tubercular; but I never saw them of great size. The inguinal glands are sometimes enlarged; but not in general. The glands at the back of the pelvis may become as large as a nutmeg, or larger; and there may be enlargement, and a sort of cheesy matter, in the lumbar glands;

but, in the earlier and middle stages of the disease, the glandular system is not affected to that degree which we might have expected. In one case of fatal carcinoma, I found several hard, white, flat tubercles on the external surface of the peritoneum, where it covers the parts contiguous to Poupart's ligament; and, in another, tubercles were found in the liver and the lungs. I never yet met, in the same individual, with cancer of the uterus and of the mamma combined.

Causes.—On the whole, though these malignant changes cannot be considered as a merely local disease, yet there is not, I think, that marked diffusion of malignant changes over other parts, which would justify us in asserting, without further proof, that the extirpation of the mass must always be performed without permanent benefit. If cancer of the lip may be removed with success, I should incline to hope, that the same success might attend the extirpation of malignant scirrhus of the uterus; but of this hereafter. Malignant ulceration of the uterus, it seems, almost invariably begins in the mouth and cervix. Are the glandulæ nabothi (that is, the large and numerous mucous glands in the neck and mouth of the womb) the cause of this? Are not the mucous glands in the lip, a principal cause why the malignant change attacks that part? Is not the malignant disorganization sometimes observed at the anus, the pylorus, and the valve of the ilium, to be ascribed to the mucous glands there? And are not the glandulæ nabothi the cause why, in its commencement, the disease usually gives a preference to this part? This, if true, would lead us to hope the more from the operation of Oziander, Dupuytren, and Lisfranc.

Varieties of Malignant Disorganization.—Although, perhaps, in most cases essentially the same, the malignant changes which the genitals may undergo, in the diseases which I have here been describing, are exceedingly various in their circumstances;—so much so, indeed, that it may be doubted whether any two cases present to the morbid anatomist exactly the same aspect. With a view to practice, however, these malignant disorganizations may be divided into different varieties;—grounded on the extent of the morbid action, or the character of the change which the parts may have undergone. Resting the distinction upon the character of the morbid organization, I would, in practice, distinguish four varieties of the disease;—that in which the womb, enlarged but little, is affected with malignant induration merely; that again in which, the disease being somewhat advanced, the malignant induration, of varying firmness, has become affected with a sort of ulcerative action; that variety, thirdly, in which the hollow formed in the indurated mass is filled, more or less completely, with a loose, vascular, fungous growth of a hæmatoid character; and that variety, lastly, in which an efflorescent excrescence (the "cauliflower") is seated upon an indurated basis. These four varieties may be distinguished, respectively, by the names of the "scirrhous", the "ulcerated", the "fungous", and the "efflorescent" or "cauliflower" form of the disease.

Varieties in the Extent of Disorganization.—It is useful to distin-

guish the different varieties of this affection, according to the extent of the disorganization. In many cases, the whole system exhibits the marks of malignant cachexy;—being sallow, wasted, and fevered. The inguinal glands are enlarged; and we have reason to fear a disorganization of the lumbar glands, or of the liver, or of other viscera. In other cases, again, the general system is not affected in the same alarming degree; but diseased changes of structure may have spread widely among the viscera of the pelvis;—the entire womb, and the greater part of the vagina, being affected with the malignant induration; in which the front of the rectum, and the posterior part of the bladder, are involved. In addition to this, the glands are enlarged, as before; and there is, perhaps, an indolent scirrhus of the ovaries and the fallopian tubes; but a large indolent scirrhus of the fallopian tubes and ovaries, is by no means a common precursor of the malignant induration of the womb and vagina. Enlargement of the glands is more frequent; and we too often meet with indurations of the bladder and rectum. There is yet a third variety of these cases met with,—in the earlier stages especially; in which the whole of the morbid change of structure seems to be confined to the womb, and to a small contiguous portion of the vagina; insomuch, that there is good reason for hoping that the whole may be removed by the scalpel;—no very extensive chasm remaining in the pelvis, after the diseased parts have been taken away. In these cases, it is not probable that the other parts connected with the womb and vagina, by contiguity or otherwise, are entirely free from disease; but I feel inclined to persuade myself, that the diseased change is sometimes so inconsiderable, that when the malignant mass is removed, the parts may recover themselves; or, at all events, that the diseased changes may lie dormant for a long term of years afterwards, or perhaps for the rest of life; and this, more especially, in cases of *efflorescent* excrescence.

Mobility of the Diseased Parts.—Under the more malignant changes of the genital structure, the mobility of the diseased parts may vary considerably; the womb and the vagina being sometimes so firmly imbedded in the cavity of the pelvis, that they cannot be stirred by the pressure of the fingers; while, in others,—and, indeed, the greater number of cases,—the uterus is found to be moveable enough;—so as to afford hope of a ready extirpation. This fixity or mobility of the parts, seems to depend upon two causes, either of joint or separate operation;—I mean, the breadth of the scirrhous changes at that part where the viscera more immediately rest upon the pelvis; and the extent of the adhesion which these parts may have contracted with contiguous organs. Indeed, in consequence of the enlargement and disorganization (from scirrhus) of the adjacent parts,—the bladder, rectum, and ovaries, more especially,—and the consolidation of these with the womb and vagina, the whole may be formed into one large mass;—consisting of the various parts incorporated; and fixed, by means of its broad basis, immovably in the pelvis. Such cases may be easily ascertained, during life, by a com-

petent operator. They are clearly, in a high degree, unfavourable for extirpation; or, rather,—in the present state of knowledge, at least,—the operation, in such cases, seems to be wholly unjustifiable.

SECTION 2.—CHARACTERS OF THE MALIGNANT ULCER OF THE WOMB.

Emaciation.—Women who labour under "malignant" ulcer of the uterus, are generally sallow and wasted; and have a withered appearance of the skin;—consisting in a number of minute wrinkles, to be especially observed on the limbs, both upper and lower. The emaciation sometimes manifests itself less conspicuously in the face; while in the arms, legs, and nates, it may in general be observed easily enough. Although, however, this cachectic shrinking is one of the best marks of visceral diseases, it must not be forgotten that, in the earlier stage of malignant ulcer, it is not always conspicuous; and the face, in particular, may retain a certain degree of fulness, notwithstanding the ravages of this formidable disease. I remember once observing to a lady, who complained of central uneasiness, that she certainly need not be apprehensive of cancer;—her looks were so imposing. Yet, on investigation, the disease was found advanced beyond hope.

Carcinomatous Fœtor.—In the malignant ulcer of the genitals, there is not always a fetid discharge;—at least, not throughout the whole course of the ulceration. But this fœtor is *generally* observed; and if, finding that the patient is affected with a cachectic wasting, we learn, at the same time, that there is a fetid discharge from the genitals,—brownish, greenish, and of serous or watery consistence,—there is always too much reason to fear, that this ulceration is begun; for the well-known carcinomatous fœtor rarely exists without malignant ulceration; though the ulcer may subsist where little or no fœtor is perceived.

Hæmorrhage.—In the malignant ulcer of the genitals, floodings usually occur; and sometimes a large hæmorrhage is the first intimation which the patient receives of the existence of the disease. These floodings are various in quantity, and uncertain in their intervals;—being, perhaps, most copious and dangerous in those cases in which the ulcer is accompanied by those fungous growths before described.*

Central Distress.—Wasting, fœtor, and flooding, are, in this disease, associated with more or less of central distress. The region of the sacrum, the pubes, the groins, the hips, and the thighs, are the main seat of the uneasiness; which is composed of achings, forcings, urgings, burnings, lancings, and micturition;—not to mention other feelings, which scarcely admit of a significant appellative. In different cases, there is much variety in the degree of uneasiness. In the latter stages of the disease, more especially, some women suffer dreadfully; and find no solace, except from large doses of opium, or other anodynes; while others, more especially in the earlier stages,

* See Page 741.

undergo, comparatively, but little pain. The malignant ulcer is by no means invariably attended with burnings; though the existence of this symptom ought always to create a strong suspicion of this disease.

Necessity of an Examination.—In dubious cases, it becomes necessary to ascertain the existence of ulcer by examination;—a diagnostic of no value, if the operation be performed by those who want the necessary science, habit, and dexterity; but where these qualities are not deficient, the operation will generally enable us to decide the point. Cases have occurred where the genital cavity has been entirely free from ulceration, and a practitioner of fifteen or twenty years' experience, on instituting an examination, has decided that ulceration had begun. By a polished tube, of convenient length and diameter,—the speculum vaginæ, as it is called,—an inspection of the os uteri, and parts adjacent, may be easily accomplished by the help of a strong light; for the tubular form of the instrument effects a dilatation of the vagina, and its polished surface (a sort of circular mirror) conveys and concentrates the light, so as to throw it in full force upon the parts above. This method of investigation must enable the least skilful to determine whether an ulcer exists or not; but, in most cases, it is neither necessary nor conceded; and, in cases of reputed carcinoma, it is generally by the touch that we are enabled to determine respecting the existence of the morbid organization. Where this really exists, we usually find, at the upper part of the vagina, a mass as hard as a piece of cartilage, and as large, perhaps, as a goose's egg; and, in the midst of this solid mass, we may distinguish a cavity often of irregular surface, and large enough to admit the extremities of two or three of the fingers;—this cavity, however, being (in some few cases) filled with a loose vascular growth. Below the indurated mass, the vagina generally feels perfectly sound. A rough examination may give much pain; dangerous bleedings may follow these investigations, if rudely made; and cases of fungus require a touch of the utmost tenderness. The hand is usually stained in these examinations; and, in most cases, though not in all, there is perceived an offensive odour; from which the finger is not easily purified. The malignant genital ulcer is, perhaps, most common in the middle period of life; but I have myself observed it at the extreme ages of sixty-four and twenty-eight;—not to mention the various intervening periods. It is certain that unmarried women are more obnoxious to it; and I have seen the disease prove fatal to the mother of fourteen children. Family-propensity to the disease is not strong; and yet, in at least two instances, I have known it attack women who were sisters.

Corroding Ulcer of the Os Uteri.—[In the "corroding" ulcer of the os uteri, the membrane which covers this part first takes on disease; and very shortly afterwards the ulcer extends to the whole circumference of the opening, and to the parts immediately beneath it; so that the natural shape of the os uteri is destroyed. Thence the ulceration proceeds to the cervix, and consumes it; so that, if the

patient should die in this stage of the disease, nothing will be found, after death, but the body and the fundus of the uterus. Sometimes the disease does not stop here; but, before the patient is destroyed, the absorbents employed in the process of ulceration take up nearly the whole body of the uterus; so that very little more than the fundus will remain. In the author's collection*, there are three preparations, showing the disease in all of these different stages.

Distinguished from Carcinoma.—This progress of destruction does not happen in the *carcinomatous* ulcer; by which disease the patient is worn out before there is time for such a degree of absorption to happen. If an examination be made *per vaginam*, the breach of surface may be readily distinguished, and the extent of the disease ascertained; but no hardness of the parts will be present;—no thickening;—no deposit of new matter. If the body of the patient be inspected after death, there will appear abundant evidences of the destructive process; but no hardness, or thickening, or deposit of new matter; so that, both during life and after death, there is a tangible and visible difference between the corroding ulcer, and the ulceration of cancer†.]

SECTION 3.—CHARACTER OF THE MALIGNANT EFFLORESCENT GROWTH, OR CAULIFLOWER-EXCRESCENCE.

Women sometimes labour under the "efflorescent excrescence"; without, however, assuming the sallow complexion of carcinoma; and, in those who are disposed to be full and plump, the disease may now and then prove fatal, before an alarming emaciation has been produced. The disease is, I believe, always attended with a pretty copious watery discharge; and when this is abundant, and of long continuance, much wasting and debility may be produced;—the exhaustion being sometimes accelerated and augmented by the eruption of large quantities of blood. In the "malignant ulcer" of the uterus, there is generally much fœtor‡; but this is not, I think, equally certain in the "efflorescent excrescence"; and the same remark may, I think, be extended to the central uneasiness; which is usually much greater in carcinoma, than in this no less fatal, and still more insidious disease. When doubts remain on the mind, an examination becomes necessary; when the efflorescent growth, varying in size, may be discovered in the genital cavity;—sometimes uniting with the parts by a broad basis, and much more rarely by a peduncle; sometimes seated on parts which have undergone but little change of structure; and sometimes (perhaps still more frequently) resting on an indurated scirrhous mass. The body of the growth may be, in the main, single; or it may be broken into large detached lobes. Prolapsus of the uterus may concur. Are strumous habits most obnoxious to this disease? In Dr. Clarke's valuable work on the Diseases of Women, there are some excellent remarks on this complaint.

* Sir Charles Mansfield Clarke's.

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part II; Chapter 3; Pages 190 to 192. ‡ See Page 744.

Structure of the Tumour.—[A more appropriate name could not have been given to this disease, than "the cauliflower-excrescence"; for there is a striking resemblance between it, and a portion of the upper surface of a cauliflower, or a head of brocoli. The surface is granulated; and it consists of a great number of small projections; which may be picked off from the surface, as the granules may be detached from the vegetable. The firmness of the tumour, also agrees with that of the plant. In the one case the granules are large and irregular; in the other, small and equal. A membrane, very fine in its texture, is spread over the surface of the tumour; and from this membrane is poured out that aqueous secretion which characterizes, in a marked manner, this disease.

Of a bright Flesh-Colour.—As the tumour occupies the upper part of the vagina, it is of course, in the greater number of instances, concealed from view; but in three or four cases,—in which the size of the tumour was so large as to fill the whole canal, and to protrude between the labia,—the author* was enabled to see the disease; and the colour of the tumour was found to be that which may be called a bright flesh-colour.

Readily Bleeds.—If the membrane covering the tumour has been injured in an examination, the blood-vessels immediately beneath it pour out their contents; which appear to consist of florid red blood, resembling that which is contained in the arteries of the body generally. The quantity of blood which so escapes, will be proportioned to the extent of the injury inflicted upon the tumour. Similar discharges of blood sometimes spontaneously take place in those habits in which plethora exists; or where the circulation has been hurried by any exciting cause.

Not endowed with Sensibility.—The cauliflower-excrescence is not endowed with sensibility;—the patient never complaining when pressure is made upon it. Its attachment is to the surface of the os uteri, and to that alone;—it never can be traced into the cavity of the uterus. A small part of the os uteri may give rise to the disease; or the whole circumference of the opening may be occupied by it.

Its Growth sometimes Very Rapid.—The growth of the tumour is sometimes very rapid; but the enlargement seems to be much influenced by the power of contraction of the vagina; so that when this canal is very dilatable,—as in married women who have borne many children,—the tumour will very quickly increase in size; whereas the pressure of the sides of a less capacious vagina,—as in single women,—will greatly tend to control its enlargement;—acting like a bandage upon it. The knowledge of this fact is available in the treatment of the disease. When the tumour is of so large a size as to protrude beyond the labia, it branches out on either side; and, by pressing and irritating the surfaces between which it lies, it not unfrequently causes ulceration of them.

Causes.—Hitherto it has not been ascertained what circumstances produce, in the parts, a disposition to take on the formation of this

* Sir Charles Mansfield Clarke.

disease. It might be conjectured, that an injury inflicted upon the os uteri in labour,—either by the head of the child, or by violent attempts made to dilate it,—might become an exciting cause; but many examples are to be met with, in which such injury has been done to the os uteri, and no such disease has followed. Married women who have never been pregnant,—nay, single women, in whom no violence can have been offered to the os uteri, are liable to the complaint. It cannot be traced to any syphilitic cause. The common prostitutes of this metropolis *, are by no means more liable to it than any similar number of women in different stations of life. The disease arises as often in the strong and robust, as in the weak; in persons who live in the country, as in those who inhabit large towns; in those whose situation in life obliges them to labour, as well as in those who, from their rank in society, sometimes consider themselves privileged to be useless members of it †.

Period of Life at which it Occurs.—No period of life, after the age of twenty, seems to be exempt from the disease. The author ‡ has known it fatal at the age of twenty; and he has met with the disease at different periods of life up to old age. The complaint *may* arise, perhaps, before the woman has reached her twentieth year; but no such case has occurred in the experience of the author.

Is it analogous to Arterial Nævus?—It has been observed above §, that arterial blood escapes from the tumour when injured. Indeed, the tumour appears to be made up of a congeries of blood-vessels; and these blood-vessels are arteries; the infinitely small branches of which, terminating upon the surface of the tumour, exhale in the most abundant manner an aqueous fluid. Perhaps some small arteries near the os uteri, may undergo that morbid dilatation of their coats, which is analogous to aneurism ‖ in larger trunks; and thus the disease may be produced. Something similar to this takes place in the arterial, or blood-red nævus: but here, the surface being covered by cutis and cuticle, no moisture of the part is met with; but, if the surface of such a nævus should be injured, arterial blood escapes.

May such a state of blood-vessels exist at the time of birth; remain concealed in early life, owing to the very small quantity of blood which circulates in the organs of generation at that age; and be developed at that period at which blood rushes with greater force and in greater quantity, in order to enlarge these organs, and (in the female) to render them fit for the performance of new duties? It may be that the increased circulation which is present at puberty, may not be sufficient to elicit the phenomena of the complaint.

* London.

† "Pallida mors æquo pulsat pede pauperum tabernas
Regumque turres".

"Death, who causes those who behold him to turn pale, knocks, with impartial hand, at the hovel of the pauper, and the palace of the king".—*Horace's "Odes"; Book* 1; *Ode* 4; *Lines* 13 *and* 14.—N. R.

‡ Sir Charles Mansfield Clarke.

§ See the previous page.

‖ From *ανευρυνω, to dilate.*

The stimulus of marriage may be required in some; while, in others, the further development of the organs in pregnancy, or the exertions of labour, may be necessary to call forth the morbid symptoms of the hitherto dormant disease.

The circumstance of the disease resembling a portion of the placenta, so as to be mistaken for it at first, is too remarkable to pass without further notice. A carcinomatous thickening of the os uteri, may exist during labour; and the patient has been destroyed very shortly afterwards, by ulceration taking place. The author has a preparation of this kind; but a carcinomatous thickening of the os uteri bears no resemblance to the cauliflower-excrescence; and the size of the former remains unaltered by pressure, and undiminished by death. Why, then, do the cauliflower-excrescence and a portion of the placenta resemble each other so closely, that the one has been mistaken for the other? They differ only in name; the structure is the same. The placenta consists of blood in blood-vessels;—the cauliflower-excrescence consists of blood in blood-vessels. In a presentation of the placenta there is hæmorrhage;—so there is when the cauliflower-excrescence is injured. Nothing can be better marked than this similarity; and if there were no further evidence to prove that the nature of the disease was a distended set of blood-vessels, it would be rendered sufficiently probable from this resemblance alone.

The vessels of the pia mater, in the dead subject, when drawn out of the interstitial spaces between the convolutions of the brain where they ramify, resemble a flocculent mass; and scarcely put on the appearance of being blood-vessels. But let injection be thrown into them; when they readily become distended, and their real structure is rendered immediately evident. In other parts of the body, the contents of the small blood-vessels, very visible during life, are emptied into the larger trunks when death takes place. Nay, the same takes place in fainting; which is a near approach to death. This is the case, for example, in the membrana conjunctiva, the lips, the skin, and in most parts of the body where the ramification of small vessels can be distinguished.

The Blood-Vessels are wholly Arteries.—If, in an examination, a small portion of the cauliflower-excrescence be detached, and if it be pressed between the fingers, or macerated in water, its volume will be found to decrease very rapidly. In the one case, blood will be squeezed from the blood-vessels, and in the other diffused through the water; and in both a flocculent mass will remain, resembling the appearance of the cauliflower-excrescence after death. That the blood-vessels so distended in this disease, consist principally, if not wholly, of arteries, is to be collected from their contents; the colour of which resembles that of arterial blood; which is not returned into the general circulation, by the termination of these vessels in small veins; but is carried off, principally, in that profuse watery secretion, which causes such expenditure of the powers of the frame.*]

* Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part II; Chapter 2; Pages 58 to 74.

SECTION 4.—CHARACTER OF FUNGOUS EXCRESCENCES.

In the genital cavity, "fungous excrescences" are sometimes formed; varying in their situation, but generally placed in the upper part of the vagina, or on the mouth or neck of the womb. These excrescences may, perhaps, sometimes grow from a surface healthy enough; but more frequently they sprout upon a carcinomatous base. By wastings, gleets, floodings, and offensive odours, the practitioner is first led to suspect the existence of the disease; and an examination by the speculum, or otherwise, demonstrates at once the nature of the affection. In Denman's Obstetric Plates is represented a fungous polypus, growing from the fundus of the uterus, suspended by a peduncle, not larger than the little finger; and the womb is inverted. But generally these fungous excrescences rest upon a broad basis. I am not certain that they are always single.

[The uterus is more frequently affected with spongoid tumour than is supposed;—many cases of that disease passing for cancer. This is a tight, but soft and elastic tumour; the substance of which bears some resemblance to brain; and contains cysts of different sizes, filled with red serum, or blood, or a bloody fungus, according to circumstances. There is no certain way of distinguishing or discovering this disease, in its early stage; for it often gives very little trouble; and any symptoms which do occur, are common to other diseases of the womb. The tumour, however, enlarges; and can at length be felt through the abdominal parietes. It is soft and elastic, and, on the first application of the hand, feels very like a tense ventral hernia. There may be two or more tumours, of unequal sizes, in different parts of the abdomen; which tumours can be felt to have a connexion with each other, and may frequently be traced to the pubes. Examined per vaginam, the state varies in different cases; but by pressing on the external tumour at the same time, we discover its connexion with the womb below. We may find ulceration; or the os uteri soft, and tumefied, and opened; or the posterior lip may be lost in a soft elastic tumour, and quite obliterated; whilst the anterior one, after a pretty careful examination, is felt high up, and apparently sound. Pressure seldom gives pain, till ulceration be about to take place; and no blood is usually observed on the finger after examination, unless a fungus have protruded. So far as I have seen, fluor albus is a rare attendant on this disease, in the early stage; and little inconvenience is produced at that period, except what may sometimes result from pressure on the bladder;—causing strangury or suppression of urine, attended with fits of considerable pain, like those excited by a stone. Slight discharges of blood generally attend the formation of the disease; and, at this early stage, the os uteri, and sometimes the cervix, may be felt tumid, smooth, and elastic. The complexion is sallow; but the health is tolerably good, till ulceration or inflammation takes place. Ulceration may occur in different parts. It may be directed to the vagina; and then we have a fetid bloody discharge, or sometimes considerable hæmorrhage; and ulti-

mately the bladder or rectum is involved in the destruction. Or a bloody fungus may protrude from the exterior surface of the uterus, into the general cavity of the abdomen; and, at length, the bowels may become inflamed and glued together. Or the tumour may adhere to the parieties of the abdomen; and the skin, after becoming livid, gives way; and a fungus shoots out from the abdomen. As the disease advances towards ulceration, the health is more impaired; hectic fever takes place; and the patient is ultimately cut off. *]

SECTION 5.—CHARACTER OF MALIGNANT ULCER OF THE UTERUS, IN ITS INFLAMMATORY STAGE.

When carcinoma (as it is called) is commencing, it cannot always be ascertained with facility;—being liable to be confounded with various distressing affections of the bladder, womb, rectum, or vagina. The existence of the disease, however, may be reasonably suspected, when others of the family have been assailed with this affection; and when there are micturition, an aching pain of the back, lancinating pains in the pelvic cavity, a muciform or serous discharge, and pain felt during intercourse of the sexes. The lancinating pains, unless seated in the rectum, are very suspicious. It must not be concealed, however, that all these characteristics are fallacious and uncertain; and many women make themselves miserable, by too hastily inferring, from such symptoms, that they labour under carcinomatous disease. It is by examination only,—either specular, or by means of the touch,—that, in cases of ambiguity, the diagnosis must be established. If the mouth of the womb is large and open; if the vagina and necks of the uterus are thickened and indurated; and if, like a carcinomatous breast, the diseased and indurated parts are affected with severe lancing pains under pressure,—there is good reason for vigilance; as the malignant ulceration may be approaching. A large, patulous, and indurated os uteri, may be looked upon, in all cases, as a diagnostic of great value.

SECTION 6.—THE ANATOMY OF THE UPPER PART OF THE VAGINAL CAVITY; SO FAR AS A KNOWLEDGE OF IT IS IMPORTANT IN THE DIAGNOSIS OF MALIGNANT DISORGANIZATION.

To give full weight to your opinions respecting the condition of the genitals, in reputed disorganization, it is absolutely necessary that you should be thoroughly acquainted with the healthy structure of the internal genitals, both in the living and the dead; nor must dexterity and much practice be wanting, in order that the examinations may be well made. Anatomy, morbid and healthy, must form the basis of your knowledge here; and I would advise you, on every occasion,—whether in the dissecting-room or otherwise,—to take every opportunity which may present itself, of examining the state of these parts, both by the knife and touch. In different individuals, there may be much variety in the make of these genitals internally; and

* Dr. Burns's "Principles of Midwifery"; Ninth Edition; Page 122.

that independently of disease;—just in the same manner as there may be much variety in the make of the features; for the face is variously moulded, not only in different individuals, but in different races;—in the Ethiopian, the Caucasian, the Mongolian, and the American family of mankind. Besides the variation in the length, the thickness, the capacity, and the position of the vagina, there is much variety in the state of the os uteri;—not to be overlooked by the scientific and dexterous accoucheur. In some women, it is flat; in many more, tuberous *, and forming (as it were) a frustum † of a sphere; in some women, it is of large size; in others, smaller; in most, smooth; in some few, a little rugous; in some, firm; in many, soft; in some, with a small aperture, not to be discovered without a very careful investigation; in others, with a capacious aperture, readily admitting the apex of the fore-finger. In most women, the opening is circular; in many, it consists of a fissure;—never stretching from before backward, like that of the male urethra; but in all cases, I believe, extending from side to side; so as to divide the tuberous mouth into two lips, front and posterior ‡. When large, the mucous follicles in the neck and mouth of the uterus, may, I suspect, give a roughness to this part.

In a preparation in my museum, the os uteri is formed into an attenuated edge. When the womb prolapses, and the opening of the os uteri is small, it may be overlooked altogether; and the case may be mistaken for inversio uteri. Of this error I have seen two examples. A firm os uteri may be mistaken for scirrhus; an os uteri large and patulous may be mistaken for cancer. The broken circumference of the os uteri, produced by the pressure of the head during former labours, may be mistaken for ulceration. A rugous os uteri, or the same part roughened by the glandulæ nabothi, may be erroneously supposed to be affected with malignant disorganization. These, and other errors, however, are the results of a want of knowledge in these matters. A small share of information is sufficient to prevent them. They are the mistakes of the *artist*, and not of the *art*. Other varieties of the os uteri I deem it needless to notice. Thus much, then, respecting the morbid anatomy, and the characters of these terrible diseases. To my friend Dr. Hodgkin § I must refer you, for a fuller and more scientific exposition of the malignant changes of structure.

SECTION 7.—EXCISION OF THE UTERUS.

The remarks which I have to offer respecting the management of malignant disorganization of the genital system in women, may be conveniently divided into three classes;—the first comprising those which relate to the cure of the disease by operation; the second, those which refer to the palliation of the symptoms when the part is

* From *tuber*, "an excrescence";—derived from *tumeo*, "to swell".
† "Fragment." ‡ See Page 727.
§ Professor of Morbid Anatomy at Guy's Hospital.

ulcerated, or in a state of morbid activity; and the third, those which belong to the management of the disease before active symptoms (those of ulceration) have begun.

Operative Treatment of Malignant Changes of Organization.

By a Free Incision into the Peritoneum.—When entering on the consideration of the radical cure of this disease, we may properly enough inquire at the outset, whether we are justified, in any case, in making a free opening into the peritoneum, and removing the parts within. Having had occasion, from my first entrance on the career of medicine, to notice the frequency and the fatality of disorganization of the pelvic viscera, I early made it a study to get together a body of observations and experiments, which might help to form the foundation of more enlarged abdominal surgery. These experiments and observations were read before the Medico-Chirurgical Society, in the year 1823, and although it was not deemed expedient to admit them into the "Transactions" of that Society, yet, recollecting that the first experiments of Franklin relative to electricity were originally treated with ridicule, and refused a place in the "Philosophical Transactions," I did not deem that a sufficient reason for withholding them from the public. In the year 1824, therefore,—through the intervention of Mrs. Cox,—the medical bookseller, these facts and opinions were laid before the profession in a small work, entitled "Researches, Physiological and Pathological, instituted principally with a view to the Improvement of Medical and Surgical Practice". In this little tract,—after laying down the particular facts which, with limited opportunities, I had been able to collect in the course of six or seven years,—I ventured to draw a few general inferences; of which the following is a summary:—

1. Smaller wounds of the peritoneum, as in tapping, hernia, &c, do not in general induce fatal peritonitis, or other destructive effects; and, therefore, the common opinion,—not, perhaps, found on paper, but frequently urged in conversation, and apparently operative in practice,—that inflammation in a spot of the peritoneum will almost invariably diffuse itself over the greater part of it, is probably unfounded in truth.

2. Extensive divisions of the peritoneum are *certainly* not *of necessity* fatal, whether by inflammation or otherwise; and *probably* not *generally* so.

3. The womb, spleen, and ovaries, may be taken away,—in the mode mentioned in the memoir,—*certainly* without *of necessity* destroying life, and *presumptively* without *generally* destroying it.

4. The womb, when developed from pregnancy, may be torn open; the child may escape into the peritoneal sack among the viscera; and the mouth of the womb may be torn off,—not, indeed (so far as the cases related may be relied on), without great danger,—but, twice in seven instances, without death.

5. The peritoneum and abdominal viscera, though very tender in the human body, will, without fatal consequences, bear more injury

than, from their modes of practice, British surgeons,—very laudably tender of risking human life,—seem disposed to admit.

6. All the above inferences, from observations on the human abdomen (recorded in the Memoir*), are in unison with those drawn from the following observations on the rabbit (to be found in the same paper);—the one set of inferences mutually supporting the other. Here I may observe, by the way, that we have in this a fact corroborative of the principle for which I have contended, elsewhere;—that observations on the brute and human subject, when made with caution, may, perhaps, be found more in correspondence with each other, than some surgeons are disposed, at present, to admit. A contrary opinion, so far as it is erroneous, must exert a very baneful influence upon the progress of surgery.†

Experiments on Rabbits.—In four experiments the left kidney was taken out of the rabbit, through an incision upon the outer edge of it, about an inch long,—very large for the bulk of the animal. The kidney was drawn up through the wound; and the superior half of the peritoneal attachment, thus put on the stretch, was, together with the vessels, included in the ligature. The rabbits were of a spare habit, and were all under their full size; as they had not reached puberty. Of these animals, the first died about sixty hours after the extirpation, with inflammation of the abdomen. The second died about four-and-a-half days after the operation, with the same disease strongly characterized. The third rabbit recovered, lived for five or six weeks, and then died;—from a cause which ill-health prevented me from exploring. The fourth, also, for a short time recovered, fattened, and grew; but, at the end of five or six weeks, it died in like manner; with a sack in the seat of the extirpated kidney, formed by the peritoneum, and filled with a semi-fluid, resembling (in colour and consistence) a custard. The cyst was not burst; the remaining kidney was, I think, enlarged; the spleen was black; the liver was dark; the kidney was rather pale.

In seven experiments I took out the spleen. Four of the rabbits were of spare habit, and of the same size with the former; and three of them were full-grown bucks, with the omentum, kidney, and other parts well loaded with fat.—Of the full-grown buck-rabbits, the first died about three complete days after the operation, with abdominal inflammation. The second died about four complete days after the operation, with well-marked inflammation of the peritoneum;—as in the preceding case. The third recovered for a time, and seemed likely to survive; but, three-months-and-a-half after the operation, it died with diffused peritonitis, and a large sack between the left portion of the liver and stomach, as big as a large orange, and full of a fluid like a mixture of whey and custard.—Of the smaller rabbits, the first died five complete days after the operation, with purging and inflammation of the peritoneum. The second recovered for a time; but, at the end of six months, began to pine away gradually, like the

* See Note to Page 151.

† "Researches, Physiological and Pathological, by James Blundell, M. D." Pages 22 and 23.

former; and died, ultimately, with inflammation of the abdomen, effusion of coagulable lymph, firm adhesions, and a cyst in the region of the spleen, as large as the kidney of the animal, and full of thin pus. The remaining two recovered permanently.

In five rabbits I opened the abdominal cavity, over the bladder, to the extent of half-an-inch, in the course of the linea alba; punctured the fundus vesicæ with a lancet; and secured the aperture by ligature.—Of these rabbits, three recovered completely, and were killed for inspection; and two died. One of them, fourteen days after the operation, with the external wound unclosed; the other, seventeen days after the operation. Both were a good deal emaciated; and there were no decisive marks of peritoneal inflammation.

In two experiments on rabbits under the adult size, I cut off at least one quarter of the bladder at the fundus, with one stroke of the scissors. A ligature had been previously applied. One of these rabbits died seven months afterwards,—full grown, and not obviously cachectic,—with one of the purulent sacks already described* seated internally, immediately over the abdominal wound. The second rabbit is alive still†; and appears large, fat, and healthy.

Into the peritoneum of four rabbits I threw about an ounce of human urine, of a full yellow colour; left it there for an hour; then discharged it, and washed out the peritoneum thoroughly, by injecting tepid water. They all suffered much collapse from this experiment; and while the urine remained in the abdomen among the viscera, they dragged the hinder legs after them, as if slightly paralytic. The injection of the tepid water seemed to sooth them.—Of these rabbits, the first (a fat buck) never recovered from a state of collapse; and died in less than twenty-four hours after the experiment. The peritoneum exhibited no obvious marks of inflammation. The second (also a fine fat buck) died in sixty hours;—in part, at any rate, from peritoneal inflammation. There was purging. The inflammation seemed greatest near the wound. The third (a rabbit under the full size, of spare habit) was destroyed in nineteen hours, with the most diffused and active peritonitis I ever saw in the rabbit. In this last animal I found small crystals of urinary salt, scattered all over the peritoneum, from which the urine had been too negligently washed out. The fourth rabbit (also under the full size) recovered completely; and is now†,—twelve months after the experiment,—large, fat, and to all appearance perfectly well.

In seven experiments, I injected into the peritoneal sack, eleven drachms of the "decoctum quercûs," of the "Pharmacopœia Londinensis." The rabbits were under the full size, and spare. Of these rabbits, one died in fifteen hours, with purging; and, I think, diffused peritonitis in the incipient state. The extractive matter of the bark was found lying about in the peritoneum. The intestines were tympanitic. Five others died, between twenty and thirty hours after the injection, apparently from the same cause; and one got completely well.

* See the previous page.

† In 1823.

In experiments 5, 6, and 7, the decoction was of the full strength; in experiments 1, 3, and 4, it was reduced to half strength; and in experiment 2, to a strength of one-third. It was, therefore, of the full strength in the rabbit that recovered. The rapidity with which death ensued, in these experiments, deserves particular notice.

The peritonitic inflammation,—which I have had repeated occasion to mention, in giving the results of these experiments,—was marked, in the more decisive instances, by serous effusion; by accumulation of adhesive matter; by the agglutination of the different viscera to each other, and the peritoneum; and, in some of the rabbits, by a thorough injection of the smaller vessels (on the large intestines especially) with blood, so that they exhibited a petechial appearance.

Inferences.—From the facts ascertained by the preceding experiments, the following inferences may, I think, be fairly drawn:—1. Large apertures into the peritoneum of the rabbit do not immediately induce a dangerous prostration of strength. In all my experiments, I never once observed any marked collapse in the animal, at the moment when the peritoneum was laid open; though I was in full expectation of it. When urine was injected, collapse was immediately and evidently produced. 2. Large apertures into the peritoneal sack, in the rabbit, are not *necessarily*, nor perhaps *generally* productive of fatal inflammation. Of eighteen rabbits not only opened, but subjected to further violence, five only died from this cause. The remainder, thirteen in number, either recovered, or were carried off by some other affection. In the remaining eleven experiments, a strong stimulus was applied to the peritoneum; and, therefore, these are excluded from the computation. 3. In the rabbit, the kidney, the spleen, and a large piece of the bladder, may be extirpated without necessarily causing death; though, under the first operation, death is probable. Of four rabbits, all died ultimately from the renal operation;—two, however, not till one or two months afterwards. Of seven rabbits, five died from the splenic operation; and, of the same number, only three died from the operations on the bladder. 4. When the abdomen is laid open, and parts are removed from it in the rabbit, the first danger arises apparently from collapse; the second from general inflammation; and the last from chronic topical disease. 5. The rabbit's abdomen is very tender;—probably no less so than that of man. Of twenty-nine rabbits, twenty-one died more or less directly from the operations performed;—some of them, it must be confessed, violent ones; and it should be observed particularly, that five, out of seven rabbits, died from the splenic operation carefully performed; though both cases, elsewhere recorded*, in which the human spleen was removed,—in circumstances, to appearance, highly unfavourable,—terminated in complete and uninterrupted recovery. The general impression left on my mind by many observations is, that the abdomen of the rabbit is, on the whole, no less tender than the human. 6. It follows, from the former inference (5), that success in

* See Foot-Note at Page 151.

abdominal operations on the rabbit, furnishes a presumption in favour of success in similar operations on the human abdomen; and, therefore, from these experiments, we may infer *presumptively* that moderate openings into the human peritoneum will not necessarily, nor even generally, prove fatal from inflammation or otherwise; and, further, that certain viscera or parts of viscera, not essential to the welfare of our structure, may be removed from the abdomen without *necessarily*, or even *generally* producing death. The extirpation of the kidney must be highly dangerous; but there is a presumption in favour of the successful removal of the spleen, the ovaries, or even of large pieces of the bladder.

Having laid this foundation of fact and inference, I then thought myself justified in endeavouring to assist a little in enlarging the circle of abdominal surgery;—a part of the healing art which, though clearly environed by many and uncertain dangers, is, nevertheless,—as it appears to me,—by no means incapable of considerable improvement.

Operations suggested by the Preceding Inferences.—It appeared, indeed, that while the body of well-ascertained facts having reference to abdominal surgery shall remain small, it would, no doubt, be the extreme of rashness on such grounds, to recommend to practice any operations as yet untried, or of rare performance;—"unless, indeed, in those cases in which they secure the only remaining chance of life"*. But the facts stated in the paper to which I have referred, and the inferences just given, seemed to create a reasonable suspicion, that a bolder abdominal surgery than that which had hitherto prevailed, might not be unattended with success; and I thought, therefore, that I might be pardoned for endeavouring to draw the attention of the profession to the following operations;—all, to appearance, not impracticable, though not all of equal promise. In doing this, however, I deemed it my duty, in mentioning these operations, to state distinctly what I now repeat; namely, that it is my design at present to recommend them to *consideration* merely, and not to *practice*; except, as observed before, in those cases in which abdominal surgery clearly contains the only remaining hope;—cases in which we might wish the operation to be tried in our own instance, or in that of our nearest and dearest relatives.

"1. *Division of both the Fallopian Tubes, and even the Removal of a Small Piece of them; so as to render them Completely Impervious;—a Fit Addition, apparently, to the Cæsarian Operation; the Danger of which it would Scarcely Increase.*—The effect of this operation would be to prevent subsequent impregnation; without, however, destroying the sexual propensities, or the menstrual action of the womb; and as many, besides Mr. Barlow's patient (in this country†), have (on the Continent), recovered from the Cæsarian incisions, the possibility of a second need for it should, I think, by all means be precluded. In those cases, also, of contracted pelvis, in which, notwithstanding the

* Dr. Blundell's "Researches"; Page 24.

† See Note at Page 152.

excitement of parturition in the seventh month, it is still necessary to destroy the fœtus,—by opening the head, and reducing its size,—in order to bring it down through the pelvis, I think it would not be amiss to adopt this operation;—in order to produce sterility. An opening, two fingers broad, might be made above the symphysis pubis, near the linea alba; the fallopian tubes might be drawn up to this opening, one after the other; and a piece of each tube might then be taken out. This operation,—much less dangerous than a delivery by perforating the head when the pelvis is highly contracted,—might, I think, be safely recommended to consideration, in these deplorable cases.

"2. *Extirpation of the Healthy Ovaries.*—This operation, even granting it to be safe, can scarcely in any instance be necessary; though it may be observed, by the way, that it would probably be found an effectual remedy in the worst cases of dysmenorrhœa, and in bleeding from monthly determinations to the inverted womb; where the extirpation of this organ was rejected.

"3. *Extirpation of the Ovarian Cyst, in Scirrhus combined with Dropsy, or in Simple Dropsy.*—This operation will, I am persuaded, come into use hereafter, in certain cases properly selected, according to principles before considered*. If the dropsical cyst be large, and of long standing, the removal will, most probably, be prevented by extensive adhesions: but if the cyst be small,—containing (as in a case published by Nathan Smith†) a few pints only,—the adhesions will most probably be few, and easily detached. It remains to be ascertained hereafter, to what extent adhesions in the abdomen may be cut through, without danger to life." For myself, I acknowledge, that I should fear such an operation.

"4. *Removal of a Large Circular Piece of the Cyst, in Ovarian Dropsy; when the Sack itself cannot be Extirpated.*—As rupture of the ovary has apparently cured the disease, by laying open the cyst, and perhaps by inducing inflammation, advantage might be expected from this operation,—at least, as a palliative; though other cysts would, no doubt, in many instances, gradually renew the disease.

"5. *Removal of the Cancerous Womb, when the Ulceration first Makes its Appearance.*—Might not the womb be taken out above the symphysis pubis, or through the outlet of the pelvis? If above the symphysis pubis, might not the head of the vagina be tied up; and might not the ligature be conveyed by needle into the vagina, so as to hang out at the pudenda? All the parts about the cancerous womb, and the vagina among the rest, are in such a diseased state, that I expect little from this operation, unless early performed; and then, perhaps, Oziander's operation (that of paring away the diseased surface of the ulcer) might be preferable; but really the effects of these malignant ulcerations are so deplorable, that I think the propriety of extirpating the womb, in these cases, ought certainly not to be lost sight of.

* See Pages 753 and following.

† See Pages 18 and 19 of Dr. Blundell's "Researches"; and a Note at Page 152 of the present work.

"6. *Extirpation of the Puerperal Uterus.*—When the Cæsarian operation is performed, or when a patient is evidently sinking after rupture of the womb, might not the whole uterus be taken away,—especially if inverted? Let it be remembered, that the wound formed by the extirpation of the womb,—and which might, probably, be much reduced in extent by drawing the parts together with a ligature,—would merely take the place of a more formidable wound;—that, I mean, formed in the womb by the Cæsarian operation; and which, by the operation here performed, would, together with the uterus, be taken completely out of the body. No operation, perhaps, can be more unpromising (shall I say more *unjustifiable?*) in the present state of our knowledge; but I thought it proper to hint at it. Experiments on animals,—rabbits (for example), which have very large wombs,—might be of use here. The inverted womb has been four times extirpated with success, when reduced to the original dimensions." Let me here take occasion to do an act of justice; by stating that, in one of these four cases before stated*, it was not Dr. Hull who extirpated the uterus; but Mr. Windsor, of Manchester;—Dr. Hull kindly contributing his assistance. My friend Mr. Webber, of Yarmouth, extirpated the puerperal uterus when in a state of inversion; and this within fourteen or fifteen days after delivery†. The woman recovered.

"7. Should the bladder give way into the peritoneal sac,—and I have two preparations of this accident,—why should we not lay open the abdomen, tie up the bladder, discharge the urine, and wash out the peritoneum thoroughly by the injection of warm water? This operation would secure a chance of life, if the urine had not been long extravasated;—say above an hour.

"8. Small openings, with callous edges, through the neck of the bladder into the vagina, are cured in France (as I learn from Mr. Travers) by the actual cautery. When the opening is larger, it may probably be closed, in some cases, by ligature, without a bad symptom. Mr. Preston, one of my pupils, first suggested to me this operation.

"9. The injection of astringents into the peritoneum, or into an ovarian cyst, has been proposed, in cases of dropsy;—in order to check the exhalation. The experiments related in the Memoir‡, give little encouragement to the trial of this operation;—at least, with the oak-bark§; or rather, in the present state of our knowledge, they render it altogether unjustifiable.

"10. In the rabbit I have often tied an abdominal artery, and then carried the ligature out of the abdomen, at the point where the artery lay, by means of a broad-pointed needle, instead of drawing the thread forth at the wound. In operating on the human body,

* See Page 152. † See Page 446.

‡ See Pages 4 to 9 of Dr. Blundell's "Researches"; and Pages 754 to 756 of the present work.

§ See Pages 8 and 9 of Dr. Blundell's "Researches"; and Pages 755 and 756 of the present work.

would this expedient be advantageous, should further experience lead us to wish the ligature in all cases removed? I have, once or twice, weeks after operating, found the remains of a ligature which had been cut short, lying in the middle of a sack of puriform matter; and, to appearance, laying the foundation of chronic disease.

Dr. Ritzius's Report of Cases.—"After the matter of this Memoir had been read before the Medico-Chirurgical Society of London, in the year 1823, Dr. Ritzius (one of the supernumerary physicians to his Majesty the King of Sweden),—chancing to arrive in London,—informed me, that the complete removal of the cancerous womb had been, in his personal knowledge, performed (on the Continent) five times. All the patients recovered from the operation; four of them, he said, were doing well several months afterwards; and one died;—not, apparently, in consequence of the injury inflicted by the operation; but, as was supposed, from the further progress of the disease in the surrounding parts contiguous to the uterus. The womb was removed through the outlet of the pelvis. There was no hæmorrhage requiring a ligature. Dr. Ritzius designs to publish these cases. The operator (at least, in one or two instances) was a M. Saüter, of Constance. These cases suggest many reflections."*

Mr. Cline's Opinion on Extirpation.—Some years before the facts and inferences contained in the "Researches" were laid before the public, in a letter addressed to a very prudent but enterprising surgeon, the late Mr. Henry Cline, I proposed for his consideration the inquiry, whether it might not be possible, in some cases, to extirpate the uterus when in a state of malignant ulceration. In this letter,—shown to two of my more able surgical friends,—some reasons were assigned why it was deemed not improper that the attempt should be made. Mr. Cline's premature decease, however,—which I, for one, shall always regard as a serious loss to our art,—put an end to all hopes of his help in this matter.

Result of Dr. Blundell's own Operations.—Having, however, at length (in fact and inference) laid a foundation for this formidable undertaking, and feeling persuaded that,—in some few cases, at least,—a life might now and then be saved by extirpation, I determined to take the operation into my own hands, on a proper occasion; and the more willingly, because it seemed to require *obstetric* dexterity, rather than that of the general surgeon; and I have now operated in four cases; of which the results are before the profession. Of these cases,† one was followed by recovery beyond my hopes; though the woman has since died. Three proved fatal;—one in the course of two or three hours after the completion of the operation; one in the course of four or five hours; and one not till nine-and-thirty hours had elapsed, after the uterus had been taken away. Of these three failures, one was (in a manner) hopeless from the first; though, taking all the circumstances into consideration, and at the express and urgent desire of

* "Researches Physiological and Pathological, by James Blundell, M.D." Pages 25 to 31.

† See Pages 769 to 773.

the patient, it seemed but right to give the only remaining chance. One,—namely, that in which the patient survived for thirty-nine hours,—was a failure of an encouraging kind; for the case, during a good part of the time, manifested many hopeful symptoms; and one,—namely, the last in which I operated, and with more dexterity and readiness than in the preceding cases,—considerably obscured my expectations (never very sanguine), by proving fatal within four or five hours after the extirpation was completed; although, previously to the operation, it appeared, both to my medical friends and myself, that all the apparent circumstances were auspicious, and highly conducive to success. Not to mention the successful operations performed (as I am told) by M. Saüter, of Constance, nor the successful case at Liverpool,—the favourable event of one of my four cases,—namely, that of Mrs. Moulden,—demonstrates that there is some soundness in the principles of abdominal surgery, which have already been laid before you. In the present state of our knowledge in these matters, should judgment be taken from the result,—the surest method of estimation, in a practical science like ours,—I do not think that any man, in whom enterprise and prudence are combined, can reasonably convict of temerity an operation which, to say the least, has in its very infancy been followed by the recovery of one patient out of four, labouring under this tremendous disease. For myself, I may perhaps be allowed to remark, that the success of uterine extirpation has very far exceeded my own most sanguine expectation. All the parts about the cancerous womb, and the vagina among the rest, are in such a diseased state, that I expect little from this operation, unless early performed; and then, perhaps, Oziander's expedient of paring away the diseased surface of the ulcer, might be preferable; but I think the propriety of extirpating the womb, in these cases, ought certainly not to be lost sight of. "I may be pardoned, perhaps, for endeavouring to draw the notice of the profession to the following operations*;—all to appearance feasible, though by no means of equal promise; stating, distinctly, at the same time, that my design, at present, is to recommend them to *consideration* merely, and not to *practice*; except (as observed before†) in cases otherwise desperate." ‡

Such was the language used in the "Researches" already cited, before the operation had been performed; and I have deemed it a duty to cite the passage; which will be admitted, I trust, not to bear about it the marks of temerity; more especially when it follows a narration of observations and experiments, painfully collected, in order to form a ground-work on which the operation might rest.

Facies non omnibus una,
Nec diversa tamen;—qualis decet esse sororum! §

* For an account of these operations, see Pages 757 to 760.

† See Page 757.

‡ Dr. Blundell's "Researches"; Page 24.

§ "A countenance not alike in all, nor yet entirely different; but such as it ought to be in sisters."

Enterprise and rashness may, perhaps, be consanguineous; and, at the first glance, may appear to bear a great resemblance to each other. In reality, however, they are as different from each other as vice and virtue; and while I hope that the one may never be wanting in the Borough Schools*, our institutions will, I trust, always remain as free as hitherto from the just imputation of the other.

In what Cases is it Admissible?—Admitting, then, that there are cases of malignant disorganization, in which the extirpation of the diseased parts may not unreasonably be recommended, it behoves us next to consider what are the cases in which the operation may be resorted to; and what are those cases in which there is no reasonable hope of its being performed with success. In the present state of our experience, I deem it unwise to operate, if the system be originally unfavourable for the higher operations of surgery; if the habit exhibit the marks of malignant cachexy; if the inguinal, and therefore (in all probability) the lumbar, glands be affected with enlargement and induration; if the scirrhous hardness have extended itself to the rectum or the bladder; if, together with the uterus, more than one quarter of the vagina be involved in the scirrhous changes; if traces of decided ovarian enlargement be observable; or if the womb, and parts connected with it, be immoveably fixed in the pelvic cavity;—so that, under examination, they cannot be made to change their place under the pressure of the finger. All this may be easily ascertained on the living subject, by a competent investigator. But if, on the other hand, the malignant nature of the disease be indisputable, and the constitution be originally of a kind favourable to operation; if malignant cachexy be not strongly marked; if the inguinal glands and the mammæ be, on the whole, healthy; if the disorganization be confined to the womb, and the contiguous parts of the vagina; if, as is generally the case, there be reason to conclude that there is no dangerous change of structure in the ovaries, liver, spleen, kidneys, omentum, or other viscera; if the diseased mass be moveable; and if there be reason to hope that the whole may be removed entire by the knife;—then, I conceive, the operation may, not without good reason, be suggested to the friends of the patient; with an honest declaration, at the time, that it is necessarily attended with great and uncertain danger, on the one hand; although, on the other, it contains in it the only remaining hope of life. Death is before the patient; disease is behind her; the operation in question lays open a side issue of escape; but "strait is the gate" (I grieve to think it!); "and few there be that find it."†

Cautions.—For heaven's sake, or if there be any stronger obtestation, and for the honour of our art,—which ought to be scarcely less sacred to us,—beware of supposing a uterus, healthy upon the whole, to be in a state of malignant disorganization! Beware of attempting

* The Medical Schools of Guy's and St. Thomas's Hospitals.

† Ὅτι στενὴ ἡ πύλη, καὶ τεθλιμμένη ἡ ὁδὸς ἡ ἀπάγουσα εις τὴν ζωὴν, καὶ ολιγοι εἰσὶν οἱ εὑρίσκοντες αὐτήν.—*The Gospel according to St. Matthew, Chapter 7, Verse 14.*

to remove the uterus, merely because it is of large size, and affected with indolent scirrhus, diffused or tubercular, as before described*; for these scirrhosities are not of the malignant kind; and in them, therefore, such an operation would be totally unjustifiable. Beware of delaying the operation till the genital system and the habit are so far diseased, as to leave no hope of success from the operation. Beware, again, of attempting the removal of the uterus, unless the ulceration is begun; and, indeed, unless the life of the patient is already brought into such danger, that there is no reasonable hope that it will be protracted beyond four or five months. Beware of attempting the operation, if the constitution seem to be originally unequal to the shock; or if it be broken up by a strongly marked and malignant cachexy; or if other disease, visceral or thoracic, may be suspected; and on no account let the patient be over persuaded,—whether by the surgeon or her friends,—to submit to the operation; but operate only in those cases, in which a free and unforced assent is given. In the present state of our information, it requires some skill to perform it; but skill still greater, perhaps, is required to select cases in which it is fitting. I am fearful,—I am jealous of you here! If any one consideration could have withheld me from using my humble endeavour to support and improve this part of surgery, it would have been the melancholy foreboding, that the abuse of this operation,—like that of obstetric instruments,—might ultimately convert into the bane of the sex, that which was designed to give them help in their last extremity. Beware, lastly, of undertaking these operations, unless you are very competent to the undertaking. As the operation is performed at present, the obstetric surgeon is, perhaps, best of all qualified, by his previous pursuits, for the undertaking; nor am I surprised that the general surgeon, habituated to operate under the guidance of the eye, should feel some little repugnance to perform an operation, in which it is the *touch*, not *vision*, which must be our principal guide.

Attendant Difficulties and Dangers.—When extirpation is to be performed, it is proper that the operator should thoroughly consider the difficulties and dangers of the operation, before he takes up the knife. So far as a judgment may be formed in the present state of our information, the principal dangers consist in a risk of hæmorrhage; a risk of collapse from the narcotic shock produced by the removal of the parts; a risk of the protrusion of the intestines; and a risk of wounding parts contiguous to the uterus;—such as the ureters, the bladder, the rectum, and folds of the small intestines. I am not sure that these dangers are inseparable from extirpation. A skilful operator may, I conceive, generally avoid wounding contiguous parts which he is desirous to leave untouched. When the operation is performed quietly, and with due dexterity, I presume that protrusion of the intestines is very rare; nor ought we, I conceive, to despair too hastily of contriving means to command the hæmorrhage; which in no one instance hitherto, so far as I know, has been clearly shown to have occasioned death; though opinions may differ here. The

* See Page 730.

narcotic shock, communicated by the removal of the parts, seems to be nearly allied to those collapses which arise from other injuries of large or important parts of the body; such as laceration of the uterus, rupture of the stomach or the bowels, blows upon the head, or the like; and although these shocks seem to be in some degree inseparable from the operation, much, perhaps, may be done to diminish them. There are, I think, two parts of the operation by which the whole system is principally shaken;—the division of the connexions by which the diseased parts are fixed in the pelvis; and the subsequent abstraction or withdrawing of the uterus, in those cases in which effort is requisite. That part of the shock which is occasioned by the latter cause, may probably be obviated altogether, by improving the method of procedure; but that part which results from the division of the uterine connexions, seems to be inseparable from the operation; except in so far as we can sustain the system against it; as, for example, by putting the patient under the influence of opium before the operation (a hint which I received from Mr. Webber); and by administering spirit during its progress, and immediately afterwards, should the failure of the pulse seem really to require it.

Method of Operating.—With respect to the method of extirpation, it may be observed, that different operators may, at present, prefer different modes of proceeding; and with good reason;—a method being good or bad, in these cases, according to the aptitudes of the surgeon; for these qualities are relative. It is much to be wished that, in all cases, the different parts of the operation might be brought under view; nor do I yet despair of this. The general surgeon would, I presume, prefer to remove the parts by incision above the symphysis; and a facility would thus be afforded, for ascertaining the state of the abdominal viscera; but I suspect it will be found, at last, that it is through the outlet of the pelvis, that the parts can be removed with the fairest prospect of success. My own method of removing the diseased structure, is given at large in the history of the operation on Mrs. Moulden; to which I must refer you*. For the convenience of both factions†, it has been liberally placed by the Editors in "The Lancet" and in "The Medical Gazette‡". To that account it may be sufficient, for the present, to add that, in performing the operation, I should make my election (according to the position of the fundus uteri) between retroversion and anteversion; that is, if the fundus (as is generally the case) lay upon the symphysis pubis, I would bring it down in front, along the neck of the bladder. It was thus that I removed the womb, in my first case. Or if, on the other hand, the fundus were erect, or lying upon the rectum (an accident of rare occurrence); or if I found, as the operation proceeded, that the fundus might be easily retroverted, and brought

* See Pages 769 to 773.

† Alluding to the two parties in the Medical Profession;—the "conservative" and the "movement", as they may be called.

‡ Number 36, Volume 2, Page 294, August 9, 1828. See also Page 733 of the same Volume, Number 4, November 8, 1828.

down along the rectum, I should prefer this mode; and it was thus that the uterus was removed in Mrs. Moulden's case.*

Case 1.—[In May, 1827, I† was first called to Mrs. J——, on account of retention of urine. On inquiry, it appeared she had suffered occasional pains, shooting from the pubes to sacrum, for near two years; that these had become more frequent, and were accompanied with pain across the loins, a sense of weight within the pelvis, and bearing-down; and that she was much troubled with dyspeptic symptoms. I examined the os uteri; and found it painful on being touched, thickened, hard, and irregular. The catamenia were irregular.

The patient was forty-four years of age; had enjoyed good health till within the last four years. She was married at the age of twenty-one; and had two children. In a few years her husband died; and since then she has led a very irregular life. She states that her father died of a cancerous affection; that it was twice extirpated from the breast, and subsequently once from the axilla; and that, at length, he died;—after suffering severely for several years.

The removal of the neck of the uterus was now proposed, but not assented to.

In July, 1828, I was again requested to visit her. Various remedies had been used, by a physician, with no permanent benefit. Frequent hæmorrhages, to a greater or less extent, had taken place. The pains were increased; and a quantity of bloody offensive matter had passed, some weeks previously, per vaginam. On examination, I found that ulceration had taken place to a small extent, on one side of the os uteri. The general health was evidently impaired. In this state, she determined to undergo the operation that had been proposed to her in 1827; which, however, I thought would be unjustifiable; as no boundary to the disease could be felt by the most careful examination;—the hardness of the neck appearing to extend to the body of the uterus, as far as could be ascertained. In this state she continued until the beginning of August; when I mentioned to her the operation of Dr. Blundell, with its dangers;—informing her, at the same time, that his patient had recovered. She consented to its performance; and requested it might be done without delay.

The operation was therefore performed at noon on the second of September, with the assistance of the following gentlemen:—Dr. Renwick, Mr. Bickersteth, Mr. Dawson, and Mr. Halton,—all of the Liverpool Infirmary; and my colleague at the Dispensary‡, Mr. Wainwright.

The patient being placed on her back, as in the operation for lithotomy,—but without having the hands and feet bound,—Weiss's "speculum vaginæ" was introduced, and held by an assistant. A strong hook was then passed into the anterior part of the cervix; and the uterus drawn down, with little difficulty or pain, to about half-

* See Page 772. † Mr. Banner. ‡ The North Dispensary, Liverpool.

an-inch from the os externum. A strong aneurism-needle (with a handle),—having its extremity pointed, and armed with a double ligature,—was passed through the neck of the uterus. The hook was then withdrawn; and the ligature was held by an assistant; while the speculum was also removed, and the labia were held out of the way by those on each side. I then made a semicircular incision over the inferior* part of the cervix, through the vagina and peritoneum; and widened it, with a hernia-knife, from one broad ligament to the other. Afterwards, a similar incision was made at the superior† part, and extended as before; so that only the broad ligaments and fallopian tubes remained to be divided. To accomplish this, I first passed the index-finger of the left hand through the upper† opening, and the middle finger through the lower*;—including the right broad ligament between them. In this ligament I then carefully made an incision, with a scalpel, between the fingers and uterus, close to its body. The nearest part of the included portion was thus divided; and the division was attended with slight hæmorrhage. Some time was lost in endeavouring to secure the bleeding vessel; which, however, proved unsuccessful. The hæmorrhage not being very profuse, I proceeded with the operation; but finding my former plan of dividing the broad ligament tedious and difficult, I brought down the fundus, by passing two fingers through the upper† incision, and then the strong hook between them and the uterus. The point of the hook was easily pressed into the fundus; and thus the object was quickly accomplished. The fallopian tubes and remaining part of the broad ligaments were now distinctly seen; and by passing the fingers beneath them, were divided with the common scalpel, close to the uterus. This was by far the most painful part of the proceeding.

During the operation, the patient lost about six ounces of blood; and was much troubled with retching. The intestines did not protrude; or interfere with any part of the operation. Immediately after it, the patient appeared as well as could be expected. There was a very slight oozing of blood; but apparently of so little consequence, that she was removed to bed. In the course of twenty minutes, or half-an-hour, she vomited severely; and became very faint. A coagulum, weighing about eight ounces, was expelled. Vinegar and water were applied to the abdomen, and upper part of the thighs. She then rallied a little; and, after complaining some time of pain at the lower part of the abdomen, the vomiting recurred; and another coagulum, rather larger than the first, was expelled. She now fell into a state of syncope; and the retching remained severe, and almost incessant. One hundred drops of laudanum were given, but immediately rejected. Small quantities of brandy were administered; the cold cloths were continued; and the patient was kept in the horizontal position. The hæmorrhage did not return after the expulsion of the second coagulum; and the pain in the abdomen subsided. She again rallied; and, in the evening,—as the vomiting

* Or posterior. † Or anterior.

continued extremely distressing,—two grains of opium were given; which relieved her for two hours. The sickness then returned; and four grains were given, with the same effect as the first dose.

September 3. *Mane.* Has passed a very restless night; countenance pale and dejected; pulse ninety-six, and weak; skin moist, and of a natural temperature; slight pain in the abdomen and back; vomiting less frequent.

Meridie. Slight distention of the abdomen, especially over the pubes. Has not passed any urine since the operation; or had any evacuation from the bowels. The catheter was introduced, and twelve ounces of high-coloured urine were drawn off; after which the tension was much diminished.

Vespere. Bowels purged freely by injections, and small doses of sulphate-of-magnesia in infusion-of-roses; vomiting and pain relieved.

September 4. *Mane.* Has passed a better night, having slept a little; general appearance as yesterday; pain in the abdomen slightly increased on pressure; little or no tension; pulse ninety-four, rather fuller; vomiting much the same; tongue slightly furred; complains of great thirst; bowels freely open; passed urine twice.

Meridie. Pulse one-hundred-and-six, harder; pain and tension slightly increased; bowels open. Twenty-four leeches were applied.

Vespere. Pain little abated; pulse remains quick, and rather hard. About twelve ounces of blood were taken from the arm; when syncope supervened.

September 5. *Mane.* Has passed a restless night; pain much relieved after the bleeding; the abdomen remains slightly distended, and somewhat tender on pressure; has had two evacuations, and passes her urine freely; vomiting continues, and appears to produce great exhaustion; pulse one-hundred-and-twenty, small and weak. A mustard-cataplasm* was applied; and gave relief in about twenty minutes.

Meridie. Pain and tension less; vomiting and thirst much abated.

Vespere. The symptoms above-mentioned worse; pulse very quick and weak; countenance anxious; cold sweats.

September 6. After passing a very restless night, and the symptoms continuing with great violence, she died at six o'clock this morning.

The above are the most prominent symptoms that occurred. I have thought it unnecessary to make a longer detail of the treatment; as it was not attended with a fortunate result, and was only that usually employed after hernia, and similar operations. It of course consisted of general and local bleeding, with the exhibition of purgatives, as far as the condition of the patient appeared to warrant.

Appearances of the Uterus.—The uterus was much larger than in the healthy state. Several tubercles, of various sizes, were loosely attached to the body and fundus. They were round and very hard. The cervix and body were considerably thicker and harder than natural; ulceration had taken place on the os uteri, particularly the

* From καταπλασσω, *to spread like a plaster.*

lower lip. A section of the uterus exhibited the common appearances of scirrhus. A circumscribed hardness was very perceptible, on the left side, extending from the cervix to the body; and several small, round, hard tumours were imbedded in the substance of the fundus.

Examination of the Body, five hours after Death.—On exposing the cavity of the abdomen, the omentum and intestines were found highly inflamed, and adherent to each other by an effusion of lymph. Several folds of small intestines filled the pelvis; and were more inflamed and adherent than those above. The lowest convolutions were firmly adherent to the cut surfaces made in the operation, and to each other; so as completely to close the aperture from within. Only a small quantity of serum was effused. The bladder was natural. The peritoneum lining the pelvis had, in general, a greenish and somewhat dull appearance; which, by some present, was thought to be of a gangrenous character; but the texture was perfectly firm and unyielding. The ovaria were retained in their usual position by the remainder of the round and broad ligaments. The fimbriated* extremity of the left fallopian tube was found closed, and distended with serum, nearly to the size of a hen's egg; and gradually narrowing along an inch of the tube to a point, where it was again closed. The ovaria were,—as is usual in persons who have borne children,—flattened and corrugated, as if covered with cicatrices. The duplicatures of peritoneum forming the broad ligaments, were more separated below than above, where they inclose the ovaria; and were thus kept in union. A very careful examination was made to discover, if possible, the sources of hæmorrhage. The arteries were probably retracted, as none could be found divided; but the mouths of several considerable veins were seen distinctly on the right side, where the layers of the broad ligament were separated, and were traced to the plexus at the side of the pelvis. The branches of the internal iliac on this side, and the spermatic arteries, were examined; but no irregularity as to the size or distribution was discovered.

The following are a few observations I beg to offer on the above operation, and its consequences:—

1. I think it due to myself and the profession to state, that it was not done precipitately. I had been in attendance for sixteen months, more or less. The woman was in great and almost constant pain; was rendered unable to follow any occupation, and was extremely anxious to have some method of relief attempted. The disease was advancing; the operation and its dangers were fairly explained; and she persisted in wishing its performance. These circumstances appear to me absolutely requisite to warrant the performance of so formidable an operation. Dr. Blundell appears to have taken the same view of his case.†

2. The operation performed on this occasion admits, I conceive, of more safety and expedition, than that performed by Dr. Blundell‡.

* From *fimbria*, "a fringe";—derived from *finis*, "the extremity".

† See Pages 769 and 770.

‡ See Pages 770 to 772.

There was no difficulty, and not much pain, in bringing down the cervix uteri within sight, while two important parts of the operation were performed; without any danger of wounding either the rectum or the bladder.

The fundus uteri was drawn down through the upper opening *; which, as it was thus brought in the direction of the round ligament, appears preferable to bringing it through the inferior or lower † one. Whether it would be better, in a future operation, to divide the broad ligaments *in situ*, without bringing down the fundus,—which certainly commits a degree of violence to the parts,—I leave for experience to decide. I found it more difficult than I had anticipated;—owing to the great depth I had to reach; and, after making one or two attempts —wishing to shorten the operation as much as possible,—I desisted.

3. The hæmorrhage,—at least, as far as a careful examination of arteries uninjected may be depended upon,—arose, not from the division of any vessel that ought not to have been divided, but chiefly from those common to the uterus. One or two rather large veins, coming off from the plexus at the side of the pelvis, were found divided; and when it is remembered that these veins have no valves, it is not unlikely that a very considerable hæmorrhage may have proceeded from this source alone.

The operation lasted twenty-five minutes; and would have been much shorter, if some time had not been lost in endeavouring to secure the bleeding vessel.‡]

Case 2.—"Mrs. Moulden, aged fifty, of grey eyes and tranquil disposition, broad in her make, and disposed to obesity, was seized with offensive discharge from the vagina, soon followed by eruptions of blood in large quantity; so that,—according to her own report,—frequent faintings were produced; the blood occasionally sank through a bed about twice as thick as a sofa-cushion;—collecting on the floor; and day after day, for months together, with little intermission, one or two pints of blood were discharged.

Although Mrs. Moulden, in her general conversation, is by no means prone to hyperbole, it seems evident that she must have greatly over-rated the quantity of these daily floodings. Certain it is, however,—from her repeated and considerate declarations,—that very large quantities of blood were lost, during a period of many months; and though, with the exception of slight œdema of the legs, there were no signs of general dropsy, the paleness, coldness, and weakness, and the frequent attacks of faintness, or complete deliquium, showed pretty clearly that much vascular inanition had been produced. In other particulars, the patient's condition was not altogether discouraging; for the bowels were regular, and the appetite was occasionally good; and her appearance, though cachectic and perfectly similar to that of other women perishing under malignant

* Or anterior. † Or posterior.

‡ "Case of Extirpation of the Uterus; by John Maurice Banner, Esq.; Surgeon to the North Dispensary, Liverpool." Extracted from "The Lancet", No. 267; 1828-9, Volume 1; Pages 57 to 59; October 11, 1828.

ulceration of the uterus, was not such as to indicate a constitution wholly unfit for a surgical operation.

The woman having been under the care of three or four different practitioners before I saw her, I deemed it proper to examine immediately with great attention; when I found that the womb was moveable, and about as large as a goose's egg; that its mouth was broad, open, and of cartilaginous hardness; that it manifested the usual marks of malignant disorganization; in which, also, about one quarter of the contiguous vagina was involved; and, further, that on the surface of this diseased mass was formed an ulcer, about as broad as a shilling. The adjacent structures appeared to be healthy enough. The bladder and rectum were sound; the inguinal glands were not enlarged (whence it was presumed that the *lumbar* glands were likewise healthy); the ovaries could not be felt to exceed their ordinary bulk; and there evidently was no tangible enlargement of the liver, spleen, kidneys, or omentum;—all of which were examined with the nicest care. The breathing was easy; the pulse, various in its frequency, ranged between one-hundred-and-fifteen and one-hundred-and-twenty in the minute; and the patient, though certainly very much debilitated, had sufficient remains of strength to walk to my house (the distance of a furlong); though not without considerable difficulty. To be short: it seemed clear, at this time, that the case was one of "ulcerated carcinoma of the uterus", as it is called; and that extirpation was the only remaining remedy.

The bowels having been cleared, and the patient being resolved to submit to the operation, I determined (February 19, 1828) to remove the diseased parts without further delay. Having, for this purpose, placed the woman in the obstetric position usual in this country (on the left side, close upon the edge of the bed, with the loins posteriorly, the shoulders advanced, the knees and bosom approximated, and the abdomen directed a little downwards towards the bed), I began the operation.

First Stage of the Operation.—I commenced by passing up the index and second fingers of the left hand, to the line of union between the indurated and healthy portions of the vagina;—the finger being converted into a cutting instrument (varying with the exigencies of the operation) by means of a moveable knife, which requires a word or two of description. The blade of this knife,—not unlike that of a dissecting scalpel,—was mounted upon a long slender shank; which, including its large handle, was about eleven inches in length; and with this stem the blade was united in such a manner, that its flat (or plane) formed, with the stem, an angle of fifteen or twenty degrees. The first and second fingers of the left hand, then, being in the back of the vagina, and contiguous to the diseased mass (as before observed),—by taking the stem-knife in my right hand, I could at pleasure lay the flat of the blade upon the front of these fingers, and urge the point of the instrument a little beyond the tip. The apex of the fore-finger being, in this manner, converted into a cutting point, by little and little I gradually worked my

way through the back of the vagina, toward the front of the rectum; so as to enter the recto-vaginal portion of the peritoneal cavity;—frequently withdrawing the stem-scalpel, so as to place the point within the tip of the finger; and then making an examination with great nicety, in order to ascertain whether the vagina was completely perforated. Great care was necessary, in this part of the operation, to avoid wounding the front of the intestine.

Second Stage of the Operation.—A small aperture having been formed, in this manner, in the back of the vagina, the first joint of the fore-finger was passed through this opening;—so as to enlarge it a little by dilatation and slight laceration (safer than incision). This done, and a cutting edge being communicated to the finger,—by placing the plane of the blade in such a manner that its incisory edge lay slightly advanced beyond the side of the finger now lying in the aperture,—after drawing the point of the instrument within the tip of the finger, which operated as a guard, I proceeded to make an incision through the vagina transversely; that is, in a direction from hip to hip. For this purpose I carried the finger, with its cutting edge, from the opening in the vagina already made, to the root of the broad ligament on the left side; so as to make one large aperture. I then took a second stem-scalpel, formed on the same model as the preceding, but with the incisory edge placed on the other side of the blade; and laying this instrument on the fore-finger (as before),—in such a manner, however, that the cutting edge lay forth on the other side of the finger (to the right of the pelvis, I mean),—I carried the finger thus armed, from the middle of the vagina, where the former incision commenced, to the root of the broad ligament on the right side; so that at the end of this, which was the second step of the operation, the diseased and healthy portions of the vagina behind became completely detached from each other, by a transverse incision; which stretched across the vagina, between the roots of the broad ligaments, immediately below the diseased parts. At this time, the intestines could be felt hanging about the tips of the fingers; but the blade of the scalpel lying on the finger,—in which it was, as it were, imbedded,—the risk of a wound, whether by point or edge, was completely prevented.

Third Stage of the Operation.—The back of the vagina, then, having been divided in this manner, I urged the whole of the left hand,—not of large size,—into the vaginal cavity; and the more easily, because the woman had borne children. I afterwards passed the first and second fingers through the transverse opening, and placed them along the back of the uterus;—that viscus lying, as usual, near the brim of the pelvis; with its mouth backward, its fundus forward, and a little elevated above the symphysis pubis. This manœuvre premised, under full protection of these fingers now lying between the womb and the intestines, I took a double hook, mounted on a stem eleven inches long, and passed it into the abdominal cavity, through the transverse aperture, along the surface of the fingers already mentioned. Laying the hook in front of these fingers, near their tips, I converted them into a sort of sentient tenaculum; which, with little

pain to the patient, I pushed into the back of the womb, near the fundus; and then drawing the womb downward and backward, towards the point of the os coccygis,—as I carried the fingers upward and forward,—I succeeded ultimately in placing the tips over the fundus, in the manner of a blunt hook; after which, by a movement of retroversion, the womb was very speedily brought downward and backward, into the palm of the left hand, then lodging in the vagina; where, at this part of the operation, the diseased mass might be distinctly seen, lying just within the genital fissure.

Fourth Stage of the Operation.—The process of removal being brought to this point, the diseased structure, still in the palm of my hand, remained in connexion with the sides of the pelvis, by means of the fallopian tubes and broad ligaments; and with the bladder, by means of the peritoneum, the front of the vagina, and interposed cellular web;—parts which were easily divided, so as to liberate the mass to be removed. The broad ligaments were cut through, close upon the sides of the uterus; and, in dividing the vagina, great care was taken to keep clear of the neck of the bladder, and the ureters. This division of these attachments, and the removal of the diseased mass, constituted the fourth step of the operation. Some bits of indurated vagina, altogether not larger than a common bean, were left in the pelvis;—to be removed, at some future period, should symptoms require. This fact is worth recording.

Remarks.—To this circumstantial account of the operation, a few remarks may be added. The intestines did not protrude. About an ounce of blood was lost, when the back of the vagina was divided;—three or four more ounces following, when the vagina was cut in front. Ligatures, tenacula, and forceps, were in readiness to secure the vessels; but these were not required. The intestines were felt at one time only; namely, when two fingers were lying out through the opening in the vagina behind. Of course, some pain was felt when the first incisions were making; and when, as in ordinary obstetric operations, the hand was urged into the vagina; but the principal distress was occasioned by drawing down the uterus;—when the retroversion was accomplished, and the ligaments were put upon the stretch. The pains and complaints scarcely exceeded those observed in instrumental deliveries. The patient lay in the ordinary obstetric position; and required no restraint. The insertion of the hook into the back of the uterus, did not occasion much suffering. The operation, from first to last, occupied about an hour; but much of this time was spent in reposing, and in considering what might best be done. With better instruments and greater activity, the whole operation might most probably be completed in five minutes. In obstetrics, however, celerity is considered to be in itself a secondary merit; and the operation was conducted on obstetric principles. The general range of the pulse was between one-hundred-and-twenty and one-hundred-and-thirty;—a frequency common in de-delivery by instruments.

When the last gush of blood was observed, the pulse became imperceptible in the wrist;—returning, however, in the course of

ten or fifteen minutes. A few ounces of spirit were administered to the patient, as the operation proceeded. Throughout the process, the forefinger of the left hand was the principal instrument; and the scalpels and hooks were employed merely as the means of arming the finger for its various operations. The professional friends who favoured me with their presence, were Dr. Elliotson, Mr. Callaway, Mr. Bransby Cooper, Mr. Key, and Mr. Morgan. An accident deprived me of the presence and assistance of my friend Dr. Roots. The operation was not undertaken at a venture; but in conformity with certain principles laid down in two papers read before the Medico-Chirurgical Society;—the first of them in the year 1819, and the last in the year 1823. The latter, which was not published*, contains proposals for other abdominal operations†. The fundamental principles of these operations, as there stated, are founded upon numerous observations made upon the human body‡, and a sufficient number of experiments upon brutes§. I hope the case here narrated, may tend to diminish any unreasonable prejudices against experiments and experimentors. The feeling itself is laudable; but it may be misdirected by the designing. In Lisfranc's operation, I conceive there must be some misapprehension. I think I run no risk in saying, that by *his* method of procedure, as understood here, what the English accoucheur means by "cancer of the uterus", must frequently be irremovable.

It is now‖ five months since the parts were extirpated; and the patient is fat and well, and designs to return to her husband. The interception of the access to the ovaries, is a complete security against extra-uterine impregnation. The head of the vagina is closed by the bladder, which lies upon it. The recovery was easy enough."¶

The body of Mrs. Moulden,—the woman from whom the uterus was removed by the scalpel**,—having been inspected with great care by Dr. Hodgkin, of Guy's Hospital, I†† shall now present, verbatim, the account which this gentleman has given of the dissection. Dr. Hodgkin's talents and great accuracy in morbid dissection are, I believe, well known to the medical world; and I presume that, to those who know how to appreciate them, it will be a subject of general satisfaction that the investigation has fallen into such impartial and able hands. The case now stands before the profession complete in all its essential parts.

Examination of the Body of Mrs. Moulden, by Dr. Hodgkin.—

* That is, not in the Society's "Transactions." It will be found, however, in Dr. Blundell's "Physiological and Pathological Researches"; Pages 3 to 31. See, also, Page 753 of the present work.

† See Pages 757 to 760 of the present work.

‡ See Note to Page 151 of the present work.

§ See Pages 754 to 756 of the present work.

‖ August 2, 1828.

¶ "Case of Extirpation of the Uterus, by Dr. James Blundell." Extracted from "The Lancet"; No. 258; 1828-9, Volume 2; Pages 598 to 600; August 9, 1828.

** See Pages 770 to 772.

†† Dr. Blundell.

"She had been admitted into Guy's Hospital, labouring under obstinate constipation. Very nearly a year before her death, she underwent the operation of extirpation of the uterus; which operation was performed by Dr. Blundell, for the cure of carcinoma of that organ *. Before the operation, she wore the cachectic aspect which generally accompanies that disease; and was much reduced in flesh. The operation was performed with great dexterity. The patient recovered from the effects of it remarkably well; gained flesh very considerably; and felt so much relieved, that she styled the day on which the operation was performed, her "second birth-day". The ovaries of this woman were not removed with the uterus; and it is worthy of notice that strong sexual desire remained. She had an occasional sanguinolent vaginal discharge. For a very few weeks before her death, her bowels became irregular;—inclining to constipation. This symptom became more marked about five or six days before her death;—the constipation being complete. Injections, however, might still be thrown up; and no stricture of the intestine could be discovered, within the reach of the finger. The abdomen became much distended; but, during the whole or far greater part of the time, there was no attendant pain. The pulse was very little affected. For further particulars, see the hospital†-record by Dr. Bright.

"The inspection was made at nine o'clock in the morning, on the ninth of February, 1829;—about thirty hours after death.

"*External Appearances.*—The body was plentifully supplied with fat;—even rather to excess. The breasts were large;—presenting full-sized glands, supported by abundance of fat. They were perfectly healthy;—presenting not the slightest indication of carcinoma. The areolæ were remarkably pale for a female who had been a mother. The marks of parturition were evident on the abdomen; which, as during life, was much distended. On examining the external genitals, a dirty-brown secretion was observed in the vagina; and some irregularity seen at the mouth of this canal; which suggested the idea that there existed some ulceration at that part; but this was by no means the case. The vagina, which was of about the length of a finger, was closed above by a soft but irregular surface.

"*Head.*—The head was not opened.

"*Chest.*—There were strong and pretty general old adhesions of both pleuræ. The lungs were crepitant, and not particularly loaded with blood. The heart was healthy and rather small; and there was some discoloured fluid in the pericardium.

"*Abdomen.*—There were three small fatty tumours on the median line, above the umbilicus; protruding, as herniæ, through small openings in the fascia; but not communicating with the abdominal cavity.

"There was some fluid effusion (rather more than a pint) in the peritoneum. It was of a deep and dingy brown or chesnut-colour, but not very turbid; and contained a few very small shreds of coagulable lymph. The cæcum and its appendix, and more particularly the colon, were much distended. A considerable part of the small intestines, was likewise much distended; but the upper portion was of

* See Pages 769 to 773. † Guy's.

its natural size. The peritoneum was generally minutely injected with blood, of a dull brown or venous colour. This might have been ascribed to congestion, had it not been most decided and conspicuous along the angles formed by contiguous convolutions;—precisely where coagulable lymph is apt to be most abundant, when peritonitis is accompanied by plastic effusion.

"The omentum and appendices epiploicæ were loaded with fat. On raising the omentum and convolutions of intestine,—in order to gain a view of the pelvis,—the lower or true pelvis (that situated inferiorly to the brim) appeared completely full;—being covered by a floor of peritoneum, in which the following points might be observed.

"Immediately behind the ossa pubis, was a tolerably even surface, about two or three square inches in extent, formed by the bladder. This was bounded posteriorly and to the right by a slightly elevated ridge; which extended from a little to the right of the median line, to near the spot where the os pubis joins the ilium. It proved to be the remains of the right round ligament. On the left, lay the very much distended termination of the sigmoid flexure of the colon. Immediately behind that part of the ridge formed by the right round ligament which is nearest to the median line, there was a slightly elevated roundish projection, nearly as large as a moderate-sized walnut. Behind this, and rather to the right, there was a blind opening, in the form of a cul-de-sac, capable of receiving the last joint of one's finger. A broad fold of peritoneum extended from this projection, in the direction of the sacro-iliac symphisis. It appeared like a trace of the broad ligament; but probably it was only an adventitious fold of the puckered peritoneum. Posteriorly, towards the prominence of the sacrum, there was a smooth surface covered by peritoneum; in size about equal to the space formed at the anterior part, by the peritoneal surface of the bladder. The left side, as has been before stated, was almost wholly occupied by the distended colon. Some short bands and bridles of adhesion, were observable on this floor of the pelvis; especially at the back part of the nodulous projection before mentioned, and between the colon and the internal extremity of the right round ligament. No trace of either ovary could be detected, at this part of the examination. A few small flattened scirrhous tubercles, were observed immediately under the peritoneum; near to the spot whence the uterus had been removed. The most considerable of these was about the size of a sixpence; and was formed under the peritoneal coat of the bladder. The finger, again introduced into the vagina, approached nearest to the internal surface just before the anterior margin of the before-mentioned nodulous projection. The contents of the pelvis,—consisting of the bladder, vagina, rectum, the last part of the colon, and the remains of the uterine appendages,—were next removed. Uterus, of course, there was none. The bladder was divided through the median line. It appeared to be quite healthy; with the exception of the scirrhous tubercles under its peritoneal coat. The vagina, laid open at its anterior part, appeared perfectly healthy; except quite at the upper end; where it was uneven, partially ulcerated, and partially of a

bright-red colour,—from increased vascularity; and was connected with a mass of soft cerebriform matter. It was this mass, of about the size of a walnut, that formed the nodulous projection seen on the inner side of the abdomen. There were some piles at the verge of the anus; above which, for about four inches, the intestine appeared to be healthy; but it suddenly became much more contracted; and, in one part, scarcely allowed the passage of the enterotome*. Its coats were greatly thickened;—the muscular tunic assuming that appearance which has been described as "hypertrophy." The mucous membrane was rather reddened; in some parts, uneven; and more firmly adherent to the subjacent coat than is quite natural. A few tubercles,—consisting of softened cerebriform matter, having the consistency of paper-hanger's paste,—were situated beneath the mucous membrane at this part. The intestine was not only thus altered in texture, but also took an unnaturally tortuous course, near to the part which is continuous with the colon. It appeared that this position of the gut contributed, scarcely less than its contraction, to produce the constipation under which the patient had laboured. The left round ligament was discovered beneath that portion of the colon which was bound down, as before related. It was traced almost as far as the internal extremity of its fellow. The remains of the ovaries were not found without considerable difficulty; but it appeared that they were brought into near approximation to each other almost immediately behind the internal, or divided extremities of the round ligaments; where they appeared to have concurred in closing the aperture formed by the removal of the uterus. The structure of both was considerably altered;—in consequence of their being throughout affected with fungoid disease.

"The fat within the pelvis, and surrounding the parts already described, was remarkably firm; and was interspersed with a few small scirrhous or fungoid tubercles. There was likewise a mass, of considerable size, presenting the texture and firmness of true scirrhus; and extending on the left side, from the parts before-mentioned, as far as the iliac vessels, which were implicated in it. Two or three small rounded calculi, were found within the pelvic veins. Neither the inguinal nor lumbar glands could be said to be much, if at all, enlarged; though one or two, in both of these situations, contained a small quantity of softened cerebriform matter. The distended intestines contained dark-coloured, unhealthy, pultaceous fæces. The appendix cæci was nearly filled with the same material; but also contained a little air. The mucous membrane of the alimentary canal appeared pretty healthy.

"The liver was also tolerably healthy.

"The spleen was remarkably small;—scarcely weighing one-ounce-and-a-quarter. It was deeply fissured; but its structure was natural.

"The right kidney was of the ordinary size, and healthy. The left, which was almost lost in its large tunica adiposa, was scarcely bigger than an almond; but its corresponding renal capsule was of at least the ordinary size."

* From *εντερον, an intestine;* and *τεμνω, to cut.*

Remarks by Dr. Blundell.—1. The continuance of the sexual desires, although the ovaries were so much changed in feature, and reduced to a mere vestige, is very remarkable. The fact, however, was ascertained beyond all doubt.

2. The good condition of the whole habit deserves remark; and the rather, because the left kidney was no larger than an almond, and the spleen was of small size;—scarcely weighing one-ounce-and a-quarter.

3. It deserves remark, too, that the parts which were contiguous to the original seat of the uterus, had become affected with organic disease. These parts were the head of the vagina, the back part of the bladder, the ovaries, the lumbar glands, and the upper part of the rectum.

4. It should be observed, further, that the general state of the contiguous parts was more healthy than we might have expected; that the state of the disease in these parts, with the exception of that found in the head of the vagina, did not wear a very formidable aspect; that the general condition of the health had not been much influenced by the disease which remained in the pelvis, or which had been produced afresh during the twelve months after the operation; and that it may be fairly doubted whether, subsequently to the extirpation of the uterus, the disorganizing changes (still, however, with the exception of those at the head of the vagina) had been increasing, stationary, or on the decline; though I think it more probable that they had been increasing.

5. After performing operations on the abdomen of the rabbit, I have, on examining the parts a few months afterwards, repeatedly observed there large balls or cysts*, as big as a moderate-sized orange, filled with a matter like custard; and this although, previously to the operation, the animals were perfectly healthy. I presume that there is no essential resemblance between the abdominal formations in these animals, and the cerebriform material formed in this case in the substance of one or two glands, and at the head of the vagina; but there is a sort of remote analogy, which merits notice.

6. When the operation was performed on Mrs. Moulden, I purposely left behind the indurated portion of the vagina†, discovered there on this dissection; for though it seemed an evil to do so, I deemed it, under all circumstances, a greater evil to remove it. For there would have been a risk lest she should have died upon the bed; which would most probably have ruined the character of the operation at once.

7. After inspecting the parts, my own opinion is, that if the woman had lived, the malignant disease would have been renewed; but on this point, of course, the reflective will judge for themselves. Whether the apparently malignant disease, at the head of the vagina, would have been renewed at all, if no part of the indurated structure had been left behind, may be doubted; and it may be doubted, too, whether, although this part was left behind, the disease would have been

* See Pages 754 and 755. † See Page 772.

reproduced with such a degree of rapidity, as speedily to bring her life or health into danger.

8. It may be satisfactory to some to know, that this account of the dissection proves that the womb was entirely taken away. The appearances on dissection, too, seem to confirm the opinion originally given, respecting the malignant nature of the disease*. Hence the case, as it now stands, demonstrates that a patient may recover after the extirpation of the entire uterus; and that, too, though its structure has previously undergone a malignant change.

9. The patient seems clearly, in this case, to have died from constipation;—produced, mechanically, by constriction and altered position of the bowel. When the disease first made its attack, the pulse was sound, soft, and under ninety in the minute, for two or three days together; and the patient had no inflammatory tenderness, though there was much spasmodic pain.

10. Considering all the circumstances, may it not be said that the case does not enable us to decide whether, after extirpation of the uterus, the cure may in general be expected to prove permanent? So far, however, as the whole case enables us to draw any conclusion, it seems to shew that there is a risk of a return; but I conceive more light is wanted to enable us to decide. It must not be forgotten that, in this case, an indurated portion of the vagina was left behind; and that, from a single case, no general inference can be drawn. That the glandular system was so little affected, is perhaps an auspicious circumstance.

11. The death of Mrs. Moulden occurred about twelve months after the operation. The womb was removed on the nineteenth of February, 1828; and she died in Guy's Hospital on the seventh of February, 1829. A week or two before her last illness, I saw her in high health and spirits; and it was then that she spontaneously used the expressive remark, that the nineteenth of February was her second birth-day.†

Case 3.—Mrs. A. B., aged thirty-three, the mother of six children (the last born seven years ago) of a constitution naturally healthy, came under my observation, reduced by malignant disorganization of the neck and mouth of the uterus, and upper part of the vagina. There was ulceration, flooding, and a copious watery and offensive discharge. The constitution was giving way; and it seemed probable that life would not be protracted beyond one or two months. Assisted by Mr. Callaway and Mr. Martin of Horsham, I extirpated the uterus, together with the diseased portion of the vagina;—the woman living for thirty-nine hours afterwards, but never thoroughly rallying. She expressed herself highly gratified with the relief of her central pains; but the skin remained clammy; the pulse, small and weak, ranged between one-hundred-and-thirty-five and one-hundred-and-forty-five in the minute; and there was a continual feeling of debility, mixed with that kind of composure, which is so often observed at the

* See Page 770.

† These details of the death and dissection extracted from the "Medical Gazette;" No. 77; Volume 3; Pages 797 to 801. May, 23, 1829.

fatal close of puerperal fever. Though no ligatures were applied, only six or eight ounces of blood were lost during the operation. The womb was as large as a goose's egg. All parties were candidly informed of the great danger of the operation before it was undertaken; and the patient herself was anxious that it should be attempted;—as she felt herself without any other hope. From examination after death, it appears that the diseased mass was entirely removed, without any injury to the intestines, bladder, ureters, or urethra. Mr. Green and Mr. Callaway very carefully inspected the body. The bladder had fallen into the chasm formed by the removal of the uterus; so that it lay upon the front of the rectum, and closed the head of the vagina. In the cavity of the pelvis, there were two or or three ounces of bloody serum; which might have been easily discharged by passing the finger betwen the bladder and rectum. The formation of adhesions had begun.

Case 4.—Mrs. ——, aged forty, of dark complexion, spare make, and the mother of several children, laboured under scirrhosity and thickening of the neck of the uterus, and about a quarter of the vagina above, with some ulceration; and feeling herself in a state of rapid decay, she was, together with her friends,—after the failure of other means,—anxious that the operation should be tried.

The vagina was lax and the uterus moveable. The dangers and the uncertainties inseparable from the removal of the uterus, in the present state of abdominal surgery, were candidly laid before all parties concerned. Mr. Green of St. Thomas's Hospital, and Mr. Morgan of Guy's Hospital, considered that the constitution was not unfavourable for an operation of this kind; and as the patient still persevered in her wish, the parts,—consisting of the whole womb and the upper part of the vagina,—were removed. When the sides of the vagina and broad ligaments were cut through, the principal hæmorrhage occurred;—amounting, perhaps, to nine or ten ounces of venous blood. It was when the uterus was drawn down, that the principal pain and collapse were produced. After the operation, the pulse at the wrist became, for a few minutes, imperceptible;—afterwards gradually returning, and ranging between one-hundred-and-twenty-five and one-hundred-and-thirty in the minute; with occasional though not frequent intermissions. Large doses of the tinctura opii were given; and the patient lay, for the most part, composed; with occasional slumbers. Now and then a tendency to restlessness was observed; although a complete rally could not be obtained. From the time of the removal of the parts, the patient went on sinking; and died at the end of about nine hours, with scarcely a struggle. An examination, instituted next day by Mr. Green and Mr. Morgan, proved that the intestines, bladder, and ureters, remained uninjured. Two or three ounces of clotted blood, were found in the cavity of the pelvis; in a situation admitting of easy removal through the outlet. The womb was twice as large as in Mrs. Moulden's case*; and the vessels,—as appeared from examination of the womb itself, and of the parts within the pelvis from which it had been separated,—were of consider-

* See Page 769.

able size;—especially the veins. Death here seemed to be produced partly by the loss of blood, but mainly by the shock of the operation*.

Case 5.—Joseph Haslam's wife, aged forty-seven,—of light complexion, stout, not of unhealthy appearance, and the mother of thirteen children,—applied for relief in the beginning of April, 1830, in the following circumstances. She states that, in February of the same year, during the severe frost and snow, she exposed herself to cold at the time she was menstruating. The discharge disappeared suddenly; and, ever since, she has felt great uneasiness, and occasionally very severe pains, in the region of the uterus;—sometimes extending to the loins, and down the thighs. She has a very offensive discharge from the vagina. On examination with the finger through the vagina, the os uteri was felt to be of a scirrhous hardness. With the assistance of a speculum, an unhealthy-looking ulcer, somewhat larger than a shilling, was discovered on the posterior edge of, and rather within, the os uteri. As felt by the finger in the rectum, the uterus appeared harder than natural, and somewhat enlarged. The general health was pretty good. The patient had menstruated regularly, since she left off suckling her last child. She was directed to use a lotion, consisting of one part of the solution of chloride-of-soda, and sixteen of water; to have the ulcer touched daily with a strong solution of argenti nitras, by means of a camel-hair pencil; to take the extracts of hyoscyamus and cicuta three times a-day; an opiate when the pain was violent; and to have the bowels regulated by means of castor-oil. This plan of treatment was continued until the time she underwent the operation, without any material alteration. She was seen by Drs. Calvert and Bent; who considered her case to be hopeless. The latter recommended the muriated-tincture-of-iron to be used, in the same manner as the nitrate-of-silver; which was to be discontinued.

In the beginning of July she took to her bed. Not receiving any material benefit from the treatment above mentioned, and being aware of the malignant nature of the disease from which she was suffering, she inquired if it were not practicable to have the diseased parts removed by operation; and stated her willingness to submit to any measure, however painful, that would afford her a chance of recovery. She was told that no operation short of removing the entire womb, could possibly benefit her; that this was an operation attended with extreme danger; that every possible means should be taken to palliate her sufferings; and with this assurance she had better be resigned to her fate. This, however, was far from satisfying her. She continued to urge an operation at every succeeding visit. Her solicitations were parried for some time; but were at length consented to. With the assistance of Mr. Bennett, I performed the operation (at one o'clock, on Saturday, October 16, 1830,) in the following manner. Before, however, proceeding with the details of the operation, it may be proper to state the alteration that had taken place in the patient since her first application.

† These two "Cases of Extirpation of the Uterus, by Dr. Blundell," are extracted from "The Medical Gazette"; No. 49; Volume 2; Pages 733 and 734; November 8, 1828.

Her general health was impaired; but not more than might have been expected, from the long confinement and the suffering she had undergone. She was not much emaciated; but very pale. For the last seven or eight weeks, she had had a considerable discharge of blood (which she called "being unwell"). The ulcerations had extended considerably. The os uteri had quite a ragged appearance. In the upper parts of the vagina there was a little hardness; but no ulceration. Her pulse was small, and quicker than natural; her tongue tolerably clean; and her appetite not bad.

Operation.—The patient was placed on her back, with the legs bent;—as in the operation for lithotomy. The hands and feet were not bound; but each leg was supported by an assistant. Weiss's speculum ani was introduced into the vagina; and a portion of the neck of the uterus was seized with a pair of Lisfrane's forceps; which were passed between the blades of the speculum, and held by Mr. Bennett. The speculum was now withdrawn, and the uterus pulled down into the vagina; so as to be visible when the labia were separated. Another portion of the uterus was taken hold of by a second pair of forceps, similar to the former, and likewise held by Mr. Bennett. He was requested to raise the uterus towards the pubes;—so as to separate it as far as possible from the rectum; by which means the operator had a better chance of seeing the parts he was about to divide, and was also in less danger of wounding the rectum. The first incision was made (with a common scalpel) into that portion of the vagina which lies between the uterus and rectum;—dividing the mucous membrane and the fibrous substance of the vagina; but not penetrating into the cavity of the peritoneum. The index-finger of the left hand, armed with a straight probe-pointed bistoury, was passed into the wound; and the incision was continued, first as far as the right lateral ligament, and then as far as the left. Thus the posterior half of the vagina was divided.

The uterus was now drawn down towards the anus;—by Mr. Bennett's altering the position of the forceps; so as to expose the parts between it and the bladder. I then proceeded to make a small aperture in that portion of the vagina situated between the uterus and the bladder;—entering the cavity of the peritoneum. Through this aperture the index-finger of the left hand was introduced; and the incision was extended each way, as far as the lateral ligaments;—in a similar manner to that mentioned, in describing the division of the posterior parts.

At this period of the operation, the bladder was unfortunately punctured; and from three to four ounces of urine escaped at the opening. This was partly owing to a fold of the bladder being dragged down, with the uterus, from its natural situation; and partly to the quantity of urine which the bladder contained. It was intended that the catheter should be introduced prior to the commencement of the operation; but as the patient stated she had just evacuated the contents of the bladder, as well as of the bowels, it was deemed unnecessary.

There now only remained to be divided the lateral ligaments and the parts contained in them. The forceps being removed, and the

hand carried into the vagina (which was easily effected), two or three fingers were passed through the anterior incision, and the fundus of the uterus was hooked down by them. A strong tenaculum was deeply fixed into the uterus; and by it the latter was drawn down, so as partially to protrude at the os externum. The left index-finger was passed behind the right lateral ligament; which was then divided, together with the round ligament and fallopian tube. It was afterwards passed behind the left; which, with its contents, was divided in like manner.

The uterus was now completely separated; and was removed without any difficulty. Two or three small portions of hardened vagina were left in the pelvis;—to be removed at some future period, if necessary.

The operation was borne with very great fortitude. It lasted about twenty minutes; and not more than five or six ounces of blood were lost. The patient appeared somewhat exhausted; but not more than might have been expected after so severe an operation. A little brandy-and-water was given. Afterwards she was put to bed; and took sixty drops of laudanum.

Examination of the Uterus.—The uterus was rather larger than natural; and the os uteri was a complete mass of ulceration. On cutting it open, the walls of the uterus were found to be thickened, and exceedingly hard. The ulceration had not extended beyond the neck; the mucous membrane lining the body of the uterus had a healthy appearance.

8 P.M.—Complains of pains in the lower parts of the abdomen; which she attributes to wind; but without any tenderness, or distention. Countenance rather anxious; pulse one-hundred-and-twenty, and feeble.—Ordered fomentations to the abdomen; and thirty leeches, if the pain be not relieved in the course of an hour. The female catheter to be introduced, and allowed to remain in the urethra.

Sunday, 9 A.M.—Has slept several hours during the night. Pain relieved by leeches and fomentations. Took, at her own request, half-an-ounce of castor-oil; which was rejected in a few minutes. Still complains of sickness, and flying pains in the lower part of the abdomen. Has had no stool; urine passes freely by the catheter; tongue slightly furred in the centre, and dry, but moist on the edges; pulse one-hundred-and-twenty, and feeble; no fever.—Apply twenty leeches to the lower part of the abdomen. Let her take the saline effervescing mixture every three or four hours; and a second dose of castor oil immediately. Her diet to consist of milk-porridge and barley-water.

9 P.M.—Her general appearance is not so favourable as in the morning. Countenance rather anxious; complains of feeling low; and has been troubled very much with sickness. Has slept at intervals during the day. She is free from pain; the abdomen is soft; and pressure is borne without pain.—Ordered twenty drops of "liquor opii sedativus," with a little mint-water;—the dose to be repeated in two hours, if necessary; to have a little weak brandy-and-water; and to be kept very still and quiet.

Monday, 9 A.M.—Something better. Slept well till four o'clock; when the pain returned. She then took a second dose of "liquor opii sedativus;" after which she became easy, and fell asleep. Pulse the same as last night; tongue rather more furred, and drier; countenance more natural; is free from pain; has only had one evacuation. Abdomen a little too full, but not tender.—To take half-an-ounce of castor-oil directly; and to repeat the dose in three or four hours, if necessary. Continue the effervescing medicine.

9 P.M.—Scarcely so well. Complains of pain in the right hip and groin. It has continued for the last two hours. The bowels have been purged rather violently (four or five times); which has produced a good deal of lowness. Has been sick for the last hour. Pulse one-hundred-and-twenty, and feeble;—as yesterday. Has taken food several times, and slept at intervals.—Repeat the anodyne draught.

Tuesday, 9 A.M. (fourth day).—Something better this morning. Slept pretty well during the night. Abdomen soft, and not at all painful; pulse same as last night. Still complains of sickness; has not been purged since last night.—Continue the effervescing mixture.

9 P.M.—Not so well. Has been disturbed by the family. Abdomen a little fuller than natural; rather painful, but not tender; sickness has not returned since morning. Pulse one-hundred-and-fifteen, and rather stronger. Has had no stool since last night.—Ordered fomentations to the abdomen; to take another composing draught at night; and three drachms of castor-oil the first thing in the morning.

Wednesday, 9 A.M. (fifth day).—Something better. Pain relieved by the fomentations; pulse one-hundred-and-twenty; tongue rather furred in the centre; countenance more natural; abdomen still too large, particularly about the pubic region. Has had no stool. The urine has passed by the vagina since last night. The catheter was withdrawn; and found to be quite stopped up with thick mucus. It was cleaned, and again passed into the bladder;—when about an ounce-and-a-half of healthy urine came away. Has had a slight return of sickness this morning.—A common clyster to be administered immediately. She had a return of pain in the middle of the day. It was relieved after the bowels had been moved; and twenty leeches applied.

9 P.M.—Much better; quite free from pain. A little urine passes by the catheter; but more by the vagina.—Repeat the anodyne draught.

Thursday, 9 A.M. (sixth day).—Has had a good night, and continues better in every respect.

9 P.M.—Not quite so well. Catheter had got plugged up again; and the urine came away by the vagina;—causing severe smarting. In other respects, she is quite as well as in the morning. The catheter was removed, cleaned, and replaced.—To take another opiate to-night.

Friday, 9 A.M. (seventh day).—Has passed a good night; complains only of the smarting-pain in the vagina; catheter quite stopped up; no urine has passed by it for some hours.—The nurse

was shewn how to introduce the catheter; and was requested to withdraw it frequently, clean it, and introduce it again.

Saturday, 9 A.M. (eighth day).—Much better; pain quite gone; has passed a good night; bowels still quite open.

9 P.M.—Continues better.

Sunday (ninth day).—Still better.

Monday (tenth day).—No material alteration. She takes milk-porridge several times during the day. From this time she continued to improve.

On the thirtieth of October, a speculum was passed into the vagina. The parts appeared healthy; but on examining with the finger, the cicatrix felt hard and scirrhous. The puncture in the bladder was not perceived; but as the urine continued to pass by the vagina, it was too certain that the wound in the bladder was not healed. She was requested to lie upon her abdomen as much as possible;—so as to allow the edges of the wound to be in contact with each other. By this means it was hoped that union might take place.

On the fifth of November, she had a slight return of pain in her back;—striking down her thighs and into the groins. It was relieved by the application of half-a-dozen leeches and the hip-bath. At the present time (November 16, 1830) she appears better than she was before undergoing the operation. Her tongue is clean, her appetite good, and her countenance animated. She is unconscious of any other discharge from the vagina except the urine. To-day she has been requested to discontinue the catheter altogether; and to wear a piece of sponge in the vagina.*

SECTION 8.—EXCISION OF THE LOWER HALF OF THE UTERUS.

It was before observed†, that in those malignant disorganizations of the uterus which have been denominated "carcinoma", there are three parts of cure;—the radical, the palliative, and that which relates to the inflammatory part of the disease. The consideration of this subject we will now resume.

With a view to the radical cure of these malignant disorganizations of the uterus, the entire removal of the diseased parts (by means of the scalpel) has been recommended and practised; and I formerly endeavoured to lay down the conditions which were necessary, in order to secure even a small chance of success‡. Besides the excision of the entire parts, however, there is yet a second operation which may be proposed; and that consists in the detachment of the lower half of the uterus from its connexions, and the removal of this part by the knife, or some better-adapted instrument, which may act upon the principle of the scissors. In mentioning this operation, I must at the same time state, that we should be very blameworthy if we were, in the present state of knowledge, to introduce it into practice; but as an operation of this kind, in conducive circumstances, might

* "Case of Extirpation of the Uterus, by Dr. Blundell." Extracted from "The Medical Gazette." No. 166; Volume 7; Pages 587 to 590; February 5, 1831.

† See Pages 752 and 753. ‡ See Pages 762 and 763.

not always be found ineffectual, I think it right that we should not lose sight of it altogether. If any cases may at present be adjudged more favourable than others to its use, they are those in which,—the disease being in its earlier stage,—the ulcer has made but little progress; and though I am sadly fearful lest ulceration should be renewed in the parts which remain after the operation, yet I entertain a kind of hope, that this perhaps might not occur, if the mouth and neck, together with the whole apparatus of the mucous follicles in them (a sort of nidus for the diseased action), were removed.

Lisfranc's Operation.—Lisfranc, a Parisian surgeon, has recommended that, in the so-called "carcinoma of the uterus", we should (with forceps) draw down the diseased parts to the orifice of the vagina, and remove them, by instruments which act on the principle of the scissors, or with a scalpel. While, however, I cannot but applaud the man who has thus made it his endeavour to help the female sex in this last and most deplorable extremity, and while I feel persuaded in my own mind, that cases may now and then occur, in which,—if the ulcer be small, and the womb prone to descend,—an operator like Lisfranc might dexterously remove the parts; yet I must, at the same time, add that, in the "ulcerated carcinoma" of the English obstetricians, an operation of this kind is quite out of the question; and I express my opinion with the more freedom here, because a notion that an operation of this sort is both easy and effectual, might lead the thoughtless and enterprising to rush headlong into the undertaking, in cases where failure is certain. What may be expected to follow, if the surgeon plunges hooks into these parts; and, after tearing and failing, is obliged to relinquish his attempt? The "ulcerated carcinoma" of the English practitioner, in the great majority of cases, is too firmly fixed in the pelvis, to admit of being drawn down and removed in this manner. This is very much to be regretted; as the operation, if possible and effectual, would most probably prove much safer than the total extirpation before mentioned*, even though we suppose that operation to have been brought up to the beau ideal of its perfection. I must not omit to add, that the removal of the os uteri (in this manner) before ulceration commences,—merely in the way of preventive,—can, I conceive, never be justifiable till we have more certain diagnostics, by which we may distinguish the so-called "carcinoma" in this stage of the disease.

Operation of Oziander and Dupuytren.—By Oziander and Dupuytren there has, I understand, been performed another operation for this most distressing affection;—the "scooping out" of the diseased parts, as it may be called. I am not sure that I am master of the details of this operation; but so far as I can learn from those who have been present, it is proposed, in proper cases, to remove the diseased surface from the whole extent of the ulcer, by the operation of paring; and, in that manner, to come down upon a part which may undergo the healing process. Of instruments used in this opera-

* See Page 752.

tion, one (as I have been informed) bears some resemblance to the bowl of a tea-spoon;—formed, however, with trenchant, or cutting edges;—this cochleareform* scalpel being mounted on a shank and handle, so as to enable the operator to pass it up into the scirrhous hollow, and excise the surface by sweeping it round the cavity. In small ulcers of dubious scirrhosity, an operation of this kind might, I can readily suppose, prove successful; and it ought not to be lost sight of. I must observe, however, of this,—as of the two preceding operations†,—that although I deem it a duty to mention them, they are not to be performed, unless by those who have qualified themselves for the task, by a great deal of previous meditation and collateral knowledge;—

"Quid ferre recusent
Quid valeant humeri"‡.

Think of Horace and Dupuytren; and the well-known and often repeated fable of the frog that exploded, in attempting to emulate the magnitude of the ox; and beware of disgracing yourselves by rashly running upon undertakings to which, though possessed of much valuable knowledge, you may find yourselves incompetent.

Caustic Applications.—To destroy the diseased surface, arsenic and caustic§, actual (?) and potential, have been advised and tried; but, as I am told, with no encouraging success. The abuse of such remedies would be terrible. Do but think of a rash surgeon, with a red-hot iron in his hand! And yet, by the beginning of the next century, "intellect" being on "the march",—perhaps an operation of this kind may be practised.

[Cauterization of scirrhus or encephalosis, even when confined to the cervix uteri, will be indicated only when the tumours are of little volume; unless it be determined first to remove the diseased mass by excision, and to cauterize any remaining portion. Cauterization has been, accordingly, more particularly proposed in the first or second degrees of ulcerous cancer. It is true that scirrhi of little thickness may be thus destroyed, layer after layer; but besides the immediate danger of this repeated process,—the violent inflammation of the uterus and peritoneum which might ensue,—it is well known how rapidly carcinoma increases, when injudiciously irritated by caustics; and that not merely in the part itself, but throughout the whole uterus and neighbouring organs. Hence, cauterization is less to be recommended even than excision, when it is supposed that the disease has reached the body of the uterus, or that the ovaria are affected, or that the lymphatic glands of the pelvis and loins are congested and diseased. Every precaution must be taken to prevent caustic appli-

* From *cochleare*, "a spoon"; and *forma*, "resemblance".

† The extirpation of the whole uterus, and the excision of its neck. See Pages 752 and 785.

‡ "What your shoulders may be able to bear, and what they may be incapable of sustaining". *Horace, on the Art of Poetry; Lines* 39 *and* 40.—By this figurative expression, the poet inculcates the necessity of choosing, for a composition, a subject to which the powers of the writer are equal.—N. R.

§ From *καιω, to burn.*

cations from extending their contact or influence beyond the part diseased. This is particularly necessary in the employment of fluid substances applied with a pencil;—such as the nitrate of mercury, or muriate of antimony; or of solid substances which are very soluble; —such as caustic potassa. The nitrate of silver occasions less inconvenience; but is more superficial in its action; and its application requires to be more frequently repeated*.]

Objections to these Operations.—The great objection to every one of these operations is, that they leave within the body a diseased and indurated mass; which may renew the disease. The cases the most likely to receive benefit from them, are not those which we call "carcinomatous"; but those in which there is merely an ulcer, without a deeply-penetrating disorganization. Unhappily, few cases are of that kind; and, in ordinary practice, but few may be able to distinguish them. The obstetric diagnosis of organic affections of the abdomen, is usually, I believe, more accurate than that of general physic; —however arrogant, haughty, and stethoscopic; yet it requires further improvement. The speculum vaginæ, in many instances, is of great use; but its worth is not greatest here.

SECTION 9.—PALLIATIVE TREATMENT.

In malignant disorganization of a carcinomatous character, if the radical cure appear to be impracticable, it becomes our duty to palliate symptoms; and our practice here lies, at present, within a narrow compass;—to be, perhaps, enlarged hereafter. Under these malignant changes, large floodings sometimes occur; and quiet, coolness, recumbency, nourishment, perhaps (in some cases) topical cold, lead, turpentine, and plugging,—but rarely these latter remedies,— may be required. Mutatis mutandis, the treatment of flooding-cases will apply to these. If there is a loose fungous growth, we may consider how far this admits of removal by ligature; but it might be dangerous to increase the hæmorrhage by touching or contracting it; and perhaps the less it is interfered with, in any way, the better. The carcinomatous change is sometimes attended with inflammation;—the body of the uterus, the peritoneum, or the parts contiguous, becoming assailed. These inflammations are seldom, if ever, so violent as to endanger life; though much spasmodic pain and distress, whether of the womb itself, or perhaps of the intestines, may be sometimes produced. In many cases, the inflammation,—becoming extinct of itself,—may require no remedy at all; but if a remedy be required, perhaps laxatives, leeches, and fomentations may be found the best. The leeches may be applied in front of the abdomen, below the navel.

Anodynes.—The so-called "carcinomatous" change is not always accompanied with much central pain; but not unfrequently much pain is felt; especially as the disease makes progress. Anodynes are of invaluable use in these cases;—they are not always, perhaps, used

* Boivin and Duges, on Diseases of the Womb and its Appendages; translated by Dr. Heming; Page 243.

with that skill, and diligence, and perseverance, which their worth deserves. Opium, hyoscyamus, conium, lactucarium, and stramonium*, may all be used in their turns. Opium is the chief. Different preparations of the drug may be used;—opium in the crude state,—in extract,—in tincture,—in the form of Battley's "solution",—in the form of the "liquor morphiæ acetatis",—in the form of "black drop". The latter preparations are valuable, on account of the little distress which they occasion to the head. In different ways the anodynes may be administered;—taken into the stomach;—introduced into the rectum;—laid upon the skin (as a lotion of tincture-of-opium, for example), or rubbed into it (like mercurial-ointment). The measure of these remedies must be determined by the effect produced; nor is the largest dose of opium unjustifiable, provided it be the minimum which will relieve the pain. Unhappily there is no danger lest a bad habit should become formed. The patient is making a short journey to the grave; and all that remains to medicine is to lead her in peace along the irremeable† way;—to soften her litter;—to smooth her pillow;—with wise and gentle hand, to mitigate her suffering;—and to conduct her, undisturbed, into the presence of the never-failing friend of the miserable,—the genius of long, long-lasting repose!

Previous to the Ulcerative Stage.—Before ulceration occurs in this disease, there is an inflammatory stage worth much attention; because, by keeping down the inflammation, the fatal catastrophe may be delayed. Other inflammations of the chronic kind in the uterus, are very liable to become confounded with the carcinomatous; and though it may sometimes be impossible to make the distinction, yet the hardness, the openness of the os uteri, the darts of pain, the death of others in the family under the same affliction,—will often enable us to distinguish; and, in general, where we doubt, it is better to assume that the disease verges to carcinoma, and to treat it accordingly; and the rather, because this method of treatment seems to be well adapted also to mere chronic inflammation. Were any woman, however, now within my hearing, I should earnestly dissuade her to refrain, as far as may be, from attempting to form opinions on this point. That she must be totally unable to judge, when even the obstetrician himself, with all his examinations, may doubt, is perfectly obvious; and the misery which may be occasioned by a hypochondriacal and ill-grounded apprehension here, is exceedingly great.

Leechings above the symphysis; cuppings on the loins; a tepid hip-bath of eighty-seven degrees; a clear rectum; abstinence from the sexual use of the organs; relaxation of the alimentary tube; warm clothing; cool, but nourishing diet; iodine, perhaps;—these are the principal remedies here. It ought to be our great object to keep down action. Of course, the first attack of ulceration ought to be watched for with vigilance; as it then comes to be considered,—and not till then,—whether the radical remedies ought to be essayed.

* From *stramen*, "straws";—alluding to its fibrous roots.

† From the negative *ir*, and *remeo*, "to return".

SECTION 10.—TREATMENT OF THE EFFLORESCENT, OR CAULIFLOWER-EXCRESCENCE.

If the efflorescent excrescence be left to run its own course, it invariably, I believe, destroys the patient;—either by flooding, or by the more frequent serous discharges to which it may give rise. To obtain a complete cure in this disease, is exceedingly difficult; to alleviate it effectually, may be no easy task; yet I am by no means of the opinion of those, who think that we ought to sit down in desidious* apathy, with our hands in our pockets, without stirring one inch in good earnest, for the effectual relief of this disease:—

> " Suave mari magno turbantibus æquora ventis
> E terrâ magnum alterius spectare laborem"†.

It may be sweet and poetical enough, while secure on the rock ourselves, to see the vessel founder in the midst of turbulence and tempest; but surely there is nothing to be envied in the feelings of those, who can see a poor helpless woman sinking under this disease, without stirring the whole art to save her;—or, at least, to alleviate her sufferings, and to procrastinate the fatal termination of the disease; and yet this case is sometimes managed with very reprehensible inertness!

Removal by Ligature.—The greater number of the efflorescent excrescences which form in the genital cavity, are of too broad a basis to admit of a ligature; yet this is by no means the case invariably; for they are sometimes united with the womb by a pedunclular basis, and may be easily got away with the help of a ligature. In these cases, it is true, the disease may return at the end of a year, or so; but it is equally true that the patient, in the mean time, may gain flesh and strength; and may remain almost entirely free from discharge; and, for aught I yet know to the contrary, she may again be relieved in the same manner; even if the exuberancy of growth cannot be kept under, by the occasional use of caustic. Besides, our days are numbered, and life is made up of years; so that even in this view, one year of restored health and hope, is too large a portion of human existence,—in middle life, especially,—to be regarded with indifference. Examination alone can detect the cases well fitted for the ligature. If the texture is loose, and liable to be cut through with the thread, it is better not to tie the excrescence.

When complicated with Inversion.—Efflorescent and peduncular growths, of large size and malignant nature, are, in some rare instances, combined with inversion of the uterus. You may see a representation of this disease in Denman's plates. Such inversion would be a great advantage. I wish we had it in our power to produce it *ex arbitriis*‡. Should a case of this kind be committed to

* From *desidia*, " idleness."

† " It is pleasant, on the shore of a mighty ocean, to behold a mariner struggling with billows raised by tempestuous winds".—N. R.

‡ " At pleasure."

your care, I conceive that both the womb and the malignant growth might be extirpated by ligature at once. Nor is it impossible that this thought may contain a principle, which lies at the bottom of some valuable improvement of our operations of extirpation. As to the scooping or removal of the diseased mass and its basis by excision, I fear that this also will, in most cases, be inadmissible; and yet, as the disease varies much, both in the breadth and depth to which it spreads, I think cases may now and then occur, in which the whole may be effectually removed in this manner; more especially if it be seated merely, or mainly, upon the mouth of the womb.

Remedial Measures.—Whether or not any thing effectual can be accomplished by caustic, may, at present, admit of a dispute; and this remedy, therefore, deserves a passing consideration. The cases which promise most, are those in which the growth is not of broad basis, and where the growth has been removed by the application of the ligature. Under such conditions, the caustic may be applied;—in order to keep under the renewal of the excrescence. Lunar caustic I have known to be of sufficient service, to recommend it to future trial; but I do not venture to give an opinion of the actual cautery; though it might be easily applied; and I have had under cure a patient who would willingly have submitted, provided other means of relief had failed. In general, however, the disease is far too extensive to admit of these remedies; and then,—taking into view the fatality of the affection,—it may be worth a consideration whether we ought not, as in carcinoma, to extirpate the womb and adjacent vagina altogether. Anxious as I am that this infant operation should not be ruined by rash performance in ill-chosen cases, I would yet not dissuade from the use of it in cases of this kind;—provided circumstances are favourable, and there remain no other hope; and, in cauliflower-excrescence, there is less reason to fear a general contamination of the constitution, than in those cases of so-called "carcinoma", which we have made the subject of so much remark*;—malignant disorganizations, and excrescences from the genitals. More might be added, but the principles here laid down will, with a little modification, apply to analogous diseases.

Analogous Diseases.—It may be proper to add, however, that polypi of loose consistence, allied to the efflorescent excrescence, sometimes grow from the genitals;—that fungus excrescences, of very loose texture, sometimes form there;—that polypi may grow on the outer side of the uterus, and obstruct the pelvis, by falling down upon the bladder or the rectum; and may be mistaken for enlarged ovary (of which mistake I have seen examples);—that we may have mixtures of these diseases;—polypus (external and internal), indolent scirrhus, with a fungus growth, allied to fungus hæmatodes. Nor is there, perhaps, any one rock on which we are more likely to make shipwreck, when we first begin to make our diagnosis with care, than that of forgetting, after we have clearly detected the existence of one organic disease, that there may be co-existent with it another, equally

* See Pages 739 to 746.

important, though less obvious; and which, in our forgetfulness, is overlooked.

Concluding Remarks.—One word more on this topic, and I conclude. On passing their attention over the various abdominal or pelvic operations which have been suggested in this and the preceding pages, the inert,—the irresolute,—the wise in their generation,—the men of grave faces, and of somewhat stolid * understandings, who never venture beyond the commercial regions of the profession; —"pares negotiis neque suprà"†;—not to add the sedate and really prudent men of philosophic coolness,—the ballast of the vessel,—may all, perhaps, feel impelled, from various motives, to raise their voice against these dangerous innovations. Nor can it be denied that much may be urged on their side. The ultimate good from these operations may, in many instances, admit of debate. If these principles are absurd, they, like other parts of the healing art, may be converted into a bane, instead of a blessing; but of such gentlemen may I be allowed to ask, apart from morosity or petulance,—"What, then! Are not these diseases desperate under the present received modes of treatment? Has your method of procedure, during the last hundred years, discovered for them any better and more effectual remedy? May it not be found that the surgery of the abdomen and the pelvis, after it has received its last improvements, is not necessarily attended with those dangerous consequences which may now accompany it? Who, in this country, would have imagined, some ten or fifteen years ago, that the human uterus might be removed by the knife through the outlet of the pelvis? Who would have dared to assert the possibility of a recovery after such an operation? Would not a proposition of that kind have run the risk of being designated as insane? Well, then, from what has been done already, may we not hope, for the sake of suffering humanity, that much more may yet be accomplished? Ought we not, each in his place, to do our utmost endeavour in promotion of so desirable an object? If we are not justified in risking something,—that is, just as much as it is absolutely necessary to risk, not more,—in cases otherwise without hope, in what cases *are* we justifiable? Surely, if there is anything solid in abdominal surgery,—such as it may ultimately become,—it is the duty of us who are entrusted with the health of the human race, to do the utmost every way to improve it;—proceeding in this as in other generous undertakings;—not rashly;—not for the sake of notoriety or gain; but with a well-balanced spirit of caution and enterprise;—under the influence of a feeling never wanting in the generality of our profession,—the sincere desire to alleviate the sufferings of humanity;—often animating themselves with glorious and never-palling sentiment, so finely expressed by the noblest of orators, in an age when orators were noble:—"Nullâ in re propius ad Deos homines accedunt, quàm salutem hominibus

* From *stolidus*, "dull."

† "Adepts in business, but nothing more."

dando"*. In the opinion of the poets, the judgment of the Idæan shepherd† was justly rewarded with the fairest of womankind‡; but were I twenty years younger, I could scarcely refrain from maintaining, that no one can hereafter put in a more righteous claim to the possession of one of the most beautiful of these works in clay,—the vases of the species,—than the man whose judgment and labour shall bring to their utmost perfection the operations of abdominal surgery! Should this suggestion be hereafter adopted, I should be very happy to give judgment on the occasion; and you, I suppose, would all be eager enough to contend with each other for the prize!

[This disease is characterized by dyspepsia; lancinating pains; irregularity and ulceration of the os uteri, and neighbouring parts, with a fetid discharge; pain in the loins; and hectic fever. Either the latter or hæmorrhage kills the patient. The face is very pallid, and of a waxy appearance. The disease principally attacks old maids, or those who have borne many children. The means employed in treating it are leeches, iodine, iron, and detergent lotions of all kinds;—chloride-of-lime, sulphate-of-copper, sulphate-of-iron, &c. Myrrh used to be considered the best detergent§.

CHAPTER IX.

POLYPUS OF THE UTERUS.

Carcinoma of the uterus, which has been described already‖, is a disease by no means unfrequent in its occurrence; but polypus, a much more manageable affection, is not so often met with. It is, however, of great importance that this disease should be thoroughly understood; because, where it occurs, especially if the polypus grow in the higher parts of the genital cavity,—as in the neck of the uterus, or in its body,—very dangerous symptoms may ultimately be produced, or the patient may even sink; though, where the complaint is once thoroughly comprehended, it may, in general, be promptly removed.

SECTION 1.—CHARACTERS AND SYMPTOMS OF POLYPUS.

General Characters of Polypus.—In this disease you find growing a tumour, more or less round, firm, hard, insensible, generally smooth,

* "In no respect do men approach so nearly to the gods, as in imparting health to their fellow-men".—N. R.

† Paris; to whom, on Mount Ida, Juno, Minerva, and Venus appeared; that he might decide the disputed point of superior beauty. His verdict was in favour of Venus.—N. R.

‡ Helen, the daughter of Jupiter and Leda, and the wife of Menelaus. Her elopement with Paris gave rise to the Trojan war.—N. R.

§ Dr. Fletcher's unpublished Examinations. ‖ See Page 729.

sometimes efflorescent upon the surface, covered by the inner membrane of the womb or vagina, and connected with the genitals by a small part, differing in the proportion its size bears to that of the body of the polypus. The size of a polypus is very various;—at first not bigger than a pea; then becoming as large as a fist, as the fœtal head, as the body of a fœtus, and even larger than that, where it is unwisely suffered to continue. If the shank of the polypus be small,—say not bigger than the little finger,—the body may be of great bulk; or you may have a bulky shank,—as large as the wrist,—though the body of the tumour does not grow in proportion. In general, the genitals are sound where this growth appears; but other affections may concur with it; and which must not be forgotten. Generally, there is prolapsus of the uterus; sometimes there is inversion; sometimes there is scirrhosity; and, in connexion with polypus, you may have large tubercles in the substance of the ovaries. The seat of the polypus is various. It may lie out between the limbs under the eye; or it may lie in the vagina; or it may be concealed in the uterus, and shut up there;—like an ovum in the earlier period of pregnancy.

Symptoms.—[The symptoms which attend this disease are, first, a mucous discharge in considerable quantity, mixed at different times with blood. In some instances, the constitution becomes debilitated to an extreme degree by this symptom, before there is the least suspicion respecting the cause of it. Sometimes, instead of the mucous discharge being mixed with blood, large coagula of blood will be voided; and sometimes pieces of a ring-like form come away;—produced by a small quantity of blood attaching itself to the surface of the tumour; coagulating there; and, at length, sliding off, and coming away. In other instances, the blood poured out becomes putrid in the vagina, and tinges the discharges of a brown colour;—rendering them, at the same time, very offensive. This fœtor of the discharges induces, in the mind of the patient, and sometimes in that of the practitioner, a belief that the disease is cancer; and this opinion is confirmed by the sickness which generally attends the disease.

The discharges from cancerous sores are fetid, if great attention be not paid to cleanliness; but fœtor of the discharge is by no means peculiar to cancer; for whenever blood is retained and becomes putrid, this circumstance must attend; and if such rings of blood as have been alluded to above, form upon the surface of polypus tumours, there will be a difficulty in their sliding over the lower part of the tumour; because it is generally larger than the upper part, or that nearest to its neck. In this explanation, we see the reason why the discharges are so generally and necessarily offensive in this disease.

A sense of pressure, and of bearing-down, are also found in this complaint; and these symptoms are proportioned, in degree, to the size and weight of the tumour. Pain is likewise referred to the back and groins.

If the tumour should be large enough to fill the cavity of the pelvis, it may, by pressing upon the rectum, and upon the meatus urinarius, prevent the free evacuation both of fæces and of urine. Such cases are, however, uncommon. It more frequently happens that strangury attends the complaint;—owing to the sympathy between the os uteri and the bladder. The sympathy between the stomach and the uterus is sometimes excited; and frequent vomitings distress the patient exceedingly.

Here, then, from one cause, are three symptoms producing great weakness;—an increased secretion of mucus, hæmorrhage, and vomiting, with derangement of the digestive powers; by which alone the strength can be recruited.

Necessity of an Examination.—Whenever such symptoms as those just mentioned are present, it is the duty of the practitioner consulted to make an examination per vaginam; in order to ascertain whether any organic disease exists. In the course of the year 1820, the author* operated upon four cases of polypus of the uterus;—the disease never having been suspected by the medical attendant. In two of the patients, dropsical symptoms had taken place to an alarming extent; but they ceased upon the removal of the tumour. All the patients recovered. The true character of any disease of the internal organs, can only be ascertained by an examination. This will discover an insensible tumour projecting through the os uteri, by which its neck is entirely encircled; so that the finger can be passed completely round it.†]

A case of this kind occurred to my predecessor, Dr. Haighton;—a man of solid sense and uncorrupt integrity; to whose precepts I owe much, and still more to his example. In this instance, the polypus was not brought under his notice till several days after delivery. Its size was equal to that of the head of a full-grown fœtus; and, by the help of a ligature, it was removed in the course of five days. The lady afterwards conceived again; and was delivered of a large child, under the care of my friend Mr. Gaitskell, of Rotherhithe.

SECTION 2.—TREATMENT OF POLYPUS.

In the treatment of this disease,—and to this I next proceed,—the first principle (undisputed, I suppose, by those who are possessed of experience in the management of these morbid growths) is, that the polypus ought by all means to be extirpated; for, unless it be removed, it will continue to grow larger and larger, till it utterly wears out life; and this, especially, if it be shooting from the upper part of the uterus, or even from the neck.

Extirpate as Early as Possible.—It is, moreover, of vast importance, not only that the polypus should be extirpated, but that this extirpation should be accomplished as early as possible. The practitioner

* Sir Charles Mansfield Clarke.

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part I; Chapter 16; Pages 257 to 260.

sometimes falls into an error which is very great. Not being accustomed to make an accurate diagnosis of genital diseases, he does not discover the existence of polypus for months, or perhaps for years; and the consequence is that, originally as large as a walnut, it may become at last as large as a child's head; and it may bring on prolapsus of the uterus, and a great deal of mucous or sanguineous discharge; all of which may be prevented, in a great measure, when the polypus is extirpated early. If the polypus is shut up in the uterus, where it is not to be felt, the practitioner may be excused; but when it is not shut up in the uterus,—when it is seated in the vagina, or lying beyond the external parts,—whether it grow from the neck or from the upper part of the uterus,—if suffered to become as big as the closed hand or the fœtal head, it is a disgrace to our art; and yet these great mistakes often occur. Lay this down, then, as a most important part of your practice;—that polypi are not only to be taken away, but that they are to be extirpated early;—as soon as they are discovered;—as soon as it is practicable.

Different Modes of Extirpation.—There are different modes in which it has been proposed to extirpate these polypi. Some have been burned; some have been torn; some cut away; and some have come away of their own accord. If a polypus be connected with a shank of a size little more than that of a thread, you may take it away with the fingers. But where it is of large size, I think the best mode of proceeding is with the ligature; applied by means of one of those instruments, of which I shall now speak.

Necessary Instruments.—In order that the ligature may be applied, it is necessary that you should be provided with proper instruments. In the first place, you ought to have a wire well annealed, or a piece of ley-cord well covered with wax; or, (which will answer excellently) you may provide yourselves with some strong silk, or a small skein of silk covered over with twisted gold wire;—easily procured where they sell the materials of gold lace. The advantage of the wire-ligature is, that it cuts rapidly through the pedicle; and is, therefore, well adapted to those cases in which the pedicle is large. The advantage of the silk covered with wire is, that it acquires a certain degree of stiffness, but not such as to destroy its flexibility; and where a loop is formed, it will be the firmer and more easily fixed. There are different instruments for applying the ligature.

Levret's Instrument.—These contrivances consists of two tubes, lying side by side, and consolidated by solder. Through one of these tubes you pass one end of the ligature;—drawing it through, so as to bring it to the middle; and then you pass the other end of the ligature into the other tube; when you can easily form a loop.

Burns's Instrument.—There is another instrument mentioned by Burns;—a contrivance of his own. It consists of two tubes; united, not by solder, but by means of a third piece; which holds them together, and may be removed at pleasure. In using the instrument, you are to put one end of the ligature down the one tube, as before; and the other down the other;—by which you make the

loop; and then,—carrying the instrument up so that its point may lie on the shank of the polypus, and bearing one tube down one side of the polypus, and the other down the other side,—you bring them round the shank of the polypus till they meet;—afterwards binding them together, by means of the third piece.

Hunter's Polypus-Needle.—After all, however, one of the best instruments I know, for introducing the ligature, in ordinary cases, is what is called "Hunter's polpyus-needle". This needle consists of a stem of iron; which stem, though flexible, is nevertheless very stiff; so that you can give it what curve you please, and it will keep that curve. At one end of this stem, there is a loop or eye; at the other end you have a handle, to which the ligature is to be fastened. There are different modes in which the instrument may be used; and I will mention all of them; for sometimes you will find *one* convenient, and sometimes the *other*. First, form a loop, by putting the ligature through the eye of the polypus needle; and then, by means of the finger,—if the polypus be small,—carry the loop over the shank, draw it tight, and tie it to the handle. A second method of applying the ligature, is to put only one end of the ligature through the eye of the needle; to carry two fingers of the left hand up to the shank of the polypus; and then to pass the eye of the needle into the same situation, guided by the two fingers. The needle thus placed, may be passed all round the polypus;—carrying the ligature, of course, along with it; and in that manner it may be made to include the shank. The ligature thus put round the pedicle, you draw down the needle with care; so as to bring the eye under sight; and then, passing the second end through the eye, you draw it tight; when the polypus is secure. There is yet a third mode in which you may apply the ligature with this instrument. As before, you put one end of the ligature through the eye of the needle, and carry it up to the shank of the polypus. Then you get the other end of the ligature into your fingers; and, by means of the fingers, pass it round the shank. This done, you put the second end through the eye of the needle, draw it tight, and constrict the polypus. By any of these three modes, the ligature may be applied;—sometimes by the one, and sometimes by the other, as circumstances may require. When you have placed the ligature on the shank, you may then draw it tight, and fix it to the handle of the needle. You will find there ivory studs, formed for this purpose; and to these the ligature may be very easily secured.

Time for Applying the Ligature.—It is a point of no small importance, in applying the ligature, to determine when this application is practicable; and when it is not;—always recollecting that the sooner the operation is performed, the better. There are some who advise that we should wait till the polypus comes down, and lies out between the limbs; and that then we should apply the ligature. But how should we ourselves like to be left, bed-ridden, in this way, for weeks, months, and years, with a tumour; giving rise to great discharges of blood; when the removal of it, in the course of

a week or a fortnight, is known to be possible? It is true that many women, like their own tea-urn, are merely transferred from room to room; but though they are not very locomotive beings, yet to leave them lying in this situation (suffering a great deal of pain, and subject to danger) when the remedy could be so easily applied,—is it not cruel? If I were to treat a patient of mine in this manner, I should consider myself most iniquitous and unjustifiable! There are others who, with more good sense, advise that we should wait till we feel the pedicle of the polypus; and that the ligature should then be applied. For ordinary use, I think this rule is not bad. In my own practice, however, I have adopted another method;—not, I conceive, without advantage to my patient. That rule is the following:—Having ascertained that there is a polypus, I sit down; and, with the utmost care and attention, consider the position of the polypus, and what little manual skill I possess. My manual skill having been compared with the difficulties of the case, I make the attempt, if success seem probable;—whether I have felt the pedicle or not; at the same time telling the patient,—as success is doubtful,—that the attempt is made only for the sake of promptly curing her, and that it is uncertain whether I shall succeed. On the other hand, if I conceive the application of the ligature to be impracticable, I do not attempt it. When you become dexterous operators, I would recommend this rule to your adoption; but if you are (as at first you must be) unskilful, then you had better adhere to the common rule of applying the ligature only where you feel the shank; and where the shank is not to be felt, perhaps it may be better to wait, or to send for more able assistance. Voluntary "forcing" brings the shank more within reach. It may be lower in the evening than in the earlier part of the day. Polypi may be drawn down a little by the forceps, or by a ligature passed through the body with a needle; but the drawing of them down, unless with much caution, is unsafe.

Keep Clear of the Os Uteri.—In applying the ligature, it is a point of no small importance to keep clear of the os uteri;—so as to include no portion of it. Not that every woman who has a portion of the womb included in the ligature will die; for there is no doubt that a part of the uterus may be included without fatal consequences. Indeed, I have myself extirpated the whole uterus by ligature; but certainly the woman will suffer more pain, and the operation will become more dangerous, where any part of the uterus is included. To secure us from this accident, different rules have been laid down; and all those rules are worth consideration. It is a rule of Dr. Hunter, that you should feel the os uteri; and certainly where you can distinctly feel the os uteri, you may, in general, avoid that part, by putting the ligature below it. That you should be careful to apply the ligature where it occasions no pain, is a second rule of great use; for, as I said at the outset, polypus is insensible; and if you find the woman does not feel the ligature at all when you first apply it, and that pain does not supervene in the course of a few

hours afterwards, then you may be well satisfied that no part of the uterus is included; or that the irritation is so small, that it is not worth consideration. There is yet a third rule, which you will find useful in dubious cases (for I speak here of dubious cases only);—I mean, the application of the ligature pretty close upon the body of the polypus, rather than high upon the shank. Some polypi have the pedicle elongated; and if I could feel the os uteri and clear it, I would put the ligature upon the upper part, so as to take it away; but if I could not feel the uterine mouth, I would put the ligature pretty low down; because,—from the experience of others, and not my own,—it seems that where the body of the polypus is removed, the shank will afterwards moulder away. In general it is easy enough, under these rules, to avoid the constriction of any portion of the uterus.

Time required for the Removal of the Polypus.—The time that is occupied with the operation of removing the polypus, varies according to the tension of the ligature, and the size of the pedicle; which may be as big as the finger, or as the wrist. Much, also, depends on the ligature itself; which may be thicker or smaller, and of more or less incisory power. An average term may be about six or eight days. I have known a polypus which required, for its removal, fifteen or sixteen days; and it may come away in the course of two or three. A very small polypus, with a very delicate shank, may separate directly you apply the ligature. During the course of the operation, you ought to see the patient once or twice every day;—in order to satisfy yourselves that she is doing well. If there be no irritation, then all is secure. If, on the other hand, there is a great deal of excitement,—with pain about the centre of the body, hips, back, thighs, and so on,—you may, probably, moderate it by putting the patient on the antiphlogistic plan; but if the symptoms still exacerbate, then you may slacken the ligature (which is very easily done);—constricting it after the symptoms are removed, and again slackening if the symptoms of irritation again appear. If they come on frequently and severely, you must, I suppose, abstract the ligature altogether, and wait for a more favourable opportunity. Such cases are very rare. They are most likely to occur where you have included some portion of the uterus.

Evacuate the Bowels before the Operation.—Before the ligature is applied, the bowels should be clear; and the bladder evacuated. The patient may then be able to lie quiet for a considerable time after the application of the ligature. When she moves about,—unless great care be taken,—the polypus-needle may be struck at the inferior end; and the upper extremity may be driven through the vagina;—so as to inflict a serious injury. There are some needles contrived with shields; the effect of which, where the shield is brought to its bearing on the vulva, is to prevent the instrument from entering further into the vagina. A screw is wrought, in these instruments, on the shank of the needle; so that you may elevate or lower the shield at pleasure. These shields, however, are cumber-

some; and, provided the patient be careful, unnecessary. When I have applied the needle, I have been accustomed to tie a ribbon round the handle, and then round the limb. This has the effect of keeping the needle more steady, in one position. I explain to my patient what the object of the instrument is. I state the risk of injuring herself by moving it. I tell her never to stir needlessly, and never to stir without laying hold of the handle; and then, if attention be not wanting, there will, as before said, be no danger and no necessity for a shield. The best shield on this, as on many other occasions, is prudence. Opium should be resorted to if the woman is very restless. The Lancaster "black-drop" may be found very effectual; but different opiates may be tried.

Removal of the Polypus after Tying the Ligature.—If there is a good deal of fœtor under the application of the ligature, it has been supposed that, after we have tied the shank, we might cut the polypus away. That, however, is dangerous. In a case of polypus joined with inversion, the womb was cut away; and it cost the woman her life. The practitioner was not aware of the inversion. There was such an oozing of blood from the surface exposed by the operation, that the patient died collapsed. I will not say that this will always be the case; for sometimes, I apprehend, the polypus might be cut away with impunity;—especially after the ligature had been constricted for a day or two previously; but, in other cases, it may be dangerous to resort to the knife. If the polypus lie out between the limbs, when you are called to operate, it is said that a good method to prevent putrefaction, is to cover it all over with charcoal, and to envelope the whole of it in cloth. The pyrolignous* acid may be of use here. Where, however, the polypus lies in the vagina, this is not practicable; but every time you see the patient, you may throw up half-a-pint, or a pint, of water;—so as to purify the vagina as far as possible. When you visit the patient, and examine the ligature, you will find it becomes daily slacker and slacker; and you are to tighten it continually, till it cuts completely through the shank. In the majority of polypi of small size, when the ligature has made its way through the shank, the mass will be, in a great measure, wasted away; but where polypi have acquired a great size, and are become as large as a child's head (for example), and very firm, they may remain in the vagina, even after the shank is cut through. Such polypi, detached from the uterus, it may, at first, be impossible to get through the orifice of the vagina. If, indeed, they can be removed without danger, it is better to remove them than to leave such a decayed mass within the woman. Nevertheless, I assent to the opinion of Denman, that in cases of difficulty, you would be justifiable in leaving the mass until it is softened down by putrefaction; for it is a well-ascertained pathological fact, that this mass, in a state of putrefaction, may be left within the vagina, without necessarily occasioning danger to the patient. If you observe typhoid, or other symptoms of poisonous influence manifesting them-

* From πυρ, *fire*; and *lignum*, "wood".

selves, then the mass is to be removed. If you find difficulty in removing it, then you may abstract it with the forceps;—just as you would bring away a child's head; or you may apply an instrument like a forked hook, contrived for the purpose. This instrument, conducted by the fingers, is to be carried up the vagina, and plunged into the body of the polypus;—great care being taken not to injure the woman. After the polypus is removed from the vagina, you may then make an examination of the parts above;—in order to see that there is not another. It rarely happens that there is a second polypus; but it sometimes occurs that, instead of one polypus, there are two or three.

Polypi may prove fatal by conjunction with other disease; by flooding and collapse; or by a failure of the powers under the use of the ligature, where too long delayed. Two women I have seen perish in this manner. In general, the ligature cures effectually; and the art and the artist deservedly gain much reputation. I would advise you, therefore, to study the disease with care.

Prognosis.—[The prognosis, in cases of polypus of the uterus, may generally be favourable; since the operation is not dangorous; and even where the debility induced is very considerable, the patient generally recovers. But this assertion applies only to the *true* polypus. The tumour which resembles it, and which has been described by Levret and by Herbiniaux by the name of "vivace"*, although admitting of removal by the ligature, is disposed to return;—other newly formed irregular portions shooting down into the vagina, with a rapidity of growth not belonging to a polypus. Several years ago, the author saw a case of this kind with Dr. Turner, formerly physician to St. Thomas's Hospital. The operation was performed four times; and, at each, a tumour weighing nearly two pounds was removed. The patient at length sunk under peritonitis.

It is not here intended to prohibit the application of a ligature round such tumours. Their size, the inconveniences arising out of it, and their disposition to become putrid in part, may render such removal advisable; but the patient should be prepared for disappointment; and the friends should be made fully aware of the essential difference between the two diseases.†]

SECTION 3.—VARIETIES OF POLYPUS.

So much, then, respecting polypi generally. I now proceed to make an observation or two on the particular varieties of polypus which you are likely to meet in practice.

Mild Polypus of the Vagina.—You will sometimes find the milder polypi growing from the vagina. Obstruction is the principal incon-

* The fungous excrescences described in the last Chapter are here alluded to. See Page 789.

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 16; Pages 265 and 266.

venience occasioned to the patient; and they are easily taken away by ligature.

Polypus of the Os Uteri.—Other cases there are, where the polypus grows from the mouth of the uterus. What I wish you to notice particularly here is, that as the polypus becomes larger and larger, the shank enlarges also, and the characters of the os uteri are merged in the pedicle; so that the mouth lies flat upon the shank; and all the trace that appears of it, is merely an aperture found in the shank of the polypus;—insomuch that, if you had never heard of this circumstance, you might mistake, and think there was no os uteri at all, or that you had got an inversion of the uterus. In this case, too, —namely, where a polypus is growing from the os uteri,—sometimes the substance of the womb seems to enter into it, and to become part of it; which makes it more difficult to apply the ligature, without enclosing a portion of the womb.

[In polypus of the edge of the orifice, or lip of the uterus, the stalk does not enter the orifice, but grows from the edge of it. It feels as if a portion of the lip were first prolonged into the stalk, and then enlarged into the body of the polypus. It is important to remember that there is a polypus, the stalk of which is not encircled by the orifice of the uterus. If it grows from the orifice, it cannot be encircled by it.*]

Polypus of the Cervix Uteri.—Again: where the polypus is growing from the neck of the uterus, it may occasion much pain, and a great deal of flooding; and it is by the flooding, and by the examination to which you are led, that you are enabled to distinguish the case. It is said, too,—though I never observed it,—that where the polypus grows from the neck of the uterus, it is sometimes surrounded by the os uteri, like a ligature; and that it cuts it through.

[In polypus of the cervix uteri, the finger cannot be passed quite round the stalk of the polypus. It may be passed partly round it; but it is stopped when it comes to that part where it is attached to the neck. The stalk of the polypus is only *semi*-circled by the neck of the uterus.†]

Polypus of the Fundus.—Another variety of polypus, is that in which the latter grows in the cavity of the uterus. It may, when it has formed in the cavity of the uterus, lie out between the limbs; or it may lie in the cavity of the vagina;—having come down from the uterus, just in the same manner as an ovum descends in a case of miscarriage. It may, too, be shut up in the uterus; and then there may be a great deal of difficulty in discovering the case, and in ascertaining what is the cause of the symptoms. The symptoms occasioned are floodings; together with a great deal of cutting, grinding, and forcing pain;—such, in short, as are produced by miscarriage; though, perhaps, in a woman unmarried. Be it observed, that when

* Dr. Robert Gooch's "Account of some of the Diseases of Women"; Third Edition; Pages 245 and 246.

† Dr. Robert Gooch's "Account of some of the Diseases of Women"; Third Edition; Pages 244 and 245.

a polypus forms in the uterus, it may leave it early; and when it leaves the uterus, it may leave it suddenly. There is a strong pain, and it comes forth;—the patient being astonished to find a large body lying between the limbs; when, perhaps, she was not before aware of any mass having been formed within her person. In other cases, it leaves the uterus in a more gradual manner; especially when it comes away early, little by little; so that it is difficult to say when it was that the polypus first appeared. In this variety of the disease, it is very easy to apply the ligature when the polypus is out of the uterus; for then it lies completely in the vagina, and within your reach. But there may be more difficulty when it is lying in the uterus itself; and none but a dexterous accoucheur could operate then; though I have no doubt that, by a proper instrument,—Hunter's needle, for example,—this might sometimes be done.

[In polypus of the fundus uteri, the stalk is completely encircled by the neck of the womb; and if the finger can be introduced into the orifice, it easily passes round between the stalk of the polypus and the encircling neck.*]

Polypus of the Vagina, with Constriction.—There is yet another variety of polypus to be met with; and that is a polypus forming in the upper part of the vagina;—growing either from the neck or from the mouth of the womb; and this accompanied with a constriction of the upper part of the vagina;—so that when you introduce the finger, the upper part of the vagina appears unusually short; and it is difficult to ascertain the case. You must examine very carefully, to find out where the polypus is growing; and when this has been discovered, the ligature may be applied;—provided you can open the constricted part a little, so as to allow the fore-finger and the needle to pass along; but some dexterity is required. I know the ligature can be applied in such cases; for I have done it myself. In one instance, where vast quantities of blood were lost, I was requested to see the patient;—the case being deemed desperate. It was in this case that I made a resolute effort to apply the ligature, and succeeded;—the woman ultimately recovering; which shows the practicability and utility of the attempt.

Polypus of the Vagina, with Adhesion.—I have seen a sixth variety of polypus;—fatal in its termination. It occurred, many years ago, in one of the "sisters"† in the other hospital‡. It sometimes happens that the round polypus, lying in the vagina, contracts adhesions with the surrounding parts; so that you feel the lower frustum (a rounded hemispheroidal mass); but you cannot feel the pedicle. I examined this woman once in the hospital, and once only; and I did not clearly understand the case, which I had never met with before;—nor have I met with it since. On the very night I made the examination, or soon afterwards, she died; so that there

* Dr. Robert Gooch's "Account of some of the Diseases of Women"; Third Edition; Page 244.

† Nurses. ‡ St. Thomas's.

was not time for much investigation. The parts were brought to me afterwards; and I found them just as I have described. I found, too,—which is the great practical point I wish you to attend to,—that those adhesions could be very readily separated with the fingers; so that if I had known, a few weeks before, what was the nature of the disease, I could readily have detached the polypus, and applied the ligature. Nor would the discovery of its nature have been difficult. Let not this remark, however, lead you rudely to attempt the detachment of masses of the scirrhous kind, mistaken for polypus. The error might produce fatal consequences.—Beware!

Polypus with Inversio Uteri.—There is yet another variety of disease to which women are liable; and that is inversion of the uterus coupled with polypus. The existence of the two masses marks the character;—first, the polypus; and then, the inversion of the uterus. In those cases, I believe the better way is to try the ligature; but understand that, instead of applying it to the pedicle of the polypus, you ought rather to apply it to the vagina;—so as to take away both the polypus and the uterus together at once. Of course the patient, in this case, is to be watched with a great deal of care. With polypus of the uterus, tubercular scirrhus is sometimes combined; and there may be scirrhus of the ovaries. Such cases are easily ascertained, in most instances, by competent examiners. Of course, the removal of the polypus by ligature, leaves the cure imperfect.

Polypus manifesting itself after Parturition.—Another variety,—one of rare occurrence,—is the polypus which manifests itself after delivery. It sometimes happens that a polypus forms in the uterine cavity, without the knowledge of the sufferer; and, conception occurring notwithstanding the presence of the polypus, both the ovum and the diseased mass grow together in the uterus. In some instances, no ill symptoms may be observed in these cases during gestation, or at the time of delivery; but after the fœtus has been expelled, the growth may descend into the vagina, with much pain and flooding; and there is probably some risk lest the uterus should become inverted or prolapsed.

Diagnosis.—Where polypi are growing from the cervix uteri, or below it, it is clear that they may, at any time, be discovered by proper examinations; for they are lying under your touch; except in the single case where, from constriction of the vagina, the polypus is shut up in a chamber formed for it, as before explained*; or in that other case, in which you have the polypus adhering to the surface of the vagina*. When, moreover, polypi grow from the cavity of the uterus, and have left the uterus, they are easily ascertained. Sooner or later they come down, and may then be removed; but the discovery is not equally easy, when the polypus is enclosed in the uterine cavity. Again: the principal symptoms produced by polypi, when they are lying below the os uteri, or growing from the os uteri or parts below it, are obstructions; when lying in the parts above, they produce a great deal of pain like miscarriages, with floodings; and a good deal

* See Page 802.

of mucous and sanguineous discharge. For myself, wherever I find that there is an obstinate bleeding produced, with pain about the hips and thighs, but without the woman's general health being much impaired,—except that she has an *exanguious* appearance,—I always suspect that there is a polypus; and direct my inquiries accordingly.

[In the treatment of this disease, the chief difficulty is in the diagnosis. When once detected, any surgeon (with a proper instrument) is competent to remove it; but the nature of the case is almost always overlooked; and when a tumour is detected, I have known the most experienced practitioners hesitate about its nature, and consequently about the propriety of the operation.

As there are often found in the vagina, tumours which somewhat resemble polypus, but which are very dissimilar in their nature and treatment, it is important to learn the marks by which they may be distinguished. The tumours which are likely to be mistaken for polypus, are the following:—1. The *prolapsed* uterus. 2. The *inverted* uterus. 3. Malignant *excrescences* from the uterus.

It is not likely that any man of moderate knowledge and experience, should mistake *prolapsus** for a *polypus* of the uterus. In prolapsus, the tumour has at its most depending part a palpable orifice,—that of the uterus,—into which a probe or bougie can be passed to the depth of several inches. The tumour is sensible; so that if pricked or scratched, the patient feels it. The tumour grows broader the higher the finger is passed; and the latter cannot pass high; for it is soon stopped by the angle where the vagina is attached round the uterus. The higher the tumour is pushed, the easier does the patient become. In all these particulars, a polypus is just the opposite. It has no orifice. It is insensible; so that if pricked or scratched, the patient does not feel it. The finger can be passed very high; and the higher it is passed, the narrower becomes the tumour. Lastly, the higher the tumour is pushed, the more uneasy becomes the patient. I have seen many cases of this kind, which gave occasion to doubts; but never one in which it became a question whether the tumour was *prolapsus*, or *polypus* of the uterus.

An inverted uterus†, being a rarer occurrence, is less likely to be met with; but when it is, it is more likely to be mistaken for polypus. When the uterus is only partially inverted,—that is, when its fundus alone is drawn down through its orifice into the vagina,—and the patient has survived for many months, the tumour feels exactly like a polypus of the fundus. The distinguishing marks are the time of its first appearance; which must have been immediately after delivery; and its sensibility. In the smoothness of its surface, the roundness of its body, the narrowness of its neck, and its being completely encircled by the orifice of the uterus, it sometimes exactly resembles a polypus of the fundus.‡]

* See Page 703. † See Page 806.

‡ Dr. Robert Gooch's "Account of some of the most important Diseases of Women"; Third Edition; Pages 253 to 255.

There is, I conceive, much room for improvement in the instruments used for extirpating polypus. One of the best is that which has been contrived by an intelligent and very able practitioner, Dr. Gooch.

Gooch's Instrument.—[The instrument which I use for this purpose, and which in numerous cases has assisted me easily through the operation, consists of two silver tubes, each eight inches long, perfectly straight, separate from one another, and open at both ends. A long ligature, consisting of strong whip-cord, is to be passed up the one tube and down the other; so that the middle of the ligature passes across from the upper end of one tube, to the upper end of the other; and the two ends of the ligature hang out at the lower ends. The tubes are now to be placed side by side; and, guided by the finger, are to be passed up the vagina, along the polypus; till their upper ends reach that part of the stalk round which the ligature is to be applied. The tubes are now to be separated; and while one is fixed, the other is to be passed quite round the polypus, till it arrives again at its fellow-tube, and touches it. It is obvious that a loop of the ligature will thus encircle the stalk. The two tubes are now to be joined;—so as to make them form one instrument. For this purpose two rings, joined by their edges, and just large enough to slip over the two tubes, are to be passed up till they reach the upper ends of the tubes; which they bind together immoveably. Two similar rings, connected with the upper by a long rod, are slipped over the lower ends of the tubes;—so as to bind them in like manner. Thus these tubes, which at the beginning of the operation were separate, are now fixed together as one instrument. By drawing the ends of the ligatures out at the lower external ends of the tubes, and then twisting and tying them on a part of the instrument which projects from the lower rings, the loop round the stalk is thereby tightened; and, like a silk thread round the wart, causes it to die and fall off.

The instrument, being thus adjusted, is to be left; but, every night and morning, the cord is to be untwisted from the shoulder of the instrument, drawn tighter, and then fixed again round the projecting part; and this is to be done morning and night. As the instrument projects out of the vagina, if the patient, while turning from side to side, was to sit down upon it, she might impale herself on it;—an accident which I have heard once took place, and terminated fatally. To prevent this, the late Dr. Clarke contrived a round flat wooden shield; which is fixed to his instrument so close to the outer orifice, that even if the patient was to sit down on the instrument, it could not be thrust higher in the vagina. I have always satisfied myself with making the patient understand the necessity for care in turning; but such a guard could easily be adapted to my instrument. If the projecting part or shoulders were made two inches broader, they would answer the purpose.*]

* Dr. Robert Gooch's "Account of some of the Diseases of Women"; Third Edition; Pages 260 to 264.

Illustrative Preparations.—I have several preparations which illustrate the characters of this disease. Some show the varying position of the shank of the polypus. In some, it is seated on the body of the diseased growth, towards the front of it; in the region of the bladder.—In some the polypus is large, and the pedicle small and slender; in others the reverse is the case; while others exhibit polypus complicated with inversion; in which case I would apply a ligature upon the vagina, and take away both the polypus and womb together.

CHAPTER X.

CHRONIC INVERSION OF THE UTERUS.

You will sometimes meet with cases of chronic inversion of the uterus so similar, in their character and management, to those of polypus, that there is, perhaps, no department of our subject in which they may be more properly considered than the present. Inversion of the uterus may, indeed, be occasioned by polypus; but in nineteen cases out of twenty, the disease derives both its date and its origin from delivery;—the womb being inverted during the abstraction of the placenta*.

Symptoms.—If a woman labour under a chronic inversion of the uterus, she tells you, on relating her case, that she has been ill ever since her last delivery; that she has since been liable to large eruptions of blood; that large concretions have been discharged, and have led to a suspicion of miscarriage; but that no embryo has been seen; and that these discharges end towards the monthly period;—returning every four or eight weeks. Her appearance is usually pallid and exhausted. If you examine the limbs, you find that the feet are beginning to swell; and you learn, on further inquiry, that the disease has existed, perhaps, for a term of one or two years. Meeting with symptoms like these, you may suspect, with reason, that there is an inversion of the womb; and if that be the case, upon examining the patient in the usual position, you will find the uterus lying in the vagina, just like a polypus; insomuch that, at first perhaps, you suspect the disease to be an ordinary polypus. When you feel the reputed polypus, as it lies in the vagina, on placing the other hand above the symphysis pubis, and searching for the fundus of the uterus, you cannot feel it there; and placing the fore-finger of the left hand in the rectum, and pressing it forward above the vaginal tumour towards the symphysis of the pubis, and with the first

* The placenta is separated from the interior of the uterus, after parturition, by the contraction of the muscular fibres which surround the mouths of the fallopian tubes. To separate the placenta, if retained, Magendie recommends the injection of cold water, mixed with vinegar, through the umbilical cord.—*Dr. Fletcher's unpublished Examinations.*

and second finger of the right hand urging the tumour back upon the rectum, you may (as it were) press the finger from the rectum above the head of the vagina, and satisfy yourselves that the womb is not there. If you have made an examination of this kind, and discovered a rounded body in the vagina, and no uterus in the ordinary situation, and the patient tells you she has been liable, for a year or more, to monthly floodings, and all this since her last delivery,—there can be little further doubt about the nature of the case. In distinguishing an inverted uterus from polypus, it may be no small help to recollect, that a genuine polypus is totally insensible; but that a great deal of pain may be felt on constricting the ligature, if the disease be inversio uteri;—and this, more especially, some two or three hours after the constriction. There is, too, in some instances, a disposition to vomit.

Treatment.—As to the treatment of this disease, it has been proposed that we should endeavour to stop the menorrhagic bleedings by injecting the decoction of oak-bark*, or a solution of alum, zinc, iron, or the like. I should recommend you to try what is to be done by this mode of treatment;—beginning with the weaker solutions, and then gradually increasing their strength, till you have reached the saturated solution, if necessary; and throwing up the injections largely, eight or ten times in the course of the day. The practice is peculiarly important when a woman is about forty-two; because, if you can support her for some two or three years, till the monthly uterine action is over, the bleeding will most probably cease, and she will no longer be liable to the disease. But I will suppose that the inversion has occurred in a woman who is much younger, and who is naturally disposed to a copious flow of the catamenia, with a good deal of uterine action. In such a case, you cannot check the bleeding; and what is then to be done? When I first entered upon the practice of obstetrics, it was supposed that these cases were desperate; and the woman was suffered to go on bleeding, month after month, till she died. But it is now a well-known fact,—and it is to Mr. Newnham, of Farnham, that we are mainly, if not solely, indebted for the establishment of this fact in modern practice,—that the womb may be extirpated by ligature, in the same manner as a polypus;—not, indeed, wholly without danger, but without that high degree of danger which makes it unjustifiable to perform the operation;—nay, I may say, without such a degree of danger as precludes a fair prospect of success. Mr. Chevalier first led the way to this operation, by extirpating the inverted uterus, in a patient considerably advanced in years. A case afterwards came down to Mr. Newnham, in which the woman was about twenty-six; and he applied a ligature, and extirpated the uterus, without (on the whole) much difficulty. After the case of Mr. Newnham, another, which occurred at Dartford, was put under my own hands, by Mr. Hurst, a respectable practitioner there. In this case, the woman had laboured under the disease for fifteen or sixteen months. If my me-

* The "Decoctum Quercus" of the London Pharmacopœia.

mory serve, there had been a great deal of bleeding, and dropsy had begun. In this woman the constitution was rather torpid; and, altogether, by no means unfavourable for the operation. I applied the ligature with Hunter's needle, as in the case of polypus; and in eleven days the uterus came away. It sloughed, and softened down; so as not to separate bodily, in the form of the uterus. The recovery of the patient was complete. Some three or four years afterwards, I saw a friend of the patient; and was informed that she was well in other particulars, but that she had never menstruated since the operation; and that she had occasionally a slight determination of blood to the head, now and then requiring a little precautionary depletion. It is now*, I think, six or seven years since the operation; and the woman is still living and well. During the progress of the removal, not a single bad symptom occurred; nor are patients averse, in these cases, to conjugal society. When Dr. Hull, of Manchester, was in town, he told me he had removed the inverted uterus by ligature, from a woman of a very irritable system. The removal of this uterus, like a game of chess, required no little tactics; and, as symptoms urged, he was obliged to slacken or constrict the ligature at different times; until, ultimately, the entire uterus came away, and the disease received checkmate at last. Now these are the only four cases in which I have had a more immediate knowledge of the application of the ligature, in chronic inversion of the uterus; and they have all done well. Indeed, I have even not heard of any cases in which the operation has been followed by fatal consequences; though such cases must, I presume, occasionally occur†.

Physiological Considerations.—If you ask me what is to be the result of an amenorrhœa produced in this manner, I should say, that the patient is likely to become plumper; and that there may be a determination of blood to the head; so that it may be necessary to apply cupping-glasses to the neck. If you ask me whether the removal of the uterus would destroy the sexual appetite, I should reply, that I believe not. If the ovaries are not taken away, I presume the sexual appetite does not suffer at all‡; nor am I sure that even the removal of these would always destroy it. If you ask me whether there is any risk of extra-uterine pregnancy, I should again reply, there is not; for, in the formation of an embryo, it is necessary that the male and female material should come into actual contact with each other; and this cannot be the case where the uterus has been removed§.

* A.D., 1828. † See Pages 151, 152, 445, and 759. ‡ See Page 774.

§ Inversion of the uterus is generally occasioned by pulling at the placenta, after parturition. There is a perpetual discharge; together with a tumour, nausea, pains in the loins, &c. Reduce the womb, if possible; if not, it may be removed. There is less danger in that operation in this case, than in prolapsus; because the wound in the peritoneum will be very small;—owing to its being compressed by the os uteri. The internal surface of the uterus has no sensibility.—*Dr. Fletcher.*

CHAPTER XI.

SCIRRHUS OF THE OVARIES.

In the same manner as women are liable to be affected with scirrhus of the *uterus*, diffused or tuberous*, so also they are obnoxious to scirrhus of the *ovaries*. Scirrhus, I think, is more frequent in the ovaries than in the uterus itself.

Nature and Progress of the Disease.—Of the two forms of disorganization mentioned, it is, I apprehend, the *tuberous* which most frequently attacks the ovary; and, therefore, when this viscus is enlarged, it is frequently the bumpy or tuberous surface which characterizes the disease. Sometimes, however, the scirrhous change which occurs is of the *diffused* kind;—the whole mass of the ovary enlarging, and the surface remaining equable and smooth. Under either form, the ovary may enlarge very much;—becoming successively as large as an egg; as large as the head of a fœtus at the full term of gestation; as large as the fœtus itself at the close of nine months; and, ultimately, even larger than this. The rapidity, also, with which this enlargement takes place, is liable to much variety; though, if the enlargement of the ovary be composed of solid material only, without dropsy, the growth will, I believe, be generally slow;—*months* it will certainly occupy, and more frequently *years*.

One or Both Ovaries Affected.—When the ovary becomes scirrhous, one side only may be affected with the disease, or the ovary on the opposite side may also be involved in the disorganization;—the two being affected in very unequal degrees; nor is this by any means uncommon. Scirrhus of the ovary may be associated with a similar disorganization of the fallopian tubes, the womb, and the remoter parts. These extensions of the disease are of no small importance. In *pure* scirrhus, of course,—as the very epithet implies,—no other disease supervenes; but now and then we meet with cases in which other disease combines with scirrhus;—inflammation most frequently;—abscess more rarely;—ovarian dropsy not uncommonly; and when the inflammation is superficial, the ovaries are very apt to contract adhesions with the surrounding parts.

Obstruction of the Vagina.—When the ovary is as large as the closed hand,—being of a size to fall into the recto-vaginal cavity, so as to obstruct the vagina,—it may become completely fixed there; so that you may not be able to press it above the brim. Or where the ovary is lying above the brim of the pelvis, superficial adhesions may take place; so as to connect the viscus with the intestines, omentum, and parts contiguous. In different cases of scirrhosity, too, there may be much variety in the condition of the basis of the ovary;—that part, I mean, by which it is attached to the sides of the pelvis, in the healthy condition of the parts; for sometimes the connexion is slender (not thicker than the finger), and sometimes as

* See Page 730.

broad as the palm of the hand; and the uterus and the ovary may be so far consolidated with each other, that to detach them is a work of some nicety.

Morbid Anatomy.—The whole of this subject,—the morbid anatomy of the scirrhous ovary,—and more especially that part of it which relates to the extension of the disease into the contiguous viscera, and to the nature, extent, and vascularity of the attachments, is well deserving of further investigation. So long as it is believed that the removal of these diseased parts, in any circumstances, is unjustifiable and hopeless, so long these inquiries may be looked upon as of speculative interest, rather than of practical importance; but if an expectation may be reasonably cherished, of improving abdominal surgery,—so as to render the extirpation of these parts upon the whole successful, in well-selected cases; and to enable us, at the bed-side, to discriminate the individual scirrhosities in which success is to be expected,—then it must be evident that the breadth, the vascularity, the nature of the attachments, the degree in which the disease may spread into the other parts of the body, together with the average frequency of these circumstances, may all be looked upon as of no small interest, even in the mere practice of our art; and I would, therefore, invite your attention to the inquiry. As the disease is not of uncommon occurrence, all the necessary information might, I conceive, be obtained in a short compass of time; provided the men of leisure or activity in the profession, would favour us with their communications, through the intervention of our periodical works. An account of dissections, drawn up with a view to these points,—if brief and discriminating,—would not occupy much space; and would have the advantage of occupying a blank, which might otherwise be filled up with the workings of frivolous or fretful feelings. By confining the communications to some two or three leading publications, they would be brought together under the mind of the same readers; and their juxta-position would probably give no small addition to their value.

Characters of the First Variety.—The characters of scirrhous ovaries are diversified, according to the age of the scirrhosity and its consequent bulk; so that, in practice, the two varieties of the disease must be distinguished from each other. Patients may sometimes come to you labouring under ovarian scirrhus, as large as a nine months' uterus; and where that is alone the cause of the enlargement, they will generally tell you they have been labouring under the disease for several years;—a very characteristic circumstance; the patient adding,—when you come to inquire more closely,—that this tumour, in the early period of its appearance, has seemed to lie (as we should have expected) rather in the inferior than in the upper part of the abdomen; and that, in the earlier stages, when she has examined herself,—by laying her hand upon the abdomen (as when lying in bed, for example),—she has felt the enlargement more on the one side than on the other; though you, perhaps, when you come to examine the intumescence, may not so clearly perceive

this lateral inclination. To ascertain this disease with certainty, an examination becomes necessary; in conducting which, you must proceed on the principles formerly prescribed; but the following particular hints may not be without their use:—Should you examine internally, and find a scirrhosity of the os uteri, or the vagina, you must not hastily infer that the ovaries are free from disease; for they too may be involved in the disease, together with the womb. When you examine externally, on placing the woman in the recumbent posture, and relaxing the abdomen, you may distinguish the intestines in the upper part of its cavity, by their yielding elasticity, and perhaps by a gurgling under the touch. When, further, you proceed to examine the parts below the epigastrium, you find that, at this part, the abdomen is much more solid and unyielding. Sometimes this hard substance may appear perfectly equable, or nearly so; but in other cases, and perhaps not unfrequently, you may distinctly perceive the tuberous, or lumpy feel, which is so frequently the effect of tubercles; and where this tuberous form clearly exists, it is a great help to you in marking the nature of the case. In the majority of cases, I think, you will find these characters concurrent. If, then, your patient have a tumour in the abdomen, of long standing; lying in the inferior rather than in the superior half of the abdomen; and inclining, in its earlier formation especially, to one or the other side;—if, again, on examination, you find the upper part of the abdominal tumour contains the intestines (to be distinguished by a little tact), while the lower part of the swelling is large, solid, and unyielding; and if this surface, sometimes equable and smooth, should be, as often happens, distinctly tuberous;—with such characters, there can be little doubt that a scirrhous disease of the ovaries exists;—either a scirrhus of one ovary only; or, together with the scirrhus of this ovary, a scirrhus also of the fallopian tubes, the uterus, and the ovary on the other side.

Characters of the Second Variety.—But sometimes patients will come under your care, labouring under the disease in its earlier stages. They apply, perhaps, when the tumour is no bigger than the closed hand; and, in these cases, the enlarging scirrhous ovaries may fall down between the vagina and the rectum; and give rise to symptoms which, if misunderstood, may occasion strange misapprehensions respecting the nature of the disease. In these cases there may be a great deal of forcing, aching, and dragging; and a feeling as if the interior parts of the body would come forth. If we inquire whether the urine can pass or not, we learn that an obstruction exists; and of the rectum it may be observed, that the compression there is so great, that solid evacuations will scarcely come away. Your patient, may also complain of a good deal of numbness in the lower limbs; with weakness, inducing her to lie much on the sofa; and she may have severe pains along the loins and thighs; with a ripping sensation in the course of the nerves, sciatic or crural. If you have once met with this variety of the disease, you will immediately suspect its existence, upon hearing the enumeration of these symptoms; and,

suspecting what its nature is, you may easily make an examination; when you find a tumour filling the pelvis, with the vagina passing before it, and the rectum behind it; when there can be little further doubt that there is an enlargement of the ovary, probably of a scirrhous nature;—the ovary being interposed between the vagina and the bowel.

Characters of the Third Variety.—But it more frequently happens,—and this is a third variety of the disease,—that where the tumour is not of a very large size, it is nevertheless so large, as to take its place above the brim of the pelvis;—lodging (either to the one or other side) in the hollow of the ilium. Where this is the case, the patient frequently suffers so little inconvenience, that she does not apply for help at all; until, at length, pain and inflammation are excited; when she is led, by her uneasiness, to consult the accoucheur;—telling him, perhaps, that she feels as if the head of a child were lodging in one side of the pelvis. On hearing this, you lay the hand upon the abdomen;—the woman being in the recumbent posture, the bladder evacuated, and the abdominal coverings thoroughly relaxed; and then, perhaps, the tumour may be distinctly felt. Where this is effected, it gives at once a pretty decisive character to the disease; for in most, though not in all cases, where you have a round firm tumour in the side of the false pelvis, and more especially if tuberous, a scirrhosity of the ovary will be found to exist.

Treatment.—In scirrhus of the ovaries, sometimes (indeed generally) the health is not very much impaired; and the woman suffers but little. The less, therefore, it is interfered with the better. Now and then, you will find a good deal of pain in the centre of the body;—about the pelvis, I mean; and sometimes there is œdema of the legs, perhaps of one leg more than the other. This œdema I should rather wish you to notice; because, if you are either incautious or incurious, it might lead you to confound the disease with dropsy of the peritoneum. As little that is effective can be done in those cases of ovarian scirrhus, I will not detain you long on that subject. What I stated respecting scirrhus of the *uterus*, I would repeat respecting *ovarian* scirrhus;—that if the tumour have once acquired the bulk of the fœtal head, there is no reasonable hope of a dissolution of the scirrhosity, by any medical treatment which you can employ; and, therefore, to make the vain attempt by means of the more violent medicines, is (to say the least of it) exceedingly unwise. To purge exceedingly; to administer calomel largely; to give conium in injurious doses; to impair the health by a headlong use of iodine;—all this I should consider to be a very unjustifiable practice. I would not allow it in my own family; and I would not, therefore, have recourse to it in the family of others. I believe it never happens that a well developed scirrhus of the ovary becomes absorbed, in consequence of the use of any medicine at present known; though I acknowledge myself unable to judge decisively of iodine. Those who have seen most of this disease, will, I conceive, in the present state of our knowledge, confine their medical treatment merely to the palliation of the symptoms; which are

to be treated on general principles. It has been observed already, that disease of the ovaries sometimes occasions but little distress, except that which arises from its bulk and pressure. Sometimes, however, an inflammation of the ovary is excited; and then you must treat it, I think, in the same manner at you would treat inflamed scirrhus of the *uterus*;—by leeches, fomentations, laxatives, diaphoretics, and digitalis, perhaps,—in operative quantities, but cautiously;—putting the patient on the antiphlogistic regimen. Sometimes bleeding from the arm may be proper; though in general, much bleeding is uncongenial with these diseased abdominal growths. When the tumour lodges between the vagina and the rectum, it may then give rise to a great deal of distress;—by compressing the bladder, the rectum, and the origin of the nerves;—the sciatics more especially. The most effectual mode of relieving all these symptoms, is by replacing the tumour. The bladder may be evacuated (by a catheter, if necessary); and, by a method of procedure very similar to that recommended in cases of retroverted uterus*, the ovary may be pushed above the brim. By evacuating the bladder, the operator obtains a full extent of room;—particularly if the urine have been allowed to accumulate; and if he can once urge the swelling above the brim of the pelvis, much of the distress may be permanently relieved; because, the abdomen above being designed to receive tumours,—the enlargements from pregnancy, for example,—it is of course adapted to the process of dilatation.

Prognosis.—The prognosis of this disease may be dismissed in a few words. Scirrhus of the ovary you are to look upon as, probably, incurable by known medicines; and I hold it as a sort of axiom, that of women labouring under this disease, those who do *least*, will do *best*. But though it is a disease not, on the whole, of a malignant nature,—the bulk, weight, and pressure, being the principal inconveniences to which it gives rise,—yet, it does sometimes become a fatal affection;—as in those cases, especially, happily not frequent, where inflammation and suppuration occur;—and those more frequent cases, in which you have scirrhosity and dropsy combined;—where dropsy, not the scirrhous, is destroying the patient. We may add, that if a woman is married, the recto-vaginal position of the ovary, becomes a cause of considerable danger during child-bearing; because, falling down between the rectum and the vagina, and obstructing the passage of the pelvis, it gives rise to one of the most dangerous obstacles in delivery;—often proving fatal both to the mother and child. Indeed, if a patient is known to have one of those tumours, she had far better remain in the unimpregnated state; for pregnancy would, perhaps, cost the woman her life; unless miscarriage could be ensured.

Removal by the Knife.—I sometimes hear my friends talking about removing the scirrhous ovary by a scalpel;—a practice to which, in the present state of information, I should not myself assent; at least, in cases of true scirrhus. If the scirrhus is doing no urgent

* See Page 677.

mischief to the patient, then you had better wait; but if there are fever and inflammation, the high probability is, that the parts will contract adhesions with the surrounding viscera; which adhesion may make it difficult to remove the ovary. Add to which, where you have a scirrhus of the ovary, it may be so firmly imbedded in the pelvis, on the one side or the other, as to make the removal of it impracticable; or, at all events, a work of considerable difficulty and danger;—not to add that the disease may not be confined to one ovary only, but may extend to the other.

CHAPTER XII.

OVARIAN DROPSY.

SECTION 1.—CHARACTERS OF OVARIAN DROPSY.

As water may accumulate in the peritoneum, so also it sometimes collects in the ovarian vesicles;—those small vesicles with which the ovary is filled, and which constitute the eggs of the human species.

Quantity of Fluid Secreted.—At first these vesicles contain but little fluid;—only a few drops, or drachms, or ounces; but,—the disease proceeding,—at length pints, quarts, gallons, or even larger measures, may accumulate; and the ovary may become of a size enormously large. To the late Dr. Cox,—a zealous and very diligent inquirer, and a great loss to surgery,—we are indebted for an obstetric curiosity; consisting of an ovary capable of containing several pailfuls,—if I may be allowed to use a homely measure.

Situation of the Fluid.—The accumulation may take place in several cysts, and in all the cysts pretty equally; or the dropsy may be seated in one cyst only, as the principal; though it almost always happens that other cysts are more or less filled;—perhaps with some few ounces only, while the principal cyst contains many gallons. It may be observed, further, that where this dropsy consists of an accumulation of water in several cysts, it sometimes happens that the cysts are in communication with each other; so that the water flows off the one into the other. The late Mr. Cline used to exhibit a preparation of this sort;—observing that, if you tapped one of the cysts in this state of the parts, you would, in consequence, empty all the rest at the same time. But that was the only case of the kind which it has been my lot to witness; for it far more frequently happens,—in nine cases out of ten, at least, and probably in larger proportion,—that the cells are not in communication with each other;—the tapping of one cyst producing merely partial relief.

Morbid Anatomy.—Further: in ovarian dropsy, the inner surface is

not always equable; but is, we are told, now and then covered with those excrescences which have, by Burns, been compared to the cotyledons* in the uteri of ruminating animals; and I would the rather notice this, in giving you the morbid anatomy of the disease, because we have been advised to excite adhesive inflammation;—so as to affect an adhesion of the sides of the cysts to each other; and these irregularities must throw in our way an impediment to such a practice. In the anatomy of ovarian dropsy, it is important to recollect, that the cysts vary considerably in the thickness of their sides. Sometimes we find them no thicker than a piece of brown paper; and sometimes,—as when scirrhus concurs with dropsy,—their thickness may equal or exceed that of the hand;—a peculiarity of structure which must materially obstruct the operation of tapping.

Variety in the Nature and Consistency of the Contents.—When the enlargement of the ovary is cystic, there may be great variety in the nature and consistency of its contents; which may be either fluid, viscid, or firm;—like water, treacle, or a conserve, respectively;—a difference of no small importance in relation to the operation of tapping. Nor ought you to be led away with a notion that, in the first tappings, the accumulated fluid will be watery, and will become more viscid as these tappings are repeated; for, in more than one instance, I have found a viscid substance in ovaries which have never been tapped at all; nor is this occurrence by any means unfrequent. Add to this that, in many-cysted enlargements, there may be much difference in the consistency of the contents of the different receptacles in the same ovary; nor, with the exclusion of tapping, do I know of any diagnostic by which the consistency of the accumulation can be determined, except that which is taken from fluctuation; for although, when the fluctuation is obscure, we must not hastily infer that the contents of the swelling are not aqueous, we may safely conclude that they are of this consistency, when the undulation is found to be lively and distinct.

Extensive Adhesions after Tapping.—Where a woman has been frequently tapped for this disease, I strongly suspect that extensive adhesions to the parts adjacent, will be by no means unfrequent; but if the disease have been unattended with much inflammation, it does certainly sometimes happen, that the adhesions of the enlarged ovary are very slight; so that the whole mass may be taken away. In my collection, there is an immense ovary,—probably the largest preserved in any museum,—which (setting aside its healthy connexion with the side of the pelvis) was bound to the adjacent parts by one adhesion only;—a part not bigger than two of my fingers, and which could have been easily cut through. The whole of the enormous ovary, excepting in these two parts, was perfectly detached. When any of you are dissecting a dropsical ovary, I would recommend you,—with a view to extirpation,—to observe how far the adhesions are of frequent occurrence; and where they do occur, whether they are *circumscribed*, or

* From κοτυλη, *a cavity*.

of an *extensive* kind; and what are the symptoms which precede or accompany them, and which indicate their existence.

Sometimes Complicated.—In dropsy of the ovary, let it be remembered, the disease is not always simple. Along with ovarian dropsy, there may be combined scirrhus; whether this scirrhus be seated in the ovary itself, or in the uterus. The combination of scirrhus and dropsy, in the same ovary, is by no means uncommon. Add to this, that when the ovary on one side is affected with dropsy, the ovary on the other side may be affected with dropsy too.

Symptoms when of Long-Standing.—When a woman labours under dropsy of the ovary of long-standing and of great size, she tells you, perhaps, that she has been ill for months or years together. You examine the abdomen; and find that it fluctuates;—if the cysts be thick, obscurely;—if thin, as distinctly as in ascites, or dropsy of the uterus, or accumulation of water in the bladder; and therefore you should be on your guard. On further investigation, you learn that the tumour is lying more on one side of the pelvis than the other (a great characteristic of the disease); and,—unless, indeed, the tumour be large enough to fill the whole cavity,—you find, moreover, that it occupies the *inferior* and *middle*, rather than the *superior* part of the abdomen. Now and then,—indeed, not uncommonly,—the surface of the cyst is tuberous. If, on examination, you find an abdominal tumour of tuberous surface, or even of a surface round and equable; or if you find that the tumour inclines to the one or other side of the abdomen, and that it fluctuates more or less distinctly, and has been somewhat rapid in its growth;—there can be but little doubt that the affection is a dropsy of the ovary;—either pure, or combined with scirrhus. Rapid growth, when it occurs, is an excellent diagnostic; for, though slow growth is no certain disproof of encysted accumulation, we may be almost certain that the ovary is enlarged from dropsy, scirrho-dropsy, or (at all events) an encysted accumulation of one kind or another, if the growth have taken place in the course of a few months.

Symptoms in the Earlier Stages.—When patients labour under ovarian dropsy of earlier formation, when the whole ovary is not bigger than a child's head,—as in the case of scirrhus,—the tumour may fall down between the vagina and the rectum. In these cases symptoms similar to those before enumerated may be produced; and, on examining with care, you find a swelling which fills the pelvis; with the vagina in front, and the rectum behind, and a certain character of fluctuation obvious enough, if the ovary be thin. So that there are three characteristics by which the recto-vaginal dropsy of the ovary may be known;—a tumour within the cavity of the pelvis, with the vagina in front, and the rectum posteriorly; a fluctuation more or less palpable; and an assemblage of symptoms more numerous in some cases, of smaller number in others, but most of them referrible to irritation, obstruction, and compression of the viscera within the pelvis. In ovarian dropsy, of earlier formation,

however, the enlarged ovary generally lies above the brim; and there,—in the iliac fossa, to the right or left,—it may usually be found; forming a tumour,—not inaptly compared to the fœtal head,—either of a tuberous surface, or equable. A dropsy of this kind it may not be so easy to distinguish as the preceding; for the fluctuation may not be demonstrable through the abdominal coverings. Nothing is easier, however, than to ascertain that the ovary is enlarged; and if, at the end of a few months, there be a great increase of bulk, we may be pretty certain that the enlargement is from effusion;—whether watery, viscid, puriform, or of some other character; for, as before observed, there is much variety here.

State of the General Health.—Where there is a dropsy of the ovary, the general health is not unfrequently good, especially in the middle or earlier period of the disease;—the woman sometimes becoming much reduced in the latter period, and suffering much from cachexia. In some cases, the quantity of the urine secreted may be considerably diminished; though a pretty free secretion is by no means uncommon. Nor is it to be forgotten that, in dropsy of the ovary, as in scirrhus, there may be an œdematous swelling of the legs, or of one leg more than the other; and care must be taken that this do not deceive you into a belief, that the woman labours under anasarca of the common kind. The œdema seems to be the result of pressure on the vessels above; and this is, perhaps, the reason why one side swells more than the other;—namely, that side on which the tumour is principally seated. Women once tapped, often fill rapidly afterwards; but the first growth of ovarian dropsy occupies very different periods,—varying from months to years; for I have reason to believe, that large collections of water may take place in the course of a few months only; and, in the latter case, the general health is more likely to suffer.

SECTION 2.—PALLIATION OF OVARIAN DROPSY.

Treatment.—The treatment of this disease may be divided, I think, into three kinds; that which is proper in the way of palliating the affection; that, again, which is proper with a view of radically curing the disease; and that which is required (if, indeed, *any* be required) where the cure of the disease is taking place spontaneously;—for such cures do now and then occur. In medicine, I believe, you have no effectual means of palliating these encysted accumulations; and, in general, those do best who struggle least. Dropsy of the ovary cannot be cured, in general, by diuretics*, cathartics, emetics,

* Dr. Duncan gives the following as a complete list of Officinal Diuretics:—I. Vegetable.—1. Gambogia (Gamboge). 2. Copaifera Officinalis (Copaiba-Balsam). 3. Spartium Scoparium (Broom-Tops). 4. Melaleuca Leucadendron (Cajeput-Oil). 5. Juniperus Communis (Oil of Juniper). 6. Pinus Sylvestris (Oil of Turpentine). 7. Lactuca Virosa (Strong-Scented Lettuce). 8. Leontodon Taraxicum (Dandelion). 9. Nicotiana Tabacum (Tobacco). 10. Digitalis Purpurea (Foxglove). 11. Gratiola Officinalis (Hedge-Hyssop). 12. Scilla

mercurial action, or the like; and, therefore, you ought to be very cautious how you have recourse to any of these means (at least, with violence); lest you should leave the patient in a worse condition than you found her. I will not venture to say you are not justifiable in making gentle attempts with these remedies; but experience shows, that so little good is to be obtained from these medicines, that, in attempts like these, the constitution ought not to be injured.

Tapping.—The most effectual means of palliating the disease, is by tapping; and, in the ordinary modes of practice, even this is to be delayed as long as possible; for if a woman be once tapped, she often fills very rapidly again. It may be years before she requires the first tapping; but she may require to be tapped the second time in the course of a few days, or weeks; or (at most) a few months; so that, if we operate injudiciously, we are making bad worse.

Precautions in Tapping.—In performing the operation of tapping, —where, from the large bulk of the tumour, it seems to be absolutely necessary,—I would recommend you, in all cases, to be careful to know whether the woman is pregnant, and whether the tumour may not arise from retention of urine; for great scandal (if I may be allowed the expression) has arisen to our profession, from neglecting inquiries of this kind. Distention of the bladder has been mistaken for ovarian dropsy; nay, the uterus itself has been tapped, when the woman has been pregnant;—especially in dropsy of the ovum. Because you have once tapped a woman for ovarian dropsy, it does not follow that the operation is to be performed a second time, without previously inquiring whether the uterus or the bladder is full; for when the second tapping is proposed, the supposed ovarian dropsy may, in reality, be an enlargement of the womb or bladder. Be on your guard, therefore! In all cases where circumstances lead you to suspect that there may be an accumulation of water in the bladder, a catheter introduced will settle the diagnosis; and, in every instance where the uterus is suspected, let a careful examination be instituted by the vagina. You should remember, also, where you are thinking of the operation of tapping the ovary, that the water is sometimes collected in several cysts; and that those cysts are not always (nor, indeed, generally) in communication with each other. These cysts, whether communicating or separate, are more especially to be looked for when the tumour in the abdomen has a tuberous surface. Hydatids too, may, I believe, form in the ovary; but the accident is rare; and hence when, from the form of the tumour,

Maritima (Squill). 13. Colchicum Autumnale (Meadow-Saffron). II. Animal. —Cantharis Vesicatoria (Blistering-Fly). III. Inorganic.—1. Alcohol (Spirits-of-Wine). 2. Spiritus Ætheris Nitrosi (Spirit of Nitrous Ether). 3. Murias Ferri (Muriate of Iron). 4. Murias Hydrargyri (Calomel). 5. Pilula Hydrargyri (Blue-Pill). 6. Tartras Antimonii (Tartar-Emetic). 7. Dilute Mineral Acids. 8. Carbonate of Potass. 9. Supercarbonate of Potass. 10. Acetate of Potass. 11. Tartrate of Potass. 12. Supertartrate of Potass. 13. Nitrate of Potass. 14. Chlorate of Potass. 15. Hydrosulphuret of Potass. 16. Ferrocyanate of Potass. 17. Carbonate of Soda. 18. Supercarbonate of Soda. 19. Subborate of Soda. 20. Tartrate of Potass and Soda. 21. Muriate of Baryta.

many cysts are suspected, it may be proper to mention to the friends, though not to the patient herself, that there is a chance of your not being able to empty the ovary completely;—so that disappointment may be prevented.

I have already observed to you that, in many cases where the ovary is dropsical, the cyst may be very thin*; so as to be tapped as easily as the common integuments. But, further, when going to perform this operation, remember, that sometimes the front of the ovary is thick; and that if you do not push the instrument far enough, on withdrawing the trocar you are surprised to find that not a drop of water comes away;—and this though you know the case to be dropsical. If the trocar be pushed further, the water will flow readily enough. Cases of this kind are not, on the whole, very uncommon; and not only do they occasion more difficulty in tapping, but there is the more risk of a dangerous inflammation, if the instrument be pushed through a good deal of diseased substance. All this should be well weighed before you operate. Indeed, in these cases of scirrho-dropsy, it may, I suspect, be better not to operate at all.

Contents sometimes Viscid.—When a woman has been tapped often, it is said that, after every operation, the fluid which issues may become thicker and thicker;—as thick as soap-suds, as thick as treacle, or even of denser consistency than this. But though this may be true, you are not to suppose that it is only after repeated tappings that these thickenings occur; for, as before observed, the contents of the ovary may be viscid from the very first*; and this becomes very probable, if you find the fluctuation very obscure. I remember once seeing a woman in the East of the town†, labouring under a dropsy of this kind, for which tapping was recommended. On seeing this woman, I told the friends that the contents of the ovary were probably viscid; for, though the growth had been rapid, the fluctuation was obscure. Nor did I regret this precautionary opinion; for, when the ovary was tapped, there came away enough to show that encysted accumulation existed; but still the discharge was sparing and viscid; and the tumour remained unreduced. Mr. Abernethy afterwards saw this case, when the urgency of the distention led the medical attendant to operate again, with as little benefit as before. On observing this, Mr. Abernethy prudently dissuaded from further attempts;—observing, as I was informed, that "it would not do to go on boring holes in the belly". Agnosco hominem!‡ Ultimately the patient died.

Inflammation of the Cyst.—When you are going to tap, let it be further remembered that, after all your best care, inflammation of the cyst may occur;—either slight, or in that degree which may carry off the patient. The late Mr. Chevalier once had occasion to tap an ovary containing seventeen gallons. In this case, it was thought proper to proceed with caution; and the water was drawn off, not all at once,—for this sudden collapse would have been dangerous,—but at three or four different times; yet, notwithstanding the pru-

* See Page 815. † London. ‡ "I know the man!"

dent manner in which the operator proceeded, extensive inflammation of the cyst ensued; and the woman died hectic, at the end of a few weeks, with one or two gallons of puriform matter in the cyst. It is remarkable that no inflammatory tenderness accompanied this attack.

Patient sometimes Dies from Exhaustion.—When a woman is tapped, she may also sink in a few days from symptoms of exhaustion;—symptoms very similar to those arising from floodings, or cholera morbus. And this, I suppose, more frequently happens when the ovary fills again very rapidly (say in the course of a few weeks);—instances of which I have myself seen. Some women sink in this manner, after the first tapping; and many sink gradually, after they have been tapped some five or six times;—which may, perhaps, be an average number. In a few rare cases, they may live to be tapped much oftener; and, indeed, there are cases which you should treat with peculiar attention; in which the constitution seems to suffer but very little; and where the woman may be tapped a surprising number of times;—very great quantities of fluid being taken away, and the general health and spirits flagging but little in consequence. A lady was tapped by Portal, eight-and-twenty times; and in a case related by Ford, the patient was tapped forty-nine times;—two-thousand-six-hundred-and-forty-nine pints being taken from her. By the late Mr. Martineau of Norwich, a woman was tapped eighty times; and from her thirty hogsheads were extracted. For a reference to these cases, I am indebted to an excellent and laborious obstetric writer,—Dr. Burns. Other instances have been communicated to me.

Tapping only a Temporary Relief.—Although women do now and then live to undergo these frequent tappings, yet they more generally sink. Hence, in ordinary practice, the longer the first tapping can be delayed, the better; for there is nothing more unwise than to ground your general practice upon the exception to the rule; though the error is not unfrequently committed. Make the best of it; and tapping, after all, is but an unsatisfactory sort of remedy;—dangerous in scirrho-dropsy; of partial relief in dropsy with many cysts; of no effect when the encysted material is viscid; obnoxious to inflammation, adhesion, suppuration, exhaustion, repetition, and death, even in cases the most favourable! The more I have seen of this operation, the more I have felt inclined to whisper to myself, when the surgeon has taken up his instrument,—"I wish he could do something better!"

SECTION 3.—CURE OF OVARIAN DROPSY.

Under ovarian dropsy, as just observed, most women sink at last; and this reflection it is which leads me to consider, whether any thing can be done for the radical cure of this fatal and not unfrequent disease.

Extensive Abdominal Incisions not Necessarily Fatal.—In the "Physiological Researches," you will find,—together with some other

memoirs,—a paper on the subject of abdominal surgery*; in which I put together the principal facts which had then come to my knowledge;—all concurring to prove, that it is possible to lay open the abdomen more or less extensively,—not without danger (for that I would never assert, publicly or in private),—but without necessarily destroying life, in the way that some of our established surgeons seemed to imagine,—especially in this country. This principle has now received further corroboration, from further observations on the human body; in cases where the abdomen has been laid open, more or less extensively, and where the patients have not died. A case occurred in which Mr. Lizars, an able and intrepid surgeon of Edinburgh, operated upon a woman on the other side of the Tweed;—removing from her a dropsical and scirrhous ovary, of which he has given drawings. In this operation, he laid open the abdomen from the ensiform cartilage to the crest of the pubes;—the woman completely recovering afterwards. This case I state in place of many, as an interesting illustration of the general principle;—that it does not necessarily follow, because there are extensive wounds in the abdomen, that death must ensue. This woman came up from the north, and remained a considerable time at my own house; when I took occasion to present her to my professional friends, who made their own inquiries respecting the circumstances of the operation, and its results, and had an opportunity of inspecting the scar. Nor is this the only instance in which Mr. Lizars has laid open the abdominal cavity to a considerable extent;—the patient surviving notwithstanding.

Removal of the Ovarian Cyst.—The laying open of the abdomen, then, not being of necessity (nor perhaps generally) fatal, it becomes important to consider whether, in a desperate disease like dropsy of the ovary, we may not divide the coverings, and remove the cyst;—more especially after we have reduced the size of the tumour, by a previous abstraction of the water. In some few cases, I have no doubt this operation might be performed with success; but I wish to state it, as my own opinion, that those cases are few, and require selection. Otherwise, if you go to work at random, you may inflict these extensive wounds upon the abdomen; and may find, after all, that the diseased mass cannot be taken away. In this, as in all other capital operations, we must (of course) consider whether the system is favourable for the use of the scalpel; nor must other points be neglected;—some of the more important of which I may here touch. First, when you are thinking of extirpating the ovary, let it be recollected that sometimes the ovary is not alone the seat of the disease; for the womb, the ovary on the opposite side, and the vagina may be affected too;—the two first not uncommonly. If you have reason to suspect that other parts are involved, such cases, in the present state of knowledge, may be regarded as very unfavourable for

* "Researches Physiological and Pathological; by James Blundell, M.D." Pages 4 to 31. See Pages 754 to 760 of the present work.

operation. It is to be recollected, also, when you are thinking of this operation, that the cyst may have formed extensive adhesions; and that these adhesions may foil you. If the adhesions do not exist, or if they are slight, and can be easily broken,—then, indeed, the cyst may be easily drawn forth and abstracted; but should it so happen that the adhesions are extensive, it would, I conceive, be impossible (so far as we know at present) to extirpate the cyst with that degree of safety, without which the operation would be unjustifiable. It is to be remembered, too, that when the dropsy chances to be associated with scirrhus, the basis of the ovary may become broad and large, and its removal may become proportionately difficult. A large internal wound remains in the abdomen; and, unless the means of contracting it can be devised, the danger of the operation must be greatly increased of consequence. Nor must we forget, when thinking of this operation, that much importance attaches to the bulk of the tumour. If the tumour is very large, I will not say that you ought not to remove it, provided you can take the whole away. Indeed, the dexterity and intrepidity of Mr. Lizars, a very able surgeon, seem to have set the point at rest. But, in the present state of our knowledge, I think it must be admitted that the tumours most favourable for extirpation, are those which contain only a few quarts. Again: before we determine respecting the extirpation of the dropsical ovary, it becomes us to weigh against each other the danger of the operation, and the danger of the disease. Ovarian dropsy, it is true, is generally fatal; but not always, nor immediately. It may enlarge slowly, and may bear repeated tappings; and that, more especially, if the general health is not much impaired. As the extirpation of the ovarian cyst must, of necessity, in the present state of surgery, be an operation of great danger, it ought (I conceive) to be reserved for those cases only in which the enlargement is in rapid progress, and the health is decidedly on the decline. In obstetrics, everywhere, to intermeddle is bad;—in obstetrics, on all occasions, our operations are an evil; and hence in this, as in every other case, it becomes us to ponder duly, whether the remedy or the malady is to be regarded with the greater apprehension.

Diagnosis before the Operation.—When extirpation of the ovary is under consideration, it behoves us to ascertain, clearly, whether ovarian enlargement really exists; and to decide, moreover, whether the enlargement is, in the main, of the encysted kind, or a combination of dropsy with a massy scirrhus. In many instances, the disease is so obvious, that the merest novice may detect it; but in some it is so obscure, that much and careful investigation is required. I conceive it is not too much to assert, that obstetric practitioners are the best judges of this; nor certainly are even these to be depended on, unless they possess the requisite knowledge, dexterity, and experience. I have heard of a case in which, on laying open the abdomen, no tumour could be found; and I have repeatedly seen cases, in which inflation of the intestines has been mistaken for dropsical ovary. These, however, be it remembered, are (in most, if not all

instances) mistakes, not of the art, but of the artist;—the mistakes of those who are negligent, or of those who are as yet inexperienced in this part of practice;—in some cases, the mistakes of those who are at once too vain to give their attention to obstetrics, and too forward to refrain, when asked, from giving opinions on points respecting which they ought to know that they are really incompetent to decide;—the blundering mistakes of some of your revolting and reviling surgeons;—of your "thank-God-I-know-nothing-of-midwifery" men (excuse a Sanscrit adjective!);—of men whose mistakes here might be pardonable enough, in consideration of much valuable knowledge which they possess in the other parts of the healing art; were it not for an immoderation and exorbitancy of vanity and insolence, which have not hitherto received, before the public, the castigation which they very richly deserve!

When, with a view to extirpation, we have to decide respecting the condition of the ovary, it will be of no small help to us to tap the ovary first;—making our observations afterwards, through the abdominal coverings. For myself, I have now been repeatedly called on to make observations of this kind; and from all that I have been able to observe, I should infer, that they may be instituted with facility. To sum up our observations, on this important point: if we have reason to believe that the system is favourable for operation, and that the patient must soon perish if nothing be done;—that enlargement of the ovary really exists beyond all doubt, and that there is no grave disease in the parts contiguous to the ovary, or no disease which may not be removed;—that the ovary is wholly, or in a great measure, detached from the adjacent viscera; and that it is not affected with a massy scirrhus, likely to give rise to a broad basis;—we may be justified in operating, provided it be the wish of the patient; but where these conditions are wanting, it may be better to abstain. The school-maxim is excellent here:—"Cogita, tum fac!"* If women have been tapped often, or if they have suffered much inflammatory pain in the ovary during the progress of the enlargement, the case will, I fear, be found very unfavourable for our operations; for adhesions are very probable.

Removal of a Circular Piece of the Cyst.—I have sometimes thought that, in ovarian dropsy of a single cyst, and when the encysted fluid accumulated is of aqueous consistency, a considerable palliation might, in some cases, be obtained, by merely cutting out a piece of the cyst,—so as to enable it to evacuate its contents into the peritoneal sac. Suppose I could not extirpate the ovary,—provided I found the vessels were not large, I could easily remove a small piece of the cyst;—say to the extent of a crown-piece. After this, there might be a reasonable hope that this aperture would not close up again; but that the water would be effused through it, so as to come under the operation of the peritoneal absorbents, with the prospect of an occasional cure. A lady, the subject of ovarian dropsy, was advised to improve her general health; and, with this view, occasionally took

* "Think before you act!"

the air in an open vehicle. In one of these excursions she was thrown from the carriage; and fell upon a large stone on the side of the road*. She was taken up, carried home, suffered a large discharge of water through the kidneys, and was entirely freed from her ovarian dropsy. Cured as she was of this disease, she married; and, in the earlier months of pregnancy, she died of a retroversion of the uterus, which could not be replaced; when it was found, upon examination, that she had laboured under an ovarian dropsy; that the cyst had been burst, and had discharged itself into the peritoneal sac; and that the inflammation had produced such a change, that no further effusion had taken place; or if any, that, on entering the peritoneum, the fluid was absorbed.

Early Evacuation of the Cyst.—There is yet another practice which may be thought of, in these distressing cases. It consists in the very early evacuation of the ovary; for though, in ordinary practice, we ought to delay the tapping as much as possible, yet it may hereafter be worth consideration, whether early tapping (before a large cyst is formed), might not have its advantages; if performed with all due caution, and all the necessary knowledge. Why is it that the abdomen fills so slowly, in the first instance? Perhaps the first growth of the dropsy may occupy six or seven months, or even six or seven years; but if you tap a woman with an ovary of large size, in the course of three, four, five, or six weeks, she may require the operation again. There are, as it appears to me, two principal causes to which the slow filling may be attributed;—one, the pressure on the exhalant vessels; and the other, the small extent of ovarian surface in the commencement of the disease; for its superficies, at first, may be of a few square inches only; but a large ovary, recently tapped, may present a surface of many square feet. The wide extent of ovarian surface, and the removal of pressure from the exhalant vessels, may, after a first tapping, give rise to a rapid effusion; and hence if, in cases of hydropic ovary, we could always tap when the tumour is no larger than a child's head, we should, perhaps, have to tap it often; but the patient might not suffer so much, as if the ovary were allowed to grow to a great size. But how can this be done? If the tumour be lying between the vagina and rectum, I think we might easily accomplish it; nor,—supposing our knowledge to be sufficient, and our caution great,—would it, perhaps, be impracticable to effect all this, even when the tumour lay above the brim of the pelvis, in the hollow of the ilium. For this purpose, might not an opening be made in the abdominal covering, large enough to admit the fore-finger, like a canula; and might not the point of the finger be placed upon the surface of the ovary, so as to ascertain that no intestine was interposed; and then, when sure that the intestines and bladder were not in the way, might we not pass a very small trocar through the opening, and into the ovary; so as to evacuate the contents in the very commencement of the disease? Understand clearly, however, that it is not here my design to recommend this

* See Page 673.

operation at present. I throw it out merely as a hint, for further consideration. In rash hands, such an operation might produce fatal consequences. In cases ill chosen, it might be at once dangerous and of no use; yet, after all, perhaps, it may admit of improvement; and, in a disease so frequent and so fatal as ovarian dropsy, every hint which promises to give greater efficacy to our treatment, may deserve from us that unwearied and pertinacious consideration, without which, in these perplexing and very deplorable cases, nothing effective can be accomplished; for, on this occasion, as on many others,—

" Seggendo in piuma
In fama non si vien ne sotto coltre." *

Here, then, are the different modes of treatment recommended in ovarian dropsy;—the abstraction of the water, with the cautions before prescribed†;—the extirpation of the ovary in the earlier and in the latter periods of its growth;—the removal of a circular piece of the cyst, so as to lay open the cyst into the peritoneum;—and the prevention of the dilatation and growth, by early paracentesis. In the present ill success of our practice, all these operations are well worth your consideration; and if you can bring one of them to such perfection as to cure some of the many unhappy individuals who now fall victims to the disease, you will, indeed, confer an invaluable good on the fairest and least offending part of our species.

Spontaneous Cure of the Disease.—Allow me now to offer a few remarks respecting the spontaneous cure of ovarian dropsy;—the rather deserving of our attention, as the spontaneous cure may be supposed to contain within it the principle of an effectual remedy for this disease. I have already observed, that a cure may be obtained by accidental rupture of the cyst, when no other known remedy will remove it. The lady who fell from the chaise, and whose case has just been narrated‡, was effectually relieved by rupture of the ovary. A woman at New York, attended by a practitioner well known to my friend Mr. Gaitskell, happening to suffer a severe fall;—for women are very liable to this accident when the abdomen is large. She ruptured the cyst, and recovered;—at least, for some time. Hence a question arises, whether there are no means that we could employ, occasionally, to burst open the ovary by pressure, however applied; nor is it unreasonable to suppose that, in some cases, if the substance of the ovary were thin, it might be ruptured; though to suggest the means of effecting this, is no easy task. A well-known surgical lecturer,—as I have been told by one of his pupils,—relates a case which he conceived to be dropsy; and which he imagines to have been removed by mere absorption, excited by mental perturbation; but which I look upon to have been nothing more than an ovarian accumulation, cured by rupture of the cyst. In this case (as he tells the tale), an old lady, passing over London-Bridge, was

* " Fame is not for him who reposes on down, and is buried in luxury."
† See Pages 818 and 819. ‡ See Pages 823 and 824.

alarmed by the cry of "mad bull"; and, making the best of her way into one of the recesses on the bridge, jumped hastily on to one of the benches. The bull passed;—she descended;—her alarm continued;—she got home;—a free secretion from the kidneys followed;—and the dropsy disappeared. In this case, it may be said, the mind was exceedingly disturbed, and that the absorbents were excited in consequence; but I think it far more reasonable to presume, that the substance of the cyst was very thin; and that, by leaping upon the bench in the recess, a rupture was produced.

There is yet a second mode in which this disease may relieve itself more or less effectually; and that is by spontaneous opening into the intestines. When I was attending the wards of this hospital, a woman, of the name of Myers, came here with an exceedingly large abdomen. This enlargement was occasional; and the woman got better, repeatedly, after large spontaneous eruptions of water by vomiting and purging. I have no doubt that, in this case, the dropsy was ovarian; and, in all probability, the cyst occasionally opened into the intestines, by ulceration or rupture;—a sort of natural tapping being performed.

It is said, too, that the ovarian dropsy has sometimes disappeared spontaneously, without any obvious cause to which the disappearance of the disease could be attributed. The patient,—very large, for awhile,—has, at length, been agreeably surprised to find that she became less and less, week after week; till, at length, she has shrunk away to her healthy dimensions. Some of these cases, I fear, have not been dropsy of the ovary at all. They may have been dropsy of the peritoneal sac, or mere intestinal inflations; but Burns has referred us to cases, in which it seems uncandid to doubt the fact;—provided the veracity of the author can be relied upon. It has been said that, in these cases, the water was removed by the absorbent action of the lymphatics of the cyst; but I think it more probable that the cyst was of a membraneous kind; and that laceration and effusion into the peritoneum was the real cause of the cure.

Concluding Remarks.—In concluding my observations on ovarian dropsy, let me add the following miscellaneous remarks:—A flat trocar and canula diminish much the pain of paracentesis. Adhesions of the cyst to the abdominal coverings, are, I believe, frequently indicated by soreness felt after moving the abdominal coverings over the cyst; and by a sort of crepitus, sometimes very distinct;—arising, probably, from ruptured adhesive fibres. Of course, the less there is of this disturbance, the better. Along with ovarian dropsy, a peritoneal accumulation, to the amount of two or three gallons, sometimes occurs. The pressure of the ovary is apt to occasion an overcharge of the intestines;—to be relieved by cathartics, and by laxative injections into the bowel. On dissection, I have observed feculent accumulations, in quantity far greater than had been suspected during life; and these may occur though the bowels act every other day. Be careful not to confound the large masses of the loaded bowel, with those tuberous enlargements of the ovary,

which are the result of dropsy or of scirrhus. The encysted matter in the ovary, sometimes becomes more attenuated as tapping proceeds. In the twentieth operation, I have found this matter of more aqueous consistency than in the first. Sometimes, on tapping the dropsical ovary, large quantities of pus, or of some puriform substance, are discharged;—especially, I suspect, if inflammatory symptoms have preceded. Inflammation of the diseased mass, after tapping, is always to be regarded with apprehension. It may destroy either suddenly, or by hectic cachexia; yet we are sometimes surprised to observe how little the constitution sympathizes with the inflamed part;—the inflammation of this diseased mass, and the peritonitis of puerperal women, exert very different effects upon the constitution. It is said that ovarian dropsy has been known to disappear after electrification *. In so forlorn a case, the remedy may be worth a trial; but my faith is weak. Astringent injections into the cyst are, I believe, highly dangerous; but this opinion may require revision. General inflammation of the cyst in hydrocele (as I learn from an eminent surgeon, and a very excellent man,—Mr. Green) may suppress further effusion, even where adhesions fail. The cases before narrated, seem to prove that the same change may be produced by inflammation in the effusive surface of the ovarian cyst; and I would fain persuade myself that, hereafter, we may be able to produce this inflammation at pleasure;—by means, on the whole, tolerably safe. Stimulant injections, and a canula, or something analogous, left in the wound, have been tried; but hitherto, I believe, with the *worst* success.—Therefore beware! In Mr. Chevalier's case, gallons of matter were produced by adhesive inflammation. Would the patient have recovered had this been drawn off by tapping? I suppose not; for when the ovary has suppurated, and the matter has escaped spontaneously, death has (at least, sometimes) ensued. You may see a case in point in "Burns's Midwifery". The existence of more than one cyst in most ovarian dropsies, is a great bar to this method of cure. Dropsy of the tuberous kind is very unfavourable for the trocar; and in these cases more especially, tapping ought, I presume, to be delayed till the last. It is the "remedium anceps potius quàm nullum †." Extensive adhesions may exist, although a woman have never been tapped; but I suspect that repeated tappings tend to produce such adhesions.

[The following interesting case, the particulars of which have been furnished me by my father‡, strongly illustrates the characteristics and progress of this affection in its most aggravated form:—"Mrs. Creek, aged 22, began to exhibit signs of ascites towards the latter end of the year 1825. On consulting the family medical attendant, he pronounced it to be pregnancy; although she was then unmarried.

* From ελεκτρον, *amber*; the substance which was first observed to exhibit the phenomena called "electrical". Dr. Fletcher observes:—"It is of little importance whether we draw sparks from the patient, or give them to him. It is the change produced in the system that cures the disease."

† "A doubtful remedy rather than none!"

‡ Dr. Alexander Lee.

In consequence of this opinion, she applied at St. Thomas's Hospital; where some flippant young gentlemen answered her, that she would be well in the course of a few months. In June, 1826, she placed herself under my care.

At this time, the fluctuation was very distinct, but her general health and spirits were good. She gradually increased in size until February, 1827; when an operation became necessary. Having, however, the fear of 'dry-tapping'* before me, I determined on meeting Dr. Armstrong, in consultation on the case; and he delivered the following opinion:—'That there was not much doubt of her case being ascites abdominalis; but that it was necessary to be very cautious; for in the very last case he was consulted on, the patient, a young lady, was delivered of a fine child before he left the house.' My patient being at this time married, I delayed the operation as long as possible;—in accordance with Dr. Armstrong's advice. But at last the solicitations of herself and friends became so urgent, that I performed the operation for paracentesis abdominis, in the presence of Dr. Blundell (February 7, 1827); and drew off twenty-six pints of a greenish-coloured gelatinous fluid. After this, she recovered her usual health and strength, and became pregnant; but, as the fluid rapidly increased, abortion ensued some time between the second and third month of pregnancy; and, on the sixth of June, I again drew off about twenty pints of fluid. After this second operation, a circumscribed tumour, having the appearance of a cyst, was distinctly perceptible in the direction of the linea alba, a little above the umbilicus; which tumour, of course, became less distinct as the surrounding fluid increased in quantity. On the third of September, I tapped her a third time, and drew off twenty pints of fluid; and now, in addition to the former tumour, which again became apparent, a large tumour of a similar character appeared in the right hypochondrium. On the thirteenth of October, the last operation was performed; previously to which, her general health began to break up very fast. The operation afforded but little relief. Her stomach could retain nothing; and after the operation, about every ten minutes, ejected a matter somewhat resembling coffee-grounds. She continued gradually to sink, and died on the fourth day.

Appearances on Dissection.—Previously to laying open the abdomen, an incision was made in the right hypochondriac region, about four inches from the spine; by which ten pints of a dark-coloured fluid were drawn off;—at first limpid, but gradually (as the cavity emptied) becoming more gelatinous. On pressing the abdomen with the hands, several indurated masses were perceptible over its entire surface; but none distinctly in the right hypochondrium.

A longitudinal incision was then made through the integuments of the abdomen and thorax, in the direction of the linea alba, as far as the umbilicus; and then obliquely to the superior anterior spinous processes of the ilia. The abdominal muscles appeared relaxed, but

* So ludicrously described by Sir Astley Cooper. See his "Principles and Practice of Surgery"; Edited by Alexander Lee, M.A., M.D.; Volume 1; Page 452.

firmly adhering together. On opening into what was supposed to be the cavity of the abdomen, about an inch below the scrobiculus cordis, a very considerable quantity of dark-coloured slightly fetid fluid escaped out of this cavity.

The membrane thus divided (and supposed at the time to be the peritoneum), was covered with large patches of a chocolate-colour, completely studded with blood-vessels in a state of congestion. In other parts it was blanched. My attention was now arrested by a large agglutinated and irregular mass of cysts, covered with hydatids and small excrescences, of an ashy colour in some parts, and of a dark-red appearance in others. This mass,—reaching from the scrobiculus cordis to the pubis, and from side to side,—was wholly formed of cysts very firmly agglutinated by condensed serous effusion. Several of these cysts, on being laid open, discharged more than a pint of albuminous fluid resembling the white of an egg;—clear in some; and tinged, in others, with red. The cavity in which these cysts were contained must have been very large, as twenty-six pints had been drawn off by tapping; although it appeared small on exposure. On examining this aggregate of cysts, it was found to rest on the anterior surface of that portion of the peritoneum which usually lines the abdominal muscles, and to which it firmly adhered. The peritoneum was here much thickened and blanched. The tumour was removed, by separating the whole of that part of the peritoneum which lines the abdominal muscles.

Abdominal Viscera.—Stomach.—The peritoneal surface of this organ was perfectly natural;—the mucous surface, at the pyloric orifice, was covered with a slimy mucus; which being removed, several patches were distinctly marked with congestion of the venous capillaries. It contained a small quantity of black vitiated bile.

Small and Large Intestines.—These were interspersed with patches of venous congestion on the peritoneal surface; particularly the ileum of the former, and colon of the latter. The *mesenteric veins* were gorged with blood, and the mesenteric glands enlarged.

Liver.—This organ was of a light pinky colour; firmer than usual; and rather pale in its substance. The gall-bladder and ductus choledochus were much distended with dark-coloured bile. All the rest of the abdominal viscera were healthy in appearance.

Thoracic Viscera.—These were perfectly healthy. Very firm adhesions had been formed (through some previous indisposition) between the pleura costalis and pleura pulmonalis."—A. L.]

Other Affections of the Ovaries and of the Fallopian Tubes.—Other diseases, and not without their interest, sometimes assail the ovary. Inflammation, more or less acute; suppuration (connected or not with the puerperal state); enlargements of the ovary, with formations of hair, bones, and teeth; or from extra-uterine gestation, scrofula, spongoid tumour, or sebaceous* and other substances;—all these may occur; and the fallopian tubes may be dropsical, scirrhous, affected with extra-uterine gestation, and so

* From *sebum*, "suet."

on; but the principles here laid down will, I conceive, with a little modification, apply also to these cases;—so far as they admit of remedy. Extra-uterine gestation has been considered already*; the rest may be dismissed without further remark. In elementary instruction, too much minuteness bewilders. "Ars longa; vita brevis"!† A man does not last so long as one of these glass bottles‡; and had need make the most of his time!

CHAPTER XIII.

LEUCORRHŒA.

SECTION 1.—NATURE OF THE SECRETIONS FROM THE VAGINA AND SURROUNDING PARTS.

1. *The Secretion from the Inner Membrane of the Vagina.*—[This membrane presents a very large surface for secretion, which is constantly going on. The quantity of that secretion is liable to great alterations;—owing to causes which will be hereafter enumerated§. The secretion in question is thinner than that formed by the mucous membrane of the uterus; for the finger, when withdrawn from the vagina of a healthy woman, after an examination, is merely moistened with a fluid evidently containing a much larger quantity of water than is found in mucus generally, or in that formed by the uterus; for if,—in a case of procidentia uteri, where (from the extent of the disease) the os uteri has become visible,—the finger be applied to that opening, the mucus from it may be drawn out in filaments. The inner membrane of the vagina (the surface which secretes this mucus) is generally thrown into a vast number of folds; which do not, like those within the cervix of the uterus, follow any regular arrangement. This corrugation of the membrane is greatest in the fœtus and in young children. In maiden women it is considerable; but in married women, particularly in those who have borne many children, it is less observable. A number of muscular fibres surround the vagina; and by the action of these fibres the capacity of the vagina is diminished, and the number of the rugæ increased. By means of volition, these fibres may be excited to a stronger action; but this is temporary, and continues only whilst the will is directed to produce this effect. A woman from whom one of the drawings of procidentia of the uterus was taken‖, had the uterus returned to its situation within the body, and was enabled to retain it for a short time in that position by the

* See Page 447.

† "Art is long; life is short." ‡ Alluding to preparation-glasses.

§ See Pages 831 and 832. ‖ In Sir Charles Mansfield Clarke's "Observations."

exertion of her will; but, in a short time, the tumour came down again;—the mere tone or permanent contraction of the fibres being inadequate to produce the same effect. The number of rugæ in the vagina, is in proportion to the strength of the woman. When this strength has been greatly diminished, the lining of the vagina becomes more and more smooth,—by the rugæ being diminished in number; till, at last, in those cases where (from the effect of long disease, or great age, or hæmorrhage) the powers of the body have been nearly exhausted, the rugæ are quite obliterated;—making the inner part of the vagina perfectly smooth. If the body of a woman who has died of hæmorrhage after a labour be examined, this state of the membrane will be plainly perceived. The secretion from this membrane is least in quantity when the wrinkling is the greatest. For example: it is very trifling in children and in maiden* women; but it is formed in the greatest quantity, and more frequently, in married women who have borne many children; and whose vagina, therefore, has been most frequently dilated. In cases of great debility, from any cause, this discharge almost always attends; but as the system acquires strength, the discharge diminishes, till it ceases altogether†. In advanced life, although the rugæ of the vagina are nearly obliterated, the humidity of this passage diminishes;—partly from the small quantity of blood in circulation, but principally from the lessened determination to these organs. Aged persons sometimes become liable to considerable irritation in these parts, from the effects of friction;—the moisture of these passages no longer existing. Analogous to this complaint is the very troublesome disease called "prurigo senilis."‡

If the vessels of the uterus and of the vagina are injected, by coloured wax thrown into the hypogastric arteries, several vessels, of considerable size, may be seen running from the hypogastric arteries along the sides of the vagina, towards the os externum; and partly by these vessels, and partly by some branches of the pudic artery, this secretion is performed. When the muscular fibres which surround the vagina contract, the small branches of these vessels will be pressed upon, and their diameter will be diminished. In consequence of this diminution of their diameter, the stream in them will be lessened, and less blood will be sent to the parts which they supply; but if the power of contraction in the muscular fibres surrounding the vagina be lessened or lost, then,—no restraint being laid upon the vessels,—their diameter is increased, more blood rushes through them, and the parts to which they go will be supplied more plentifully. So, like-

* Virgines rarò hoc malum (fluor muliebris) infestat, frequentiùs adultiores.—"This disease (the flux of women) rarely affects virgins; but matrons more frequently."—*Sennertus*; *Book* 4; *Part* 2; *Section* 2; *Chapter* 12.

† Ῥοος δε λευκος εν τησι γεραιτερησι των γυναικων μαλλον γινεται η εν τησι νεωτερησι.—"A white stream (leucorrhœa) sooner in old women than in young ones".—*Hippocrates, on the Diseases of Women*; *Book* 2.

‡ In the collection belonging to the author, there is a preparation of a fatal laceration of the vagina of an aged person, in consequence of coitus.—*Sir C. M. Clarke.*

wise, if the canal is very much dilated by any cause, this muscular band (being put upon the stretch) will be unable to act at all; and a like effect will be produced upon the blood-vessels which furnish fluids for secretion.

In moist countries and climates, also,—where it is to be expected that the tone of the body would be diminished,—this discharge is found to be very profuse*.

2. *The Secretion from the Lacunæ seated in the Vestibulum.*—The term "vestibulum†" has been given to that part of the passage leading to the uterus, which lies to the outside of the hymen. Beyond this membrane the canal is called "the vagina".

Between the clitoris and the meatus urinarius are to be seen small openings, which pour out a glutinous mucus. Two other openings, of the same kind, are situated upon each side of the vestibulum; at about an equal distance from the fore and back part of the passage. These are large enough to admit the end of a bristle. There are also several little orifices, very near to the carunculæ myrtiformes. All of these openings pour out a glutinous mucus which has a peculiar odour‡.

3. *The Secretion from the Mucous Membrane of the Urethra.*—The urethra is lined, throughout, with a mucous membrane; which secretes a viscid mucus. This mucus shields the membrane, and prevents the salts of the urine from stimulating it. If, however, the urine be rendered particularly acrid,—from substances taken into the stomach, or from improper actions going on in the stomach,—the mucous membrane may be irritated by such increased acrimony, notwithstanding this mucus; for the secretion in question, though it may be equal to defending it from ordinary stimuli, may be incapable of protecting it from others which are stronger. This is the case, also, in other mucous membranes. In diseased states of the bladder, mucus occasionally escapes, in large quantity, from the orifice of the meatus urinarius;—so as to give a ropy consistence to the urine.§]

SECTION 2.—PROFLUVIUM VAGINALE, OR VAGINAL DISCHARGE.

[Under the above term, it is proposed to comprehend those morbid discharges from the vagina, which have been variously, and perhaps improperly named by writers.

* "In Holland, fluor albus is frequent, and in a manner peculiar to the place;—owing to the dampness of its situation. I have attended more women labouring under fluor albus in autumn, than at any other season of the year;—especially when the weather was extremely moist and cold. Most of them were cured by change of diet, increased perspiration, and the proper use of Peruvian bark and aromatics." *Leake's "Medical Instructions"; Volume the First.*

† "A porch."

‡ This mucus sometimes becomes inspissated; and the author has seen portions of it as large as a small nutmeg in the fold of the prepuce of the clitoris.—*Sir Charles Mansfield Clarke.*

§ Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part I; Chapter 1; Pages 19 to 25.

If a practitioner be capable of removing that assemblage of symptoms which attends a disease, it is very immaterial what name he gives to it, or whether he affixes any name to it at all. On the other hand, the adaptation of a proper name to a disease, will not always lead to the successful treatment of it. For example: if a surgeon is called to a patient, who, having been subject to giddiness, is attacked by a sudden privation of sense and the power of voluntary motion; whose pulse is full and slow, whose face is red, and whose breathing is stertorous;—if he takes away a large quantity of blood, such a patient will be as much relieved as if the surgeon knew that the complaint was called "apoplexy". And if a surgeon should be able to attribute certain symptoms to aneurism of the aorta, the disease will be as much beyond the reach of remedy, as if no name were conferred upon it. Nevertheless, it is necessary, for the purpose of description, to designate every disease by some appellation; and great care should be taken that it should be an appropriate one; or, at least, that it should not mislead.

Names given by Various Authors.—Hippocrates calls the morbid discharges from the vagina which are not menstruous, "γυναικεια λευκα"*. Sydenham gives to these discharges the name of "fluor muliebris"†. He considers the complaint to depend upon debility, and to be allied to diabetes, respecting which he observes: "Curativæ indicationes ad sanguinem invigorandum corroborandumque‡". Then follow some prescriptions for medicines of a tonic and stimulating kind. After this he concludes by saying: "Eâdem ferè methodo, atque iisdem remediis, contumax iste et diuturnus affectus, fluor muliebris, sanatur, ac diabetes modo dictus; nam utrobique indicationes curativæ eædem sunt; quantumcunque inter se hi duo morbi dissidere videantur".—See "Epistola Prima de Morbis Epidemicis, ab Anno 1675 ad annum 1680§."

Dr. Meade describes the disease under the name of "fluor albus"—"Fœdus morbus est tetra ista colluvies, quæ (colore albo) ex fœminarum naturalibus interdum profluit. Hunc autem humorem modo profundunt canales uterini; modo ex glandulis quibus consita est vagina erumpit. In utrâquo mali specie, corporis habitus præcipue habenda est ratio; ab illius enim vitio tam hic quam iste morbus originem trahit. Ubi, autem, in ipsâ vaginâ sedem fixit, externa

* "The whites of women".

† "The flux of females".

‡ "The curative indication is to strengthen and improve the blood". Dr. Fletcher observes:—"The 'indicatio morbi' was thought, by Galen, to be a display of what a disease required for its cure. It is now generally thought to be the object of treatment, ('consilium medendi'). This treatment is divided into four kinds:—1. Prophylactic. 2. Curative. 3. Palliative. 4. Conservative. The last guards against relapse. We fulfil these indications by three classes of remedies:—1. Dietetic. 2. Pharmaceutic. 3. Surgical.

§ "In the same manner, and by the same remedies, are to be cured both that obstinate and tedious affection, 'vaginal fluid', and the disease of late called 'diabetes'; for the curative indications are the same in both; however these two diseases may appear to differ".—*Sydenham's "First Epistle on the Epidemic Diseases which raged from the year* 1675 *to* 1680".—N. R.

etiam opus sunt".*—Mead's "Monita et Precepta"; Caput 19; Sectio 3. The mode of cure recommended by Dr. Mead, consists of the exhibition of an emetic of "vinum ipecacunahæ", of purgatives of rhubarb, with occasional doses of mercury six times sublimed; and if the fibres are lax, and require to be strengthened, steel is to be exhibited. Astringent injections are recommended, by him, to be thrown into the vagina; which is also to be fumigated with a powder consisting of some gum-resins, and "cinnabar† of antimony."

Dr. Cullen treats of the disease under the title of "leucorrhœa":—"Every serous or puriform discharge from the vagina, may be, and has been, comprehended under one or other of these appellations:—'leucorrhœa', 'fluor albus', or 'whites'. Such discharges may be various, and may proceed from various causes not yet well ascertained; but I confine myself, here, to those discharges alone which may be presumed to proceed from the same vessels which, in their natural state, pour out the menses. As the leucorrhœa generally depends upon a great loss of tone in the vessels of the uterus, the disease has been relieved, and sometimes cured, by certain stimulant medicines; which are commonly determined to the urinary passages; and, from the vicinity of these, are often communicated to the uterus. Such, for example, are cantharides, turpentines, and other balsams of a stimulating nature"‡.

By Dr. Denman, in his valuable "Introduction to the Practice of Midwifery", and by Dr. Heberden, in his "Commentaries",—published after his death by his son,—the disease is named "fluor albus"; and both of these writers have given very accurate descriptions of it:—"A mucous, ichorous, or sanious discharge from the vagina or uterus, is called "fluor albus". These discharges are various in their degrees, as well as in their kinds;—from a simple increase of the natural mucus of the part, to that which is of the most acrimonious quality; but the first is not esteemed a disease, unless it be excessive in quantity. It is the most frequent complaint to which women are liable; and is, by them, suspected to be the cause of every disease which they may at the time suffer; but it is generally a symptom of some local disease, or a consequence of great debility of the constitution; though, when profuse, it becomes a cause of yet greater weakness§".—"Humor iste, quanquam plerumque albus

* "This offensive disease consists in a foul discharge, of a white colour, flowing from the genital parts of women. This humour is sometimes poured out by the uterine canals; and sometimes by the glands with which the vagina is plentifully furnished. In both varieties of the affection, especial regard is to be had to the habit of body; for it is from a defect here that they both derive their origin. When, however, the disease is located in the vagina itself, local applications are to be also resorted to."—*Dr. Mead's "Admonitions and Precepts"; Chapter* 19; *Section* 3.—N. R.

† From the Indian *sinoper*, "dragon's blood"; for, according to Pliny, the Indians applied that name to a mixture of the blood of the dragon and the elephant; and to many red substances. True "cinnabar" is the bisulphuret of mercury.

‡ Cullen's "Practice of Physic".

§ Dr. Denman's "Introduction to the Practice of Midwifery"; Chapter 3; Section 6.

(ut vulgo appellatur), et aquæ similis, interdum tamen glutinosus est, et coloris subflavi;—item subviridis, et mali odoris; atque tam acris ut, nisi partes in quas descendit sæpe eluantur, levis inflammatio fiat, cum prurigine et dolore. Cuticula, quoque, deteratur; et urina reddi nequeat, sine sensu pungentis caloris".—Heberden's "Commentaria"; Caput 41*.

By La Motte, in his work entitled "Traité Complet des Accouchemens"†, the complaint is called "les fleurs blanches"‡. Dr. Hamilton, in his "Treatise on Female Complaints", considers the disease under the head of "sexual weakness"; and amongst women above the lower class of life in this country, the discharge is called "a weakness". The most vulgar denominate the discharge, "the whites".

In reviewing these names, we shall find that they are all objectionable, with the exception of that employed by Sydenham,—"fluor muliebris"; which term is as applicable to the menstruous discharge, as to any other. The term "a weakness", deserves particularly to be reprobated; because it may, and actually does, very often become the reason for prescribing tonic medicines; which may be most detrimental to the patient. Indeed, women often spontaneously have recourse to strengthening medicines, and to a nutritive diet, in many cases in which both are injurious.

Sir C. M. Clarke's Definition.—The author§ has prefixed the expression "vaginal discharge" to this chapter‖; but he wishes it to be considered as a *symptom*, and not to be treated as a *disease*. The most simple definition of it appears to be,—"a fluid discharge from the vagina; varying in consistence, quantity, and colour; either produced by weakness of the constitution, or by a change in the structure, position, or actions of the neighbouring parts;—such change being the effect either of natural or of morbid causes".

Cause of the Discharge.—It is very important to inquire into the cause of the discharge; for by the knowledge of the cause, the judgment of the practitioner will be directed to the best mode of treatment. If the discharge be the effect of weakness, and if by its continuance the original weakness be increased, tonics are required. If it depend upon some tumour in the vagina, the removal or support of this will also remove the discharge. If it arise from inflammatory action, this must be removed before any endeavour to restrain it is

* "This humour, although generally white (whence it derives its common name), and resembling water in fluidity, is sometimes glutinous, and of a yellowish colour. Sometimes it is of a greenish colour, and bad odour; and so acrid, that unless the parts upon which it flows down are frequently cleansed, slight inflammation may be set up; together with itching pain. The cuticle, in such cases, may be abraded; and the urine may not be passed without a hot, pungent sensation".—*Heberden's "Commentaries"; Chapter* 41.—N. R.

† "Complete Treatise on Deliveries".

‡ "The white flowers".

§ Sir Charles Mansfield Clarke.

‖ The second in Part 1 of his "Observations on the Diseases of Females". Page 26.

employed; for as the discharge, during its continuance, lessens the violence of the disease which produced it, it should not be checked till such inflammatory action is diminished. Nothing can be more injurious, in such circumstances, than the exhibition of tonics and stimulants; such as cantharides, turpentine, and steel. In many cases, it is as absurd to restrain the discharge from the parts, as it would be to endeavour to put an end to the natural salivation of a teething child, while the determination of blood to the head continues; or to heal an ulcerating surface, in a constitution which has been long accustomed to it, without substituting some other secretion for it.

In many complaints of the female organs, the patient is liable to discharges; and these are of different kinds. But all the varieties of discharge are not met with in one patient, at the same time; since, in one case, the discharge is mucous; in another, purulent; and in another, watery.

The author hopes that some advantage will be gained, by classing these diseases according to the peculiar nature of the discharge which accompanies them. It must be allowed that there are mixed cases, where the discharges vary from their usual appearance. Moreover, a discharge of one kind will mark one stage of a disease, and a discharge of another kind a different stage. As happens in diseases in other parts of the body, one disease also is sometimes blended with another; and the discrimination of these modifications and irregularities, constitutes no small part of the skill of the practitioner. A scirrhous tumour of the uterus, may have been attended (for years, perhaps) by an increased secretion of mucus; but, upon this disease becoming active,—by inflammation attacking the tumour (so as to convert it into cancer),—the discharge becomes purulent, and highly irritating. The period of this conversion, is indicated by the alteration in the nature of the secretion.

In the "cauliflower-excrescence" of the os uteri*, the discharge consists of little more than a clear watery fluid. Blood, however, is sometimes mixed with it; or perhaps comes away alone in large quantities. Nevertheless, the discharge of blood forms no part of the peculiar character of this disease; but is generally produced by violence or improper exertion.

The discharges from the vagina may be comprised under the following heads:—1. Transparent Mucous Discharge. 2. White Mucous Discharge. 3. Watery Discharge. 4. Purulent Discharge. 5. Sanguineous Discharge†.]

* See a paper by Dr. Clarke, in the Third Volume of the "Transactions of a Society for the Promotion of Medical and Chirurgical Knowledge"; and also Page 746 of the present work.

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 2; Pages 26 to 36.

SECTION 3.—VARIETIES AND SYMPTOMS OF LEUCORRHŒA.

Varieties of the Disease.—Independently of organic disease,—such as scirrhus*, cancer†, polypus‡, "cauliflower"—excrescences§, or the like,—women are liable to certain discharges from the genitals, somewhat approaching the puriform character, but far more frequently allied to mucus; though often of a more aqueous consistency, and much more abundant than the healthy secretion of these parts. Of this disease I have observed, in my practice, that there are two varieties;—the inflammatory, which is less frequent; and the gleety form, which is of common occurrence;—not to mention another variety, to be distinguished from the other two;—I mean an infectious gonorrhœa‖.

a. Transparent Mucous Discharge depending upon Debility.

Causes of the Gleety Variety.—[That women whose vagina has lost its tone become liable to this disease, has been before remarked in that part of this work¶, where some general observations upon the nature of vaginal discharges were made. Whatever tends to produce debility of the system, may lay the foundation of this complaint;—such as long diseases, profuse hæmorrhages, or anxiety of mind. Women who live in a moist atmosphere, who keep bad hours, who spend much of their time in bed, or who inhabit hot rooms,—being generally weak women, and having a relaxed vagina,—will be apt to be affected by the complaint. It sometimes arises in women who suckle their children for too long a time; and it will often subside spontaneously, on the child being weaned**.]

Symptoms of the Gleety Variety.—In the gleety form of the disease, the patient, perhaps, comes to you with an appearance pale, and worn, and weary. She tells you she is very liable to coldness of the hands and feet; that she feels a perpetual fatigue; that she has scarcely any appetite; that she has a great deal of flatulence, with other symptoms of indigestion; that she has a sensation as if the anterior part of her body would leave her person, with aching of the back, and bearing-down, and irritation of the bladder; that she is in a high degree irritable, and susceptible, and nervous, and wretched; and that, in connexion with all this, she has "the whites", as she terms the disease; or,—to use a term less offensive to the "molles auriculæ"††,—"a weakness"; by which she understands a discharge, more or less copious, from the genitals; of a muciform character, not usually offensive in smell, but sometimes so irritating,—especially if there is a neglect of cleanliness,—as to give rise to excoriations of the surrounding parts.

* See Page 727. † See Page 729.
‡ See Page 792. § See Page 746.
‖ From γονη, *the semen*; and ρεω, *to flow*.
¶ Sir C. M. Clarke's "Observations". See Page 831 of the present work.
** Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 2; Chapter 22; Pages 325 and 326.
†† "Fastidious ears".

Sometimes produces Urethral Discharge in the Male.—It sometimes happens, where the discharge is acrimonious, that it not only excoriates the patient herself, but may act upon her intimates; and where there has been irregularity on the part of the husband, he may fancy that he has chancre, and that he has affected his mate. A husband once called upon me, and told me his suspicions on this subject; though the subsequent progress of the disease, and the cure without mercury, clearly demonstrated the mistake.

Aptitude for Suckling and Pregnancy.—If women give suck during the time they have this leucorrhœa, this, it is said, has a tendency to diminish the discharge. Of this I have had no proof myself, though I am not prepared to deny it; but I think I may say, that this diminution is neither certain nor frequent. Women labouring under leucorrhœa, if the discharge be sparing, may become pregnant nevertheless; but those who labour under a copious effusion will, I think, generally remain sterile. When menstruation occurs, it is said the discharge ceases; but this I doubt. I think it more probable that the leucorrhœa is concealed by the catamenia (of a red colour), which mingle with it; and that the whole together comes away from the womb, as if it were merely the ordinary menstrual secretion. Thus much, then, respecting the history of the disease.

b. Transparent Mucous Discharge from the Vagina, arising from Increased Action of the Vessels.

Causes of the Inflammatory Variety.—[Women of naturally plethoric habits, and of vigorous constitutions, are more liable to profuse secretions from these parts, than women of ordinary strength. This fact may be ascertained in investigating the complaints of such women; although the quantity of the discharge is rarely so considerable, as to induce the patient to make it the subject of particular complaint. There is, however, a state of the system in which such discharges are so very profuse, as to demand attention. Women who, in the middle of life, indulge much in the pleasures of the table (particularly if they drink too freely of wine or spirits), whose habits of life are sedentary, and who take very little exercise in the open air, are liable to become suddenly corpulent. They form a large quantity of blood;—as may be known by attending to the blood-vessels. The pulse becomes full; and the superficial vessels, which were hardly visible before, become in different parts of the body so large, as to be easily traced by the naked eye. This may be remarked upon the cheeks. Such women are generally weak, although they may have the appearance of strength; they can take very little exercise without fatigue; and are overcome by a very moderate degree of exertion. The habits, which at one time were sedentary by *choice*, become so now from *necessity*; for the woman neither possesses energy enough to exert herself, nor, if she has the inclination, can she indulge it;—owing to the inconveniences attending such exertion.

Symptoms of the Inflammatory Variety.—In many of these cases, a

slow enlargement of the liver takes place;—as may be felt by applying the hand to the side. In general, only a very small quantity of bile is mixed with the stools; and sometimes these become not merely of a clay-colour, but perfectly white. The fœtor is usually greater than that of the alvine excretions generally; and it resembles more the odour of putrefaction, than that of fæces. As the quantity of bile which passes into the bowels becomes smaller, the woman becomes more and more constipated; and the obesity increases. The vaginal discharge increases in quantity; the fluid of menstruation also is secreted more plentifully; the intervals between the periods are generally shorter than natural; and these symptoms, for the most part, lead the patient to apply for professional advice. Upon inquiry, it will be found, that fits of giddiness and of sleepiness have attacked the woman; that there has been pain in the head, and perhaps indistinct vision;—such as a "waving" appearance when the eyes are open, or a sensation of sparks when they are closed. These symptoms are sometimes relieved by spontaneous bleeding from the nose. In this way the case proceeds;—in some instances, disregarded by the woman; until the urgency of the symptoms demands attention*.]

General Indications of Treatment.—In the treatment of the disease, it is always my first object to ascertain whether the discharge from the genitals is really idiopathic; whether it results from some previous change of organization;—from polypus, for example; or from scirrhus, or cancer, or the like. In dubious cases, the question can be decided only by an examination carefully instituted; but, in the majority of instances, such an examination is not requisite; and you may be pretty certain that the disease does not arise from any of those disorganizations before considered, when the discharge is muciform, somewhat sparing, without much offensive smell, and not usually accompanied with flooding. Where there are floodings, where there is much acrimony, where there is a great abundance of the discharge, and where the latter is watery and greenish, or like a wash of coffee, then you may always suspect,—and with strong reason,—that disorganization is the ground-work of the disease; and that it is not (as the patient herself supposes) a simple leucorrhœa. Even in simple leucorrhœa, the discharges may acquire an odour slightly offensive; but when cancer exists, the discharge frequently becomes offensive in a high degree; and you must wash your hands,—and repeatedly too,—before you can get rid of the smell. Again: when I have found the discharge to have no ground in disorganization, I am further anxious to know whether it is of gleety or of inflammatory nature.

Diagnosis between the two Varieties.—In general, it may be useful to recollect that the inflammatory form is by no means common; and that the gleety variety is of very frequent occurrence. Where the discharge arises from inflammation of the vagina, there will often be swelling of the external parts, and throbbing, and heat. If married, the patient suffers under intercourse; and, upon examination, heat

* Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 21; Pages 316 to 318.

and tenderness of the parts will be observed. Add to this, that, if the disease be of the inflammatory kind, when you begin with the astringents presently mentioned*, pain will be produced, and perhaps an aggravation of symptoms. If astringents cure the disease, the probability is that the form is not inflammatory; or if it be, provided the application succeed, the nature of the disease becomes of less important inquiry;—a question rather of curiosity, than of practical interest. By the external swelling, then, by the redness, the heat, the throbbing, the tenderness, the pain on examination, and (I may add, perhaps) by a tendency to a puriform discharge, and by the effects of astringents when tried,—relieving the disease when it is of the gleety form, and aggravating it when inflammatory,—you may generally decide, with tolerable certainty, whether the affection is inflammatory or not.

SECTION 4.—TREATMENT OF LEUCORRHŒA.

a. Treatment of the Gleety Variety.

Astringents.—When I have satisfied myself that the patient labours under the gleety form of the disease, I then confide my cure principally to the astringent method. Under ordinary management, leucorrhœa, I believe, is found to be a very intractable disease; and women may go on using these astringents, perhaps, for nine months together; and, at the end of that time, they may be in the same condition as when they began. From what I have observed in my own practice, I should infer that the cure of this disease is sometimes attended with much difficulty; but this difficulty, I would fain persuade myself, arises more from the negligent and careless manner in which the local remedies are employed, than from any want of effect in the astringents themselves, or from any inaptitude of the parts to recover themselves; though, in cases of long standing, it is not improbable that the vessels of the mucous membrane may become distended†, and (as it were) varicose‡. In treating this disease by astringents, then, much care and diligence are required. Indeed, those astringents ought not to be used in a negligent manner; nor should the employment of them be trusted to the patient, without explaining to her, very fully, the manner in which they are to be administered. Solutions of alum, sulphate-of-zinc, iron, or decoctions of bark, or logwood, may all be tried in their turns. In the opinion of some, there is an advantage in varying your astringents, according

* See a list of them at Page 446.

† Leucorrhœa in the female, like gleet in the male, may sometimes be kept up by habit, after the irritating cause has been removed. This, however, may be considered the sequel to the state of inflammation or excitement; and produces, by its long continuance, great local relaxation and debility; while the leucorrhœal fluid, lodging in the vagina, tends to encourage irritation of the part. Mr. Hunter has remarked, that "a gleet seems to take its rise from a habit of action which the parts have contracted; and as they have no disposition to lay aside this action, it is, of course, continued". Thus we find a species of vaginal discharge, which may be termed "the leucorrhœa of habit";—a state which, I conceive, may almost invariably be remedied by the use of nitrate-of-silver; although the cure may be somewhat protracted.—*Dr. Jewel on Leucorrhœa; Pages 64 and 65.*

‡ From *varus*, "distorted".

to their effect; and when you find that one has not the desired influence in checking the discharge, let another be tried. Women prefer colourless astringents; as nature,—with a view, I presume, of correcting the effects of the impurities peculiar to their sex,—has given them the same fondness for cleanliness which we observe in kittens, and other playful animals; and they do not like their dresses to be stained. The astringent which I generally use is alum; and it scarcely ever fails me. Our Saxon ancestors complained, that the Danes stole away the hearts of their women, by the fascinating custom of purifying their persons once every week. For aught I know to the contrary, many an accoucheur may have made his way to fortune, by a commendable attention to the neatness of a shirt-plaiting!—

"Sic itur ad astra"!*

"Studium aufert, Neobule, Liparæi nitor Hebri"!†

[One circumstance, more particularly, led me to adopt the use of the nitrate-of-silver in the cure of these diseases;—namely, the extensive and healthy changes which I have known to result from the application of this agent to the different mucous tissues, when their secreting surfaces had taken on a disordered or unhealthy action; as in the case of the fauces and larynx. After extensive trials and observation, I can confidently say, that its effects are as conspicuous in cases of vaginal discharge not dependent on disorganized structure, as in the various local diseases in which it has hitherto been employed with so much success. It has been said, that checking the vaginal discharge is prejudicial. This opinion is at variance with my own experience; but I would employ the nitrate-of-silver, not merely with a view of arresting the discharge, but to produce a perfectly new action, or new excitement, in the part from which the secretion has its origin. The mode I have adopted in the application of this agent, has been either to conceal it in a silver tube,—as it is employed in cases of stricture (except that the tube should be adapted to the size of the "argenti nitras"),—or in the form of a solution;—in the proportion, generally, of three grains to the ounce of distilled water;—the strength being gradually increased. A piece of soft lint may be moistened with the solution, and introduced into the vagina, for a short period, several times in the day; or a bit of sponge, firmly and neatly tied to the end of a slip of whalebone, and well saturated with the solution, may be passed into the vagina, up to the os and cervix uteri. This can easily be affected by the patient herself. It is necessary that the application should be frequently repeated; or no permanent benefit can be expected. Should it become requisite to employ a strong solution, and to apply it to a certain part, or

* "Thus he ascends to the stars".

† "The beauty of Hebrus, of Lipara, O Neobulus, engrosses thy attention"!—*Horace's "Odes"*; *Book* 3; *Ode* 12; *Line* 6.—Lipara (now called *Lipari*), the birth-place of the youth Hebrus, is an island near Sicily.—N. R.

ulcerated surface, it can be accomplished with a great degree of nicety, by means of a camel's-hair brush, introduced through the speculum, or dilator. This, however, can only be done in the absence of excoriations, or tenderness; as the introduction even of a common syringe, sometimes produces a considerable degree of pain and irritation; independently of which, some females will not submit to the introduction of any instrument. In married women, there is not the least difficulty in using the dilator; nor does its introduction, under common circumstances, occasion any degree of pain. By means of this instrument, the condition of the cervix uteri and vagina can be readily ascertained *].

[There is one great objection to the use of nitrate-of-silver in solution; namely, the power it has of turning linen-cloths black; so that, if care be not taken, they will be rendered unfit for use. If, however, repeated trials should prove that greater good is derived from it than from any other astringent, the benefit will greatly counterbalance the objections. The patient, however, should be put upon her guard respecting it.†]

Vary the Strength of the Astringent.—In treating this disease, it is not only of great importance that your astringents should be varied in their kind, if necessary; but, moreover, that they should be altered in their strength; for if you sit down, time after time, and prescribe the same solutions of the same intensity, you will most probably fail altogether in the cure. The more dilute the solution, the better;—provided it will cure the disease; and it is better therefore to begin with the weaker intensities;—say a drachm of the alum to a pint of soft water; then of two, three, four, five, and a larger number of drachms, if necessary; till at length you obtain, and use, a saturated solution;—provided you find that the weaker solutions are of no avail. It is not to measure and weight that you ought to look, where you are using that which you conceive has power to produce an effect; but rather to the effect itself which is produced. In different females, the vagina is very various in its irritability;—five times as susceptible in some females, as it is in others. If you find painful effects resulting from the solution, weaken it; if those painful effects still continue for a week or a fortnight, lay it aside altogether. Never use an astringent of strength greater than is necessary for the cure of the disease. Try, therefore, the weaker solutions at first. If it be objected that you may do mischief to the parts, by applying this powerful astringent, it may be replied that we have no proof of this; although the risk ought to make us cautious. Even if there be risk,—as I presume there may be,—the leucorrhœa itself does a great deal of injury to the parts too; and it is a choice of evils, whether you will incur the inconvenience which may result from the leucorrhœa, or whether you will risk the mischief which may arise from an effective attempt to cure.

* Dr. Jewel's "Observations on Leucorrhœa"; Page 82.
† Dr. Waller's "Observations on 'Denman's Midwifery'"; Page 64.

Be resolute, therefore, but be also cautious;—always bearing in mind the salutary maxim of the now neglected ethics of antiquity,—

> "Est modus in rebus; sunt certi denique fines,
> Quos ultra citraque nequit consistere rectum."*

Necessity of proper Instruments.—It is of the utmost importance to your success, in this method of treatment, that your patient should be provided with a proper instrument, in order to apply the wash to the inner surface of the vagina; which is generally the seat of the disease. For though, in some cases perhaps, the inner surface of the womb may be the source of the discharge, I presume that this is by no means common. To attempt the application of these washes by means of a small syringe, or a piece of sponge, is absurd. Arm a patient in this manner, and you may as well tell her to apply the wash to her great toe; for it is impossible, by these means, to bring the remedy into operation upon the parts which are affected. To use the wash effectually, the patient must place herself in the recumbent posture, with the hips raised, and the limbs a little separated; and then,—being provided with a long-tube syringe, of the capacity of five or six ounces,—she may pass it (previously lubricated), sufficiently far to bring it into contact with the os uteri, and when it has been properly placed in this manner, she may empty the instrument into the vagina;—care being taken to depress the piston slowly and gently; so that no injury may be done to the genitals during the descent. This office should be performed, not once or twice only, but eight or ten times (or even oftener) in the course of the day. Indeed, the oftener it is done the better; for the application of the astringent is temporary;—lasting only for a few minutes; so that repetition becomes the more necessary. Moreover, with a view of keeping the astringents in contact with the diseased parts as long as possible, I would advise the patient to retain her position after injecting the astringent; because, as long as she remains in the recumbent posture, so long a part of the injection may be expected to remain in the canal.

Thus much, then, respecting the use of astringents in cases of leucorrhœa. If carelessly or injudicially tried, they will not unfrequently be found of small avail; but when they are varied in kind, and altered in strength; and when they are injected sufficiently far, and sufficiently often, and with the caution necessary to retain the fluid as long as may be,—this method of treating the disease (by astringents) will, in general, be found to be a most effectual remedy. Would astringents in *powder* be found to be of greater efficacy than astringent *washes?* Their application would be more permanent; nor would it be difficult to regulate their strength.

Attention to the general Health.—In leucorrhœa, while you are treat-

* "Moderation should be observed in every thing. Certain limits are at length arrived at, beyond which it is not right to proceed".—*Horace's "Satires"; Book* 1; *Satire* 1; *Lines* 106 *and* 107.—N. R.

ing the disease locally, you are not to forget the patient's habit. In some cases, by sending her into the country, and restoring the general health, the disease may be brought at once to its close. Even in the severer cases, when recommending topical applications, I should pay great attention to the state of the constitution. With this view, I should endeavour to amend the condition of the chylopoietic viscera; and, more especially, to increase the quantity and the quality of the secretions. To ameliorate the secretions, the blue-pill may be found of benefit;—being given over night, and followed by a morning laxative. In some cases, however, the quality of the secretion may be healthy enough; but the quantity is deficient; and here you may find much advantage in the use of chalybeates, stimulants, and gentle laxatives. Two grains of the sulphate-of-iron, with aloes and myrrh, of each eight grains, may be given daily (unless too aperient) in the form of pill; or two grains of the sulphate-of-iron, and three of the sulphate-of-quinine, may be taken daily; with as much cayenne-pepper as may warm the stomach. The cayenne-pepper ought to be good. The pilular form may be preferred; and the softer the pill is, the better; for pills of all kinds, when indurated, may pass through the bowels unchanged, in cases in which the digestive powers are feeble. These pills may be administered about half-an-hour before the three principal meals (breakfast, dinner, and supper); which should be taken at the hours of nine, two, and nine respectively. According to the effect produced, should be the dose of the cayenne; and the effect wanted is a little warmth of the stomach, with a little gnawing pain there. In some women, a single pill may be sufficient; in others, one, two, three, or four; and, therefore, in those cases in which much pepper is required, it is, I think, better to order pills consisting of capsicum alone as the efficient ingredient;—to be taken in conjunction with the others, as need may require. In addition to these remedies, I am inclined also to recommend another of the same class, not without its benefit;—I mean the white mustard-seed bruised. A dessert-spoonful may be taken, as soon as the patient rises in the morning; and another about half-an-hour before dinner-time. The object of all these remedies,—as I employ them, at least,—is to increase the quantity of the gastric secretion; and, in that manner, to improve the digestive powers.

Attention to the Diet.—It is not only necessary, in these cases, that you should improve the digestive apparatus as much as possible, but the patient should take a fair supply of nourishing food; not, however, in quantity sufficient to oppress the chylopoietic organs. Every five or six hours, the nourishment may be administered;—an interval of five or six hours being sufficient for the completion of the gastric digestion. Solids are, I think, decidedly preferable to fluids, in these cases;—provided the patient can take them. For the same reason, agreeably to Mr. Abernethy's useful rule, I recommend the patient not to drink when taking the principal meals,—the dinner and the supper. The drink ought to be taken either two hours before, or three hours after the greater meals;—in order that it may not be in

the stomach when the digestive process is in progress, and impede it by diluting the gastric juice. Some people, however, cannot eat without drinking; and to these I would recommend the use of a quarter-of-a-tumbler-ful of hot toast-and-water;—the water being made as hot as the mouth can well bear it; for the heat may have the effect of augmenting the gastric secretion; and, in so far, it may increase the powers of the stomach. In slighter cases of dyspepsia,—as I know myself, from personal experience,—great advantage is derived from the use of heated water at dinner;—a beverage sometimes excellent for the valetudinarian, though hurtful for those in health. As to the kind of drink which the patient should take, I think that black tea is preferable to coffee or cocoa. To coffee I am rather averse. It is heating and menorrhagic. Ale, wine, porter, and spirits, should be made the subject of careful trial. Bottled porter, in a state of effervescence,—when it does not disorder the stomach,—seems to support the system; as I have had occasion to observe, where women have been suckling. Wine is apt to become acescent; and, therefore, I prefer a moderate quantity of diluted spirit; which, without sugar, is not prone to acidity. Two or three parts of water, may be added to one of spirit. Half-an-ounce or an ounce of rum or brandy, may be taken in the course of the four-and-twenty hours. The quantity should never be increased without good cause; and ought always to be measured out in a small measure kept for the purpose; and the bottle containing the spirits should be afterwards locked up;—for we must not endanger the life and health of our nurses. When two pints of water are mixed with one part of the spirit, the whole, though fiery, is weaker than port-wine; for, I believe I am right in asserting, that every glass of port-wine,—of which some ladies unadvisedly drink a pernicious quantity,—is equivalent in strength to more than one-third of a glass of brandy;—a fact, which I recommend gentlemen to remember, when they take their seat at the dinner-table!

Exercise in the Open Air.—There is another point of regimen which requires attention, in the treatment of these women; and that is the air. When a woman is in town, labouring under this disease, it is of great importance that the air should be changed; and that she should go down into the country;—to the sea-side, or to some of our watering-places. I believe the mere change of air, independently of a better quality of atmosphere, is of no small advantage; and,—paradoxical as it may appear,—by changing the air for the *worse*, we may sometimes change it for the *better*. The more the patients are in the open air, the better. They cannot take too much exercise in the open air, provided they do not suffer in consequence fatigue, distress, or pain, or forcing; and though much exercise cannot be borne at first, yet by accustoming themselves to it day after day, they may learn at length to bear it with alacrity. Man seems to have been originally formed for the air. You are aware that apes and baboons, and all those animals which bear a great and humiliating resemblance to mankind in structure, pass their lives on trees and fields; and I would say of man himself, that he is "a *field*-animal"; and that when he makes himself

a citizen, he is getting out of his element;—to become very politic, and very knowing, and very wealthy, and very care-worn, and very miserable. For the apple, of knowledge, he *again* pays dearly* ! Hence one principal cause of many diseases with which you meet in large cities, and which are not to be met with equally in the country; and hence many persons are improved immediately and surprisingly, by rustication while living in town. They get into the situation for which the Creator of nature designed them; and for which, I have no doubt, the different parts of their body are best fitted; and they begin to think that there is some truth in the tradition; and that, after all, man may find his best pleasures in a garden† !

Copaiva, Cubebs, &c.—There are certain medicines which I would recommend to you, in cases of leucorrhœa; and which I must not pass without notice;—though, except in slight cases, much good is not (I believe) to be derived from them. Copaiva-balsam, compound-tincture-of-benzoin‡, and cubebs, are the principal. I would advise you to administer them according to the effect produced. A pretty full dose of the copaiva, I conceive to be about four drachms, in the course of the day; of the compound-tincture-of-benzoin an ounce, and one or two ounces of the cubebs, daily;—more or less according to the effect produced.

Much bed is not good in leucorrhœa. Much dissipation and much devotion,—large parties, divine operas, polemical caudle, and densely crowded galleries in dissenting chapels,—are surely hurtful. Indeed, when patients labour under relaxing cachexia, without organic disease, they ought carefully to review their whole regimen, and confess themselves to their physician, that they may take his counsels respecing it. In such cases, the state of the chylopoietic viscera is every thing.

b. Treatment of the Inflammatory Variety.

Principal Indications.—[The objects in the treatment of this case are,—to unload the vessels, by removing at once a large quantity of blood; to prevent its too quick formation in future; to restore, if possible, the liver to a healthy state; afterwards, to moderate the vaginal discharge, or to diminish the inconveniences attending its continuance; and, lastly, to lay down proper rules for the patient's conduct, in order to prevent a return of the symptoms.

Blood-Letting.—If any local symptoms, arising from fulness, should be present, the blood should be taken from the neighbourhood of the affected part by scarifications, and cupping-glasses applied between the shoulders, to the lower part of the abdomen, to the loins, or to the region of the liver, when there is reason to suppose it affected. If no such symptoms should be present, the lancet may be used. Small

* "Because thou hast—eaten of the tree,—cursed is the ground for thy sake! In sorrow shalt thou eat of it, all the days of thy life"!—*Genesis*; *Chapter* 3; *Verse* 17.

† Alluding to the Garden of Eden.

‡ "Tinctura Benzoini Composita".

quantities of saline purgatives, given three or four times a day, eminently relieve;—by increasing the secretion from the mucous glands of the intestines, and also by stimulating the extremities of the biliary ducts in the duodenum; so that a larger quantity of bile may be poured out by them. Such a mode of treatment is infinitely preferable to a recurrence to mercurials; which are much too frequently exhibited. While this plan is pursued, the diet of the patient should be regulated. She should live chiefly upon fruits, vegetables, and light puddings. By slow degrees, the quantity of exercise may be increased; till, at length, it can be taken so as to counterbalance any disposition which there may be, to form too large a quantity of blood.

Stimulants Inadmissible.—The patient should be prohibited from taking fermented liquors and spirits. If the functions of the stomach should have been much impaired, by being long accustomed to stimulants, it may not be proper to withdraw them altogether. But even here, spices, the aromatic seeds, and the volatile alkali, will supersede the use of ardent spirits.

Injections.—Until the plethoric state of the system shall have been removed, tepid water alone may be thrown into the vagina; but when the symptoms arising from this state have subsided, a weak solution of sulphate-of-zinc may be injected into the vagina, several times in a day. Local increased action may become the cause of the disease. Frequent sexual intercourse may give rise to it; and, therefore, it is very frequently met with in women of dissolute lives, and of either weak or plethoric habits.

Where inflammation (either of a common or of a specific kind) has attacked the mucous membrane of the vagina, and purulent secretion has long existed, when this inflammation subsides, the matter secreted becomes gradually less yellow, and more tenacious; and, at length, is found to be merely *mucus*. This case is sometimes very difficult of cure.

Leeches and Cupping.—In the treatment of the case of discharge of transparent mucus from the vagina, produced by increased action of the vessels of the parts alone, local remedies will be principally required. These should consist of the application of leeches or of cupping-glasses (the parts being also scarified), to the lower part of the abdomen, or to the back; and it may be necessary to repeat this operation.

Regulate the Alimentary Canal.—The bowels should be kept in a relaxed state, by the exhibition of manna, castor-oil, or some other mild purgative. The food of the patient should be of the most simple kind;—all salted and high-seasoned meats and spices being very improper. Whatever tends to irritate the sexual organs, will keep up the disease. All sexual communication therefore, should, be omitted.

Cold Lotions.—The external parts may be frequently washed with cold water; and solutions of acetate-of-lead may be injected, by means of a female syringe, into the vagina*. When the secretion of mucus

* Dr. Latham informed the author, that he had seen several cases of discharge from the vagina, where the use of this application had been productive of more

continues after the local increased action has been allayed, astringent injections will be advantageously employed.*]

[Leucorrhœa has its seat in the vagina, as well as gonorrhœa; but the latter is distinguished by swelling of the labia, and by the discharge being acrid, and of bad odour. For the former we use balsams, resins, turpentines, uva ursi, cantharides, the "tinctura muriatis ferri", &c.†]

CHAPTER XIV.

INFLAMMATION AND ABSCESS OF THE VAGINA.

SECTION 1.—INFLAMMATION OF THE MUCOUS MEMBRANE OF THE VAGINA.

Causes.—[The membrane of the vagina is liable to take on inflammatory action from many causes; and, inflammation being once produced, the membrane is quickly excited to the secretion of a puriform fluid. When the very extensive surface of this membrane is considered, it will not be a matter of surprise, that the quantity of fluid secreted by it should be very considerable. In the corrugated state of this membrane, the canal is of small diameter; but, when distended to its greatest degree, a very large surface is exposed; the whole of which surface is endowed with a power of secretion. Inflammation of this part may be caused by the application of any of those circumstances, which excite inflammation elsewhere; but the vagina is more especially subject to inflammation in consequence of the performance of those functions, which succeed to communication between the sexes; the very act of which, in some women, produces the disease. The complaint may also originate from the pressure to which it is liable in the act of parturition. Inflammation of this passage may also arise from specific contagion; which form of the disease is denominated "gonorrhœa". In the greatest number of cases of inflammation of the vagina, the disease extends to the neighbouring membrane of the urethra;—as the symptoms appear to demonstrate. The disease, being once excited, is much disposed to continue, in a chronic form; and after the inflammatory symptoms have all subsided, the discharge will continue profuse for a great length of time;—even under the best management.

Symptoms.—The symptoms attending both common and specific inflammation of this membrane, are not dissimilar. The disease begins by a sense of heat, referred to the orifice of the passage, and

benefit than any other. The author believes these to have been principally cases arising from increased action of the vessels of the sexual organs; as, in many other cases of local increased action, this remedy is known to be eminently serviceable.—*Sir C. M. Clarke.*

* Dr. Fletcher's unpublished Examinations.

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 21; Pages 319 to 342.

extending "up the body"*. The uneasiness is sometimes described as a burning pain, affecting all the internal parts. An intolerable degree of itching of all the external organs, is not an unusual concomitant; and the labia themselves become enlarged, by a greater determination of blood being made to them. If the matter be not carefully washed from the folds of the part, the surface becomes superficially abraded; and if it be examined attentively, a number of small round spots will be found to cover it. The sexual feelings become stronger during the continuance of the disease; a sense of burning is experienced in the act of making water (arising partly from the disease affecting the urethra, and partly from the passage of the urine over the neighbouring irritable parts); and the patient is excited very frequently to void the contents of the bladder;—the urine being passed in only small quantities at a time.

Time of its First Appearance.—The interval between the application of the cause and the first appearance of the symptoms, in the case of specific contagion, differs in length in different persons;—depending upon the irritability of the parts concerned; the cleanliness of the person; or, perhaps, upon the degree of virulence of the disease, in the person communicating the infection. In the generality of cases, the first notice of the existence of disease, is given at the end of about eight-and-forty hours;—sometimes a little earlier; in other cases much later. If the suspicions of the patient are excited, the first symptoms will be observed sooner, than by women whose fears are not alive to the subject.

Distinctions between the Matter of Common and of Specific Inflammation.—Attempts have been made to discriminate between the appearances of the matter secreted in *common*, and in *specific*, inflammation; and there are not wanting practitioners, who fancy that the matter of gonorrhœa produces upon the linen a stain of a darker or more green colour than common pus. Such persons, in all probability, impose upon themselves; and too frequently, it is to be feared, voluntarily mislead credulous patients.

Enlargement of the Inguinal Glands.—The lymphatic glands in the groin sometimes enlarge;—seldom in *common*, more frequently in *specific*, inflammation of the vagina; and, in some instances, these glands are found to inflame, and to suppurate; although this is a rare occurrence. Where many glands inflame at once, suppuration is less likely to take place, than when one gland only takes on enlargement. The enlargement of the glands subsides, as the inflammation is removed from the vagina.

Progress of the Disease.—In simple inflammation of the mucous membrane of the vagina,—the purulent discharge being established in large quantity,—the inflammatory symptoms frequently subside very rapidly; after which a termination is put to the secretion, and the parts return to a state of health;—provided there be no acting cause producing its continuance. In the latter case, the symptoms will continue until its removal; when they will speedily cease. In

* This is the term usually employed by the patient.—*Sir C. M. Clarke.*

the case arising from specific contagion, the duration of the disease is greater; and the discharge, once established, continues for weeks, or perhaps for months; although not always accompanied by the other local symptoms.

At what Time is it Contagious?—It is difficult, if not impossible, to determine at what period of the disease the power of communicating infection ceases. A prudent practitioner will be careful to give no decisive opinion respecting the non-existence of this power, as there are no criteria by which its presence can be ascertained; and it may perhaps be presumed, that no person is secure from danger, if he indulges in intercourse with a woman so long as the discharge continues.

Sometimes occurs in Infants.—It is a curious fact that, in young subjects,—both male and female,—a purulent discharge from the urethra and from the vagina, sometimes takes place in consequence of the existence of irritation in distant parts. Thus, during dentition,—while the capsule of the tooth, or the gum covering it, is violently pressed upon by the crown of the tooth,—the above circumstance is not unusual. Medical men, therefore, should be careful to avoid denominating this symptom "venereal"; since, were it actually so, it would lead to nothing useful in the treatment; and discussions, highly destructive of the peace of families, might be thereby introduced.

Treatment.—Histories of cases of "gonorrhœa *virulenta*" and "gonorrhœa *benigna*",—by which names inflammation of the mucous membrane of the vagina has been treated of,—are to be found in the works of many excellent writers on surgery; who have also laid down the best directions for the management of the different forms of the disease. It remains only for the author* to state, that it appears to him that the mode of treating venereal gonorrhœa differs little, if at all, from that which is applicable to the management of the case depending upon the application of common causes. It is rarely necessary to carry the employment of antiphlogistic remedies to any great extent. Temperance, rest, care in avoiding general and local stimulants, mild purgatives, and tepid bathing, constitute, perhaps, almost all the necessary remedies. Mucilaginous drinks are generally recommended; and,—inasmuch as the salts of the urine, when abundantly diluted, will be less likely to stimulate than when in a state of concentration,—such diluting drinks may be advantageously employed. Nitrate-of-potash is frequently exhibited. The author has prescribed it; but, perhaps, more in compliance with custom, than for any better reason.

Peruvian Bark.—Great stress has been laid, by a writer of deserved celebrity†, upon the effects of Peruvian bark, in diminishing the irritability of the urethra in this disease. Upon the authority of this writer, the author* has exhibited it; but he has not been happy enough to observe any beneficial effects from it.

After the Inflammatory Symptoms have Subsided.—When the inflammatory symptoms have subsided, and when the purulent dis-

* Sir Charles Mansfield Clarke.
† Dr. George Fordyce.

charge appears to continue,—either from a relaxation of the secreting vessels, or from what has been termed "a habit of secreting,"—the exhibition of Peruvian bark, of the resins, turpentine, and (above all) of the true balsam of copaiba, has been attended with the best effects. Astringent injections, thrown into the vagina, will also be found serviceable; and they may be employed at a much earlier period of the disease, than in the other sex; in whom it has been thought that a foundation has been laid by them, for the production of strictures in the urethra. It is true that such strictures have been frequently attributed to the too great strength of the injection employed; but when it is considered that the urethra of different persons varies in its degree of irritability, that man must acknowledge himself to be a very nice prescriber, who can precisely accommodate the strength of his injection to the peculiar susceptibility of the urethra, in every individual case!

Do Secondary Symptoms ever follow?—Practitioners of deserved celebrity, have differed much upon the subject of "gonorrhœa virulenta" being followed by secondary symptoms. Few surgeons think it necessary to subject a patient to a long-continued mercurial course. Many direct the employment of small quantities of mercury only; while the majority neglect it altogether. The question is of great importance; and the author declines to offer an opinion upon the subject. He has certainly seen, on the bodies of patients who have laboured under gonorrhœa virulenta, copper-coloured spots, removable only by the oxymuriate-of-mercury* and sarsaparilla; but he thinks that he has seen similar appearances upon the skin of patients, whose chastity could not be suspected. The author has known several instances of married women, who have laboured under a purulent discharge (which might possibly be the effect of contagion), bringing forth children prematurely; some of which have been born dead, and others possessing a dark-coloured furfuraceous cuticle, in different parts of their bodies. These appearances have yielded to the use of the milder preparations of mercury.†]

SECTION 2.—ABSCESS OF THE VAGINA.

[The labia and the nymphæ, but especially the former, are liable to take on inflammation; which frequently terminates in the formation of matter. The symptoms of this disease, and its treatment, differ so little from those of inflammation in other external parts, of loose structure, that nothing need be said respecting them in this place; but purulent discharges from the vagina occasionally issue from the cavities of abscesses, which form in the cellular membrane surrounding this canal.

As such cases do not admit of those modes of cure which are appli-

* The "Hydrargyri Bichloridum," of the present London Pharmacopœia.

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females". Part 2; Chapter 3; Pages 166 to 176.

cable to other purulent discharges from these parts, some observations will be here made upon the subject.

Of Rare Occurrence.—In the first place, it is to be remarked, that such cases are of very unfrequent occurrence;—the common causes of inflammation being much more apt to produce this action in the *uterus*, or in the *mucous* membrane of the vagina, than in the *cellular* membrane which surrounds the passage.

Symptoms.—At the commencement of the disease, there are no especial circumstances which point out its existence. The practitioner finds symptoms present, which denote local inflammatory action; and treats them accordingly. At length, a discharge of matter takes place; but it shortly ceases, and the patient believes that her complaint is cured. After some time, she is again attacked with uneasiness in the part affected, together with a sense of fulness and of pressure; and again a quantity of pus escapes. These circumstances lead to an examination; when a soft tumour will be found behind the vagina; and, pressure being made upon it, pus will escape. After the disease has continued some time, the general health will be found to suffer; and, occasionally, the parts in the neighbourhood will become more than commonly irritable. In the few cases of this disease which have fallen under the care of the author*, the menstruation has been usually profuse;—as, indeed, might be expected, when it is considered that inflammatory action is taking place in the neighbourhood of the uterus†.

Causes.—The author has known this disease arise in single women of lax fibre, in whom no cause for its production could be assigned. Indeed, whenever the disease has occurred, the subjects of it have been weak and irritable women. At different periods of time, the glands of the groin become enlarged and hard; and sometimes suppurate.

Point where it Discharges.—When a collection of matter has taken place in any part of the body, the absorbents are disposed, by their action, to form a communication either with the surface of the body, or with an internal cavity having an external opening;—provided such cavity be adjacent; and, cæteris paribus, the abscess will break where the action of the parts is the most considerable, and the temperature the highest. For instance: if an abscess take place in one of the labia‡, a natural opening will be more likely to occur in that part which is in contact with the labium of the opposite side, than externally. When an abscess takes place in the cellular membrane surrounding the rectum, it will frequently burst into that intestine,

* Sir Charles Mansfield Clarke.

† Small abscesses sometimes form in the cellular membrane surrounding the meatus urinarius; into the cavity of which they open, and through which they discharge their contents. These are rare occurrences; and the author has seen but very few. They are to be treated as other causes of fistula, by laying open the cavity of the abscess; and they yield to no other mode of management.—*Sir C. M. Clarke.*

‡ From *labium*, "a lip".

instead of on the outside of the anus. So, in like manner, when abscess takes place in the cellular membrane surrounding the vagina, it will be found to break more frequently at the upper part (where the action of the vessels of the parts is the greatest), than at the lower part;—notwithstanding the pressure made upon it by the matter contained. Out of this circumstance arises one of the greatest inconveniences attending the disease; for, in this way, the abscess is seldom emptied of its contents; which become, from retention, highly offensive;—the supernatant quantity escaping out of the mouth of the abscess, only when its cavity can contain no more.

Prognosis.—Cases of the above description become very unmanageable, even when clearly understood. It is evident that no astringents can restrain the discharge; that no stimulant can be thrown into the cavity of the abscess;—so as to induce a contraction of it, adhesion between its sides, or granulations; and, unless the most depending part of the abscess should be situated so low as to be capable of being brought within the view of the surgeon, it would be hazardous to attempt an operation,—so as to expose its cavity; or to introduce any extraneous body (such as a seton), in order to excite a new action within it.

It is to be observed that, in all cases of this disease, the discharge is not constant, as from an ulcerated surface; but that the patient is sometimes entirely free from it; while, at others, the quantity of puriform fluid is very considerable.

Whenever the cavity of the abscess can be safely laid open throughout its whole extent, such a mode of treatment is advisable. Great care is to be taken that the abscess is filled up by granulations;—by keeping the sides of the wound separated, by the introduction of lint.*]

CHAPTER XV.

STRUCTURE AND DISEASES OF THE BLADDER.

SECTION 1.—STRUCTURE OF THE BLADDER.

Of the bladder, in women, it may be proper to remark, that it is a musculo-membranous receptacle; which, when contracted, lies concealed behind the symphysis pubis; and when dilated, advances forward and becomes large;—containing, occasionally, nearly two gallons of water. Of course this is the effect of over-distention.

Coats of the Bladder.—It consists of three tunics;—at least, according to the British anatomist; and the distinction is sufficiently minute for all practical purposes. Internally, it is invested by its mucous

* Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females". Part 2; Chapter 3; Pages 166 to 184.

membrane; externally, it is partially covered with peritoneum; and intermediately, you have numerous muscular fibres, ranging in all directions. Of course, when these fibres contract, the dimensions of the bladder are considerably decreased, in every direction. The peritoneum furnishes a very partial coat for the bladder;—covering merely the back part of the body and fundus; while the neck all around, and the whole of the front, lie bare. Where the bladder is covered by peritoneum, it is smooth; where by the cellular web, it is rough.

Openings into the Bladder.—At the lower part of the bladder in front, the urethra enters; being an inch, or an inch-and-a-half long. Throughout its course, it lies at the back part of the symphysis pubis; and, at any time, when it is to be wished that you should feel the urethra, you may distinguish it by putting your finger upon the back of the symphysis pubis. There are generally two ureters opening into the back part of the bladder, at the inferior sides. Hence there are three apertures forming the points of a small triangle;—the two orifices of the ureters, and the orifice of the urethra.

Situation of the Bladder.—When the bladder is dilated, it fills up the abdomen much in the same way that the womb would do;—perhaps occupying one-third, or one-half, of the front and middle part of the cavity; but when contracted, it lies behind the symphysis pubis; and, at all times, the back part of the neck of the bladder, lies on the front and superior part of the vagina. Hence, if an examination of the bladder is to be made, you may pass the finger up to the anterior and upper portion of the vagina; and thus ascertain its condition, almost as well as if the finger were within it. This is a fact of which all are not aware; and a fact of considerable importance in obstetric practice.

I have a preparation of the bladder over-distended, and burst on its peritoneal surface;—which is remarkable; for that is the strongest side. The back, which is covered with peritoneum, is smooth; and the front, covered with cellular web, is rough.

SECTION 2.—RETENTION OF URINE.

As men are liable to retentions of urine, so also are women; but from causes much less grave. In women, the retention of urine is of two kinds;—partial and complete; and very important the distinctions are.

Complete Retention.—We sometimes meet with patients labouring under a complete retention of the urine; so that not a drop comes away;—the abdomen, in the course of two or three days, looking like a case of ascites; particularly if a woman have borne any children. With this condition of the bladder, there may be slight delirium, shivering, heat, and a pulse at one-hundred-and-twenty in the minute. The patient, perhaps, on account of her delirium, gives but an obscure history of her case; and forcings occur, and much pain of the abdomen and of the bladder. An accoucheur of experience meeting with

a case of this sort, will soon learn its nature; and even the inexperienced, finding that no water has passed for two or three days together, can scarcely mistake the case for dropsy of the peritoneum.

Partial Retention.—But, more frequently, we meet with cases of *partial* retention; and of a very deceptive kind. The patient may tell you she cannot retain the water; because it is frequently gushing from her, or dripping away continually; so that your first impression is, that she labours under incontinence; for water never passes in a plenary stream, and in large quantity at once. If at this time you lay the hand on the abdomen, you find it large;—as if it were ascitic. It fluctuates very distinctly; and there may be tenderness, pain, forcings, rigors, and fever; which are characteristic of the disease, and help to distinguish it from ordinary peritoneal dropsy. Now and then, there is a swelling of the legs, particularly if the woman be pregnant; so that, if you are at all in the dark as to the nature of the disease, you still retain a wrong notion of it. You began with the suspicion that the woman was incapable of retaining the urine; and you now fall into the opinion that she labours under the ascites. There is a case related by Sir Richard Croft, in which, under partial retention, the urine had been gradually accumulating for four or five weeks together. The abdomen, at length, became exceedingly distended; for, in these cases,—the water issuing more slowly by the urethra than it enters by the ureters,—there is a continual, but slow and gradual increase of the quantity. Thus, in the case referred to, the urine accumulated to the measure of nearly two gallons. Nor is it alone with incontinence of urine, or with peritoneal ascites, that this disease may be confounded; for,—the abdomen being tender and painful in high degree, with rigor and fever, and the patient continually writhing and complaining,—we may get a notion that she labours under abdominal inflammation, joined with suppuration or spasms.

Diagnosis.—Here, perhaps, you will ask me, how it is that we are to know, at the bed-side, the nature of an affection so fallacious;—simulating at once the symptoms of inflammation, dropsy, and urinary incontinence. We are to judge by the following diagnostics:—We ought always to suspect that there is a retention of the urine, when we discover a large intumescence of the abdomen, fluctuant, and accompanied with much pain, tenderness, and forcing; and we may always reasonably suspect that there is a considerable quantity of accumulated urine, if the water do not issue at all, or if it issue in a very small stream, or by drops involuntarily, or in occasional gushes; and all this in conjunction with a large, tender, painful, and fluctuating abdomen. If, in these cases, you are told that the patient can pass the water, let it be submitted to inspection; and take care that it is the secretion of the patient that is produced to you; for nurses are not always to be relied upon in this point. If you find that the urine issues in a copious stream, there is no danger; but if there is no discharge at all, or only a very small discharge, then there may be a retention; which may rupture the bladder, unless the patient be relieved.

Diagnosis furnished by the Catheter.—When you suspect that there is a retention of the urine, introduce the catheter; and this instrument, properly managed, will prove an excellent diagnostic. In passing the instrument, however, do not slide it into the womb, and draw off the liquor amnii in mistake for the urine. Be careful, too, not to urge it upward too forcibly;—so as to force it through the back part of the urethra into the vagina, in place of the bladder. In passing it gently, however, be careful that it is passed sufficiently high,—especially in dubious cases: for sometimes you may just reach the entrance of the bladder, and there stop short. Remember that the catheter should be clean; its apertures, eight or ten in number, all open; its calibre clear; and the stilette withdrawn. Recollect also that, from over-distention, the bladder is sometimes paralytic; and, therefore, even though the catheter be fairly introduced into its cavity, the urine may not readily flow away. All this bear in mind; and then, if the catheter be introduced with all these cautions, you will find it an excellent diagnostic. One other caution I ought to mention; which is, that sometimes there is a deep mucous follicle by the side of the urethra, perhaps an inch or more in its profundity; and into this the catheter may pass:—you mistaking it for the urethra. As no urine flows, you may persuade yourself that there is no accumulation of it; and inflammation of the bladder, if not rupture, may be the consequence of the error. Here, then, is the answer which I would give to the question before proposed,—"How is it that we are to know, at the bed-side, the nature of the affection?" It is known by the intumescence and fluctuation of the abdomen; by a total retention of urine, or an involuntary discharge by dribbling or by gushes; by there being in the chamber-utensil no large quantity of urine, passed by the patient at one time, in a plenary stream; and by the failure of a flow of urine, although the catheter has, with all due cautions, been introduced into the bladder. Remember all these diagnostic symptoms. Fatal consequences may result from a want of sagacity here.

Causes.—Retention of the urine may arise from a variety of causes, requiring a corresponding treatment; of which causes I shall mention the more important (in women).

Constriction of the Urethra.—Retentions occur, sometimes, in consequence of a general constriction of the urethra. Of this kind I have seen two cases; in which the urethra was constricted from end to end. In one of these cases, the bladder lay open, by an aperture, into the vagina;—so that the action of the urethra was superseded. In the other, the bladder was healthy enough; but the urethra was so contracted, that I found it requisite to sound it with a probe; and, every morning, the patient used to be twenty or thirty minutes in passing the water, if the ordinary quantity were accumulated. Dilatation is the remedy for this defect; nor will it be difficult, if there be no extensive organic disease.

Spasmodic Stricture.—Women are sometimes affected, or fancy themselves affected, with spasmodic stricture. I do not believe all

that is said by women reputed to labour under this disease; which may sometimes be attributed to a mixture of caprice and hysterics; yet there is no doubt that spasmodic stricture does sometimes take place; and it is more likely to occur in very irritable girls, than in any other persons. A well marked case of this kind I examined in the other Hospital* for Dr. Williams. In these cases of spasmodic stricture, for days together, no urine passes without the catheter; and then it may flow readily enough; being afterwards again retained, and again emitted, *ex arbitriis*†. In general, and perhaps *always* in real spasmodic stricture, the catheter may be passed;—the constriction giving way before the instrument; so that palliation is easy. But with a view to the radical cure of the disease, you may try what can be done with the "tinctura ferri muriatis"‡; the warm hip-bath; the cold hip-bath; large blisters at the lower part of the spine, and above the symphysis pubis; and (perhaps I may say) the extract of belladonna.

Inflammation of the Neck of the Bladder.—After a hard labour, it sometimes happens that the urine is retained;—the retention being produced by inflammation in the back part of the neck of the bladder, swelling (more or less), and spasm. Time,—a period of two or three days, for example,—generally cures this affection. The cure may be accelerated by the application of leeches (from ten to twenty) above the symphysis pubis; by a large blister; by fomentations; by purging; and by bleeding from the arm.

I have already observed§, that retentions of the urine are sometimes to be attributed to retroversion of the uterus, which may close the urethra either completely or partially; and may give rise to both the varieties of the disease before described. Of course, the principal cure consists in the replacement of the uterus, by emptying the bladder, and afterwards operating upon the womb by the hand;—by directing the patient to take a position on her knees and elbows; or, this failing, by again emptying the bladder, and making with the hand more active attempts than before to replace the uterus;—in the manner already explained at large‖.

Procidentia Uteri.—Retention of the urine, more or less complete, arises occasionally from prolapsus of the uterus; where it comes down beyond the external parts (producing "procidentia", considered fully on a former occasion¶);—the bladder descending together with the womb; but where the uterus comes down but a little way,—so as to constitute the "relaxation" formerly considered **,—some retention of the urine may still be produced. In cases of this kind, the most effectual means of relieving the patient, is by replacing the uterus. A woman may be taught to replace the womb for herself, by making pressure upwards and backwards; so that the urethra may thus be replaced and rendered pervious, and the urine be

* St. Thomas's. † "Capriciously".
‡ Now the "Tinctura Ferri Sesquichloridi" of the London Pharmacopœia.
§ See Page 672. ‖ See Pages 677 to 679. ¶ See Page 697.
** See Page 704.

allowed to flow. Of course, in cases of this kind, it is occasionally necessary to introduce the catheter; and this, too,—if the patient have a tolerably intelligent mind,—she may do for herself.

Prolapsus Vesicæ.—Prolapse of the bladder sometimes occurs*; and, in consequence of this descent of the bladder, an obstruction may be produced as before. The most effectual mode of relief, in this variety of the disease, is by replacing of the parts, and supporting them by means of a pessary. If the urine cannot be liberated in this manner, then the catheter must be introduced.

Inertness of the Bladder.—In women you may, occasionally, meet with retentions of urine arising from inertness of the bladder;—in some cases, perhaps, the result of an injury done to the spine. A case, which bore this aspect, I once examined in the Hospital†;—a case where a severe blow had been received in the lumbar region, in consequence of a fall on the stairs. Three or four pints of urine had been accumulated in the bladder; and when the catheter was introduced,—so as to remove all resistance,—a flow of urine occurred; but it was feeble. I remember once seeing Sir Astley Cooper introduce the catheter, in a male, in whom there was great abdominal distension; and when the catheter was introduced, the urine, to the surprise of the by-standers, scarcely flowed at all;—till, at length, the hand was laid on the abdomen; and when a gentle pressure was made there, the water issued readily enough. In these cases of paralysis of the bladder, the remedies principally to be relied on are, I believe, in the first place, the introduction of the catheter; secondly, the employment of very warm hip-baths; and, lastly, blisters; and which may be applied either to the lower part of the abdomen in front, or to the spine.

Suppressed Secretion.—You will now and then be called to cases, where the urine is said to be retained; but where there is, in truth, no retention, but really a suppressed secretion. My friend, Dr. Chapman (late of Demerara), tells me, that in the very last stage of the yellow fever, when it is all over with the patient, there is sometimes no secretion for hours. In this very Hospital†, I once called to see a poor creature, dying under a sloughing chancre; and who had not passed any water for some time. I was requested to introduce the catheter; and did so,—too inconsiderately,—before I had duly examined the abdomen; but I was unwilling to disturb the poor girl. When I made my attempt, I found I could not introduce the catheter to half the depth I had expected; and, frustrated in my endeavours, I made my examination above the symphysis pubis; when,—the abdominal parietes being exceedingly attenuated,—I could readily distinguish the point of the catheter lodging in the bladder, just behind the symphysis pubis. Violence has no place in scientific midwifery. Operating (as I was) upon a poor young girl, only not moribund, you may well suppose I proceeded with the utmost gentleness. Indeed, in this case, had force been used, much injury of the bladder might have ensued.

* See Page 694.

† Guy's.

These, then, are some of the principal causes by which the retention of the urine may be produced:—A permanent constriction, or sptsmodic stricture; an injury done to the bladder by severe labour, reroversion of the uterus; prolapsus of the uterus; prolapsus of the bladder and vagina; a want of muscular power in the vesical tunics; and a total failure of the secretion of the urine.

[The bladder may become enormously distended; and yet, after a time, there may be no inclination to void urine. The only symptom may be pain in the abdomen; which you may be at a loss to account for. In suppression of urine, the old woman's remedy is a very good one;—that of pouring water from one vessel to another, within the hearing of the patient. Putting the hand into cold water sometimes succeeds; and so does a tea-spoonful of spirit-of-nitrous-æther*, or a little tincture-of-the-muriate-of-iron†. If there be pain in the bladder, and no urine be passed, it is probably because there is none secreted. Give camphor and hyosciamus in a pill; and put in the catheter;—in order to draw off any acrid urine that may be there.‡]

SECTION 3.—THE CATHETER, AND ITS INTRODUCTION.

Different Instruments Employed.—Under retentions of urine in women, it is necessary to have recourse to the catheter; and, for this purpose, different instruments have been contrived. They are of various form, size, and material;—of silver, pewter, flexible metal, and caoutchouc; but most frequently of silver. There is a flat catheter;—the contrivance and recommendation of a very excellent practical accoucheur, Dr. Ramsbotham; and there is a double catheter, which Dr. Clarke has contrived;—an instrument not without elegance. In it, you have the advantage of having a small catheter within a larger; so that if the urethra is so small that you cannot introduce the larger, in some cases, at least, the smaller may be substituted with success. The length of the catheter which I use, is about six inches. Shorter catheters may generally draw the urine; but not readily in all cases. The instrument ought not to be straight; for then you are more likely to pass it through the back part of the urethra. A certain degree of curvature, somewhat bold, should be given to it; so that, during the introduction, the point may be easily passed upwards and forwards. At the under end of the catheter, a stop ought to be placed. It enables you to hold it more steadily; and prevents the risk of its slipping into the bladder. All catheters are properly made with the upper extremity closed; being open at the side by apertures. Some of the older catheters have only two or three punctures in their extremity; but these are not sufficiently numerous. There ought to be, at least, four or five on each side; for some of them may become obstructed, and thereby the flow of the urine may be prevented. When about

* A preparation of the Edinburgh Pharmacopœia ("Spiritus Ætheris Nitrosæ"); —answering to the "Spiritus Ætheris *Nitrici*" of the London College.

† The "Tinctura Ferri Sesquichloridi" of the London Pharmacopœia.

‡ Dr. Mackintosh's unpublished Lectures on Midwifery.

to introduce this instrument, you will find it convenient to be provided with a large vessel in which to collect the water; but you ought to have a small one also, to receive it immediately from the instrument; and a decanter (or any other bottle) of proper size, is, I think, one of the most convenient vessels for the purpose.

Different Modes of Detecting the Urethra.—In introducing the catheter, the first and most difficult point turns on finding the orifice of the urethra. Sometimes, if the operator be unskilful, it may be necessary to expose the person a little for this purpose; but when tact is not wanting, the orifice of the urethra may be reached without this. There are different modes in which this part may be discovered;—first, by putting the patient in the recumbent posture, and planting the tip of the left index on the glans of the clitoris, you may afterwards carry the finger downward about an inch, at an equal distance between the nymphæ; when you will find its extremity lying immediately before the orifice which you seek; and the instrument may then be easily introduced. This is a very good method of introduction, but is wanting in decorum; and therefore I prefer another mode. When you operate in this manner, you place the woman on her left side, in the usual obstetric position; and afterwards plant the finger upon the urethra; which is to be felt, like a piece of lay-cord, close upon the symphysis pubis. You then carry the finger down to the arch of the pubis; where you may discover the orifice of the urethra, especially on moving about a little; and this once discovered, the catheter may be easily introduced with the other hand. This method succeeds very well. It does not expose the person of the patient; and it is more convenient for the abstraction of the urine. There is yet a third mode;—that which I prefer in my own practice; but which requires a good deal of experience to be able to use it with dexterity. It consists in placing the finger immediately on the point of the arch of the symphysis pubis; close to which lies the orifice of the urethra; and there feeling for the opening. There is no reason why you should not find, in these parts, the orifice of the urethra; just as readily as you would find any other orifice, of equal size, formed in a piece of moistened leather (for example), and submitted to the touch. In some of these cases, the orifice is so flaccid, that you may have a difficulty in distinguishing it; and, in these cases, you may venture to apply the catheter at a risk upon the part; when you will generally find that it enters without difficulty, on moving it about a little. In most cases, however,—as the orifice is generally a little dilated, and sometimes also elevated at its margin,—you may feel the aperture readily enough.

Manner of Introducing the Instrument.—Having, in one or other of these modes, found the orifice, you lubricate the catheter;—taking care that you do not close up the punctures of the instrument; and then, passing it into the opening, you slide it onwards;—carrying the point upwards and forwards, above the symphysis; but not with violence; for if the instrument will not pass without violence, lay it aside altogether. The back of the urethra has been bored through, over and over again,—to the dishonour of the profession; so that

there is no need to perform that operation again! I know of one case in which, a male catheter being employed, the point was pushed through the back of the neck of the bladder; and the patient died in consequence. Do think of your own urethra, when you are passing the catheter into the urethra of any other person; for such reflection may have a good effect in mollifying your operation! In passing the catheter, not only proceed with gentleness, but beware of holding the instrument sturdily in a certain position, as if you were determined to carry it up, according to strict anatomical rules;—bearing down all resistance *in a scientific manner*; for sometimes the urethra lies very much out of its ordinary course. My own method is to pass up the catheter with the utmost gentleness;—holding the instrument lightly, that it may take its own turns in ascending; when you may sometimes observe it to make nearly a complete circumgyration, before it enters the bladder.

Causes why the Urine does not Flow.—The catheter being in the bladder, you may generally abstract the water easily; but sometimes, on removing the stilette, not a drop will be found to pass. Being surprised and rebuked, you collect yourself a little; and begin to consider what is the nature of the impediment. There are different causes to which this failure of the flow may be ascribed. The following are the principal:—Sometimes the calibre of the catheter is obstructed by some foreign substance; and sometimes the apertures of the instrument are shut up. In other cases, you may have introduced the catheter into the vagina or the uterus;—mistaking it for the urethra. Or, if the introduction have been forcible, you may have made a false passage; and the instrument, entering the urethra below, may have been forced through the back of it into the vagina. In other cases, the catheter may lie within the cavity of the bladder; but a failure of the flow may result from a paralytic weakness of the viscus. In other cases the failure may arise, not from the non-entrance of the catheter, but from a want of the secretion of urine. Now and then, though rarely, it happens that the failure results from your not having passed your catheter sufficiently far;—particularly in cases of retroversion. Now and then, the difficulty arises from your having got the instrument into one of those deep mucous follicles, to which I before adverted *. I will relate to you a very useful case, with a view of illustrating this point:—A lady, in the country, laboured under retention of urine. The practitioner, a man of candour and talent, introduced the catheter, and withdrew the water. Again he tried to introduce the instrument, but failed; gave some pain to the patient; and declined proceeding further. There was a talkative nurse there,—generous in the gift of her opinion; and, in consequence of her weighty decision, another practitioner (a rival) was called; and took (as it appears) some advantages, not very magnanimous, of this paltry incident. He passed the catheter, a first time, successfully enough; but, failing on a second trial, and being unwilling to lose his laurels, he pushed the instrument onward with some little violence;—occasioning pain and bleeding, but no

* See Page 856.

discharge of the urine. In this posture of circumstances, Dr. Haighton was sent for; and he introduced the catheter, without difficulty, the first time; but, on making another attempt, he also failed. Recollecting, however, this deep mucous follicle, and suspecting that it was lying near the orifice of the urethra, he examined more carefully; and found that the whole difficulty arose in consequence of the instrument sometimes entering the one canal, and sometimes the other. He then took his measures accordingly.

Direction of the Urethra.—It may be as well I should add here, that the urethra may lie in three principal directions:—First, on the back part of the symphysis pubis;—being drawn upward more than ordinary;—as in retroversion of the womb, for example. Secondly, in a course stretching downward and backward, towards the point of the os coccygis. This happens in the case of procidentia, where the uterus is pushed forth between the limbs. Thirdly, it may lodge behind the symphysis pubis; but in a direction somewhat distorted; for the urethra occasionally takes a tortuous course; and this you will find, especially, in cases of relaxation; where the uterus comes down a little way. That such distortion exists, you know by the movements of the catheter; for it is in these cases that, during introduction, it turns variously;—as before stated†.

When you have entered the bladder with the instrument, and find the urine flowing, I should recommend you not to withdraw the whole quantity at once. Suppose there are several pints, or two gallons accumulated. Abstract about the half of this; and let the bladder contract upon what remains;—introducing the catheter again, and abstracting the remainder some few hours afterwards. Under this practice, there is (I think) less risk of inflammation. After the urine has been drawn off, you ought to be on your guard against inflammation of the bladder, or any other chronic disease. But should inflammation supervene, I would treat it on the same plan as inflammation of any other important viscus.

SECTION 4.—RUPTURE OF THE BLADDER.

Of Rare Occurrence.—The rupture of the bladder, in women, is happily rare; yet it occasionally occurs. This organ may give way posteriorly, into the peritoneal sac;—the urine becoming interfused among the viscera; or the laceration may be seated in front;—the water making its escape into the cellular web, which lies about these parts, and covers the contiguous surfaces.

Prognosis and Treatment.—If the urine is extravasated in front, I fear there is little to be done. Inflammation, sloughing, death,—these are successively the fate of your unhappy patient. If, however, instead of the anterior rupture, there is a laceration of the bladder behind, so that all the urine escapes into the peritoneal sac, I conceive there is yet something which might, perhaps, be attempted. Were a relative of mine in this condition, I should recommend the

* See Page 861.

making of an opening above the symphysis pubis, so as to withdraw the urine; and the thorough ablution of the abdominal cavity and its contents, by means of the free injection of distilled water, at ninety-eight degrees (or more) of Fahrenheit's thermometer. The operation should be continued prudently,—no symptoms forbidding,—till the water comes away without manifesting the urinary characteristics; for if the urine were left in the peritoneal sac, extensive and fatal inflammation must ensue; and it is quite evident, in the present state of our knowledge, that the escape of the patient is without hope. The peritoneum thoroughly washed, I would then recommend that the ruptured part should be drawn up to the abdominal opening; and,—the bladder being, at this time, lax and dilatable,—this might easily be done. This accomplished, the laceration might be closed with a ligature; the parts of the bladder lying forth beyond the ligature, being carefully cut away; and the bladder being then drawn up, by means of the ligature, to the abdominal opening internally. One of the ends of the ligature might be cut away, and the other might be brought to lie out at the wound;—to separate, and be withdrawn afterwards, as in tying up an artery. Disruption of the bladder ought, I think, by no means to be given up as wholly desperate. Facts ought to be collected; experiments ought to be made; proper cases ought to be chosen; and skilful operators ought to give their help; and, by proceeding in this manner, I am not without hope that, in some few cases, life might be preserved.

Experiments Illustrative of the above Mode of Treatment.—To assist in clearing the ground a little, I have already made some experiments upon the rabbit; and it may be proper to give you the results. Into the abdominal cavity of four rabbits, I threw about two ounces of human urine, and left it there for an hour; after which I withdrew the urine, and washed the viscera thoroughly with tepid water from the cistern. Of these four rabbits, three died with general inflammation of the peritoneum; but the fourth lived*. It follows, therefore, that this animal,—though prone to disease within the peritoneum, and containing many and large viscera,—may, nevertheless, escape with life, even though these viscera have been bathed in urine for fifty or sixty minutes;—provided the cavity be then washed out. Such escapes, however, are (I suspect) both narrow and rare.

In another set of experiments, I tied up the fundus of the bladder in the rabbit;—afterwards cutting the fundus away*. I found that, in a few days, the ligature separated;—leaving the bladder closed. Some of the rabbits perished, some months afterwards, in consequence of chronic disease;—not, apparently, the *necessary*, but the *accidental* effect of the experiment.

Since these experiments were published†, Mr. Travers,—so well known by his excellent writings,—has tied up, with success, a small aperture in the stomach; so that, although I would not have you

* See Page 755.

† See Dr. Blundell's "Researches, Physiological and Pathological"; Pages 6 to 8.

rashly engage in an undertaking so hazardous; yet it may (I think) be asserted, that what I am here proposing is not thrown out at random, without any basis on which it may rest; but is confirmed, in some measure, by surgical observation and experiment. Let us, then, reflect on these things. If, instead of sitting carping, with their hands in their pockets, certain of our brethren (of unhappy temper) would but bridle their garrulity, and apply themselves to the discovery of some useful practice,—as some of my own valued friends have been doing,—I do think that, on making the experiment, they would find this calm exercise of the mind more agreeable to themselves, than the fretful ebullitions of small passions; and certainly it might prove more beneficial to the public. Such men often have talents for better things, if they would but so use them; and, when coming in contact with them, I cannot forbear thinking of the reproach addressed to Philip of Macedon, by Damades, the Athenian: —"Why do you, O King, descend to the part of Thersites;—you, who might so nobly personate the character of Agamemnon?"

SECTION 5.—INCAPABILITY OF RETAINING THE URINE.

Women are sometimes affected with what is called "incontinence of urine";—an incapability of retaining the water. Like the urinary retentions, it may arise from very different causes; which require a little attention from us; and to their consideration we now proceed.

Malignant Ulceration.—The uterus is too frequently the subject of a sort of scirrhous change, followed by malignant ulceration. This malignant ulceration, beginning about the neck and mouth, gradually spreads into the vagina, the rectum, and the bladder; and when the bladder is laid open into the vagina, of course an incapability of retention is produced;—this being the last stage of malignant ulceration, and admitting of no effectual cure. Dilution of the urine (by drinking freely of aqueous fluids), and the thorough ablution of the vagina (by the injection of tepid water), are the principal palliatives in cases of this kind; and the more attention that is paid to cleanliness, the better.

It further happens, occasionally,—and this constitutes an important variety of the disease,—that retention of urine arises from an over-distention of the bladder, in those cases where the obstruction of the urethra is partial, and not complete;—a variety of the disease of which I formerly took occasion to treat*. In these cases, when the bladder becomes loaded, there may be continual stillicidium†. The patient is attacked, at length, with much abdominal pain and tenderness, and continual urging; with repeated gushes of the urine in small quantities; and a great deal of constitutional irritation;—the urging, perhaps, being scarcely less vehement and painful than that of parturition itself. The impression made on the mind,—particularly before this urging manifests itself,—is, that there is no retention of the urine, but simply an incontinence;—a

* See Pages 855 and 856. † "Dropping of urine."

mistake obviously of grave consequence; for rupture of the bladder may arise from the misapprehension. The effectual means of relieving an incontinence of this kind, is the introduction of the catheter, in order to empty the bladder thoroughly; after which the cause of the retention should, if possible, be ascertained and removed;—on principles already explained*.

Weakness of the Neck of the Bladder.—There is yet a third variety of incontinence of urine; and that is, the incontinence which results from a mere weakness of the neck of the bladder;—common in those who have had very large families (ten or twelve children, for example). In these cases,—more especially if the child is large, or the pelvis small, when the labour has been laborious,—the bladder is apt to get so infirm about the neck, that it loses much of its retentive power; and, perhaps, from the moment of delivery, the woman is incapable of retaining the water; or if, at any time, she chance to cough, laugh, rise suddenly, or in any other manner contract smartly the abdominal muscles, the water comes gushing away. This disease may continue for years, with greater or less severity; but it frequently, in great measure, cures itself. The first few weeks after delivery,—say at the end of the fortnight,—the patient is better; at the end of the month, the retentive powers are still more increased; and, in the course of a few more weeks, she becomes able to hold the water very well; though still liable to the gushes, when sudden efforts are made. Hence, where incontinence is the result of an enfeebled cervix vesicæ, *time* must be looked upon as one of the principal remedial means. In some cases, perhaps, advantage may be obtained from plunging the hips into cold water, two or three times daily. The improvement of the general health is by no means to be neglected; for the more you improve the general health, the more you will increase those healing powers of the parts, on which all cures are more immediately dependent. Commendation is bestowed, by some, upon the use of blisters; and they may, at any rate, deserve a trial. A large blistering-plaster may be applied to the abdomen and to the loins alternately;—the vesications being repeated for five or six times, as the parts may be found to bear them. Whether any advantage would be derived, in these cases, from blistering the back part of the neck of the bladder,—a proposition which may surprise you,—I am not prepared to say; but, I presume, this would not be found impracticable; for,—the upper part of the vagina lying in contact with the neck of the bladder behind,—something stimulating might be applied there, for four or five hours together, according to the effect produced; and in cases where there was a mere weakness, without grave organic lesion, if a stimulus is likely to be of use at all, I should expect more advantage from this local excitement, than from extensive but remote vesication of the abdomen or the loins. Understand clearly, however, that I do not recommend you rashly to resort to this practice; which may be

* See Pages 854 to 862.

attended with its evils; but I think it proper to mention it; and the proposal may not be undeserving of further consideration.

An Aperture in the Neck of the Bladder.—One of the most obstinate varieties of incontinence of urine, is that which results from an aperture formed by slough, and leading from the neck of the bladder into the vagina. This aperture may be very small in its size;—so much so, that you cannot clearly distinguish it by careful examination. Or, on the other hand, it may be of very considerable dimensions;—inasmuch as two or three of the fingers may be passed through it, into the urinary cavity. This disease may, I think, generally be traced to parturition as its origin. The labour has been laborious*; perhaps instruments have been used; for the first few days after delivery, the urine has been passed with difficulty, or the catheter has been required; and then, perhaps, for a few days more, the water has flowed without help; then an incontinence of urine has followed; and this has been succeeded by the escape of a membranous substance from the vagina; which substance, on immersion in water, has been found to consist of a portion of the bladder and vagina, altered in consequence of mortification. In these circumstances, when there is a doubt on the mind, the nature of the accident may be ascertained by a careful manual examination; when you will find that a communication has been made, by slough, between the bladder and the vagina. If the aperture is large, it may easily be detected, by passing the finger through the opening; where, too, the catheter may be felt bare; provided it has been passed into the bladder, along the urethra, in the ordinary manner. On the other hand, if the aperture be small, it may be very often felt by a delicate touch; in the same manner as we may, by examination, detect the os uteri. If the aperture be so small that you cannot discover it by manual examination, there remains one other mode by which the point may be ascertained; and that is by inspecting the orifice of the vagina; and ascertaining whether, under forcing, the urine passes

* Preternatural labour may arise from six causes; three of which affect the mother, and three the child:—1. Too little uterine action. The labour is long; the intervals between the pains are great; the os uteri is not dilated; and the general habit is relaxed. The means employed are cordials, stimuli, the ergot-of-rye, and frictions to the abdomen. Such cases often require the forceps;—the strength of the patient being expended in dilating the os uteri. 2. Rigidity of the female parts. The pains are violent, but the child makes no progress; and the os uteri feels hard. If there be danger of rupturing the uterus, bleed, give opiates, or excite a little alarm. If convulsions occur, bleed largely, pour cold water over the head, and get the child away. In order to lessen the rigidity, you may foment the parts, and smear the os uteri with extract of belladonna. 3. Deformity of the pelvis. If this be not great, premature delivery may be brought on between the seventh and eighth months. If the deformity be too great for this, use the perforator; and if greater still, resort to the Cæsarian or the Sigaultian operation. 4. Malposition of the fœtus The worst presentation is that of the placenta over the os uteri; for there is then hæmorrhage at every pain. The next is the presentation of the arm. The child cannot be born in that position; but must be turned. The presentation of the head is the best; and after that the presentations of the breech, feet, &c. Those of the shoulders, back, &c., are very bad. 5. Malformation of the fœtus. 6. Plurality of children.—*Dr. Fletcher.*

from the vaginal orifice, or that of the urethra, or from both. In some cases, perhaps, a piece of sponge passed into the vagina, might enable us to determine whether the urine really found its way into this canal or not. In cases where much nicety of discrimination is required, the practitioner may employ the vaginal dilator; and this, with or without a speculum, will enable him to ascertain whence it is that the urine is flowing, what is the size of the aperture; and what is the situation in which it is placed.

Palliative Treatment of such Cases.—Incontinence of urine from an opening in the neck of the bladder, may be treated in two ways;—by palliatives, or with a view to a fundamental cure. In general, women will submit to the trial of the palliative means only; and of these the following are the principal.

In the first place, the patient should drink somewhat copiously in the course of the day;—not at her meals, however; for fear she should disturb the digestive organs. Pure water, toast-and-water, or any similar beverage, she may drink freely;—so as to dilute the urine, and diminish its acrimony; and by drinking one or two pints more than ordinary, in the course of the four-and-twenty hours, much relief may be obtained from the excoriation, inflammation, and swelling, produced by the distillation of the urine over the surface of the vagina.

A second point of treatment, of no small importance, is that of great personal cleanliness; and, if I may be allowed the expression, *vaginal* cleanliness. In the same way that the hands are daily, and the feet repeatedly, purified by ablution; so this part of the body may be kept clean. I would recommend the patient to wash the vagina six or eight times in the course of the day;—three or four times, certainly. There are two ways in which the vagina may be washed, with great advantage;—the one by using the hip-bath, the other by the simple employment of the syringe. Proceeding in the former mode, the patient takes her seat in the tepid water of the bath; and filling with tepid water a half-pint syringe, armed with a tube long enough to reach the upper part of the vagina, and placed at a convenient angle with the barrel of the instrument, she passes this into the passage,—so as to reach its superior part; and then, by expelling the water briskly, she washes this part of her person from one extremity to the other. This should be repeated three or four times in succession; and the whole operation ought to be performed four or five times in the course of the day. There is, however, yet a simpler mode in which vaginal ablution may be accomplished; and which will often be found to answer the purpose very well. It is by the use of the syringe without the bath. The patient may sit, if she please; but the recumbent posture is preferable; and by repeated injection with the syringe, she may purify the vagina as before. In managing the practice, it ought to be a main object to perform the operation sufficiently often, and thoroughly well; and, when executed in this manner, it will be found to remove all that is offensive and

acrimonious from the vagina; and will, most probably, heal the surface, if broken by superficial ulcerations.

There is yet another palliative practice, which may be thought of in this very distressing disease; and that consists in the use of some instrument which may close up, in the way of a plug, the opening into the bladder. The practice is more especially recommended by Mr. Barnes; who has written a paper on this subject; which paper was published in one of the earlier volumes of the "Medico-Chirurgical Transactions". We are advised, by Mr. Barnes, to take a ball-pessary, and cover one hemisphere of it with a piece of fine, soft sponge; afterwards sliding the instrument into the superior part of the vagina. If the aperture is very small, this instrument is not likely to be of much service; but if it is large enough to admit a finger, for instance, then the sponge will make its way into the opening, and may be expected to close it. When the urine is to be passed, the patient may withdraw the plug, suffer the urine to flow, and afterwards replace the instrument; or, perhaps, she may be taught to introduce a catheter; and if she can perform the operation well, it may render the removal of the pessary unnecessary.

Here, then, are three palliative measures well worth your consideration (for the disease is one of the most distressing kind):—the thorough dilution of the urine; the thorough ablution of the vagina; and,—in those cases where the aperture is large, and which would seem to admit of the least remedy,—the introduction of a pessary coated with sponge; which may close the aperture in the way of a plug. I may remark here, that when no plug is applied, the urine may be retained in the bladder, when the patient is quiet,—in certain positions especially,—to the amount of a few ounces. In these cases, a part of the retentive power may depend on the situation of the aperture; but more, I suspect, is to be attributed to the action of the vagina; for,—the neck of the bladder lying in contact with the vagina behind,—the vagina, swelling out a little, may press into the aperture, and thus act much in the same manner as the sponge itself is designed to do.

Means of Radically Curing the Disease.—But you will sometimes be asked, whether there are no means of radically curing the disease. Different propositions have been made for that purpose. If the disease be of very recent occurrence,—if, for example, you have attended the labour, and have had the woman under your care when the slough came away,—then, by improving the general health as much as may be, by introducing a catheter into the bladder, and keeping it lying there, so as continually to draw off the water by the natural passage (the urethra),—a bottle, or bladder, being connected with the other extremity of the catheter,—you may sometimes find, perhaps, in these cases of slough, that the part will heal and close up of itself; but certainly such closures are of very rare occurrence. Where, however, a slough once separates,—so as not merely to break the continuity (as incision or rupture might do), but to remove a part of its

substance,—I presume it rarely happens that the disease cures itself in this way. Of a cure of this kind, I never saw a well-marked case. Yet this cure should be attempted; for, if the opening be small, and a good deal of adhesive matter be secreted, now and then, perhaps, the aperture may become closed. Of course, the less the bladder is disturbed, while this operation is proceeding, the better; for motion disarranges, more or less, the process of healing.

By the Actual Cautery.—In those cases in which there is an incontinence of urine produced by an aperture,—fistulous perhaps, and of small size (scarcely large enough to admit a small catheter, for example),—it has been proposed that we should attempt a cure by means of the actual cautery; and this method of treatment, I understand, is adopted in France, with success. Mr. Travers, from whom I first received my information, assured me that he had seen it performed. With a good speculum, and a vaginal dilator, in women who have had a large family, it is perfectly easy to obtain access to the superior part of the vagina in front, where the opening lies. Nor would it, I conceive, be by any means difficult to apply the cauterizing iron to the part. To give the necessary light, a lamp may be employed; but I should presume that the heated iron, being itself luminous, would admit light enough for the necessary illumination of the parts. The whole practice, however, is rough; and, as the disease admits of relief by means of those mild palliatives before recommended, the cases in which it might be proper to recommend its adoption, must be rare. For myself, I have hitherto had no experience of it; and, therefore, I forbear entering into details. It is proper I should add that, in one case in which it was tried by an eminent surgeon in this country, it failed of success; but the patient suffered no further injury in consequence; and I need not tell you that it would be unwise to condemn the practice, on account of the unsuccessful termination of one solitary case.

By Ligature.—Where there is an aperture of this kind, it has been proposed that we should close it by ligature; and this extension of a principle before laid down*, was first suggested by an esteemed pupil, Mr. Preston. Of this operation it is proper, I think, that we should not lose sight altogether; though it would be found, I fear, of no easy performance; for the whole space of surface on which we should have occasion to operate, is so circumscribed, that the application of a ligature, in any way, must be difficult; and it would be still more so to apply it without distressing the urethra. These difficulties ought not to be concealed; but, after all, I cannot forbear indulging a sanguine expectation, that if the ligature could once be properly applied, a speedy closure of the aperture would ensue. Remember the experiments already detailed; in which ligatures were applied to large apertures in the bladder of the rabbit, with the effect of closing it completely†.

Division of the Urethra through its whole Length.—There is one other practice which has been suggested;—a rough one, it is true; but

* See Page 863. † See Page 755.

which, nevertheless, deserves a passing notice from us. In this practice it is proposed, that in those cases in which there is a fistulous opening through the neck of the bladder, we should take an instrument, and divide the urethra from one end to the other;—care being taken that the fistulous opening shall enter into the incision, and form a part of it. Smart inflammation would result from this; but not, perhaps, more active than that produced by an operation of lithotomy; and from this inflammation a closure of the aperture might be expected; but to an operation of this kind, I think, that already suggested,—the actual cautery, I mean,—might be preferable.

To bring our observations here to a summary: when the patient is anxious to be cured radically of the disease, we have these different means before us;—the division of the urethra, the closing of the aperture by ligatures, and the use of the actual cautery; but all of them are uncertain. In small fistulous openings, the actual cautery is, perhaps, the most promising remedy of the three.

Incontinence from Posterior Laceration.—Before I quit the subject of incontinence of urine, there is yet one other variety which I ought to mention; and that is, the incontinence arising from rupture of the back part of the neck of the bladder; laying it open into the vagina;—the opening arising not from slough, but laceration. The way in which this rupture is produced, I formerly explained*. During delivery, the bladder becomes over-charged with urine; and the head of the child, coming down into the pelvis, presses the bladder (thus loaded) against the symphysis pubis, so as to divide it into two chambers; one of which lies below the head at the arch of the pubis, and the other above and in front. If the bladder be carefully emptied, by the introduction of the catheter, no ill effects ensue; but if the accoucheur accomplish the delivery without emptying the bladder,—the head still pressing down upon the lower chamber,—it bursts the bladder, and the urine comes away in a large gush;—giving the first indication of the occurrence of the accident. On making your examination, as soon as this gush issues, you find there is a large aperture; into which you may pass two or three fingers. At first sight, this would appear to be an accident which scarcely admitted of a remedy; and certainly it is much to be deprecated; and the rather, as it may too often be attributed to the bad management of the accoucheur. Nevertheless I am satisfied, that the closure of the bladder, by healing, is by no means impracticable in all these cases. Improve the general health as much as possible; introduce a catheter into the bladder, and let it be continued there, so as to withdraw the water continually; and perhaps you have the satisfaction,—in the course of a fortnight, or three weeks, or a month afterwards,—of finding the parts internally healed. Dilution of the urine may be of importance here. A bladder or a bottle should be annexed to the lower end of the catheter; in order to collect the water as it flows.

Here I think it right to observe,—as probably you know already,—that there is a wide difference between this case and that in which

* See Page 129.

an opening is produced by slough. In slough there is not merely the aperture, but the removal of a part both of the womb and of the vagina. In rupture, no substance is wanting;—the injury being effected by a simple disruption of the texture. In slough, too, there is always a great deal of injury inflicted on the parts contiguous; but in these cases of rupture, the injury may scarcely exceed that which might be produced by clean incision with a knife. Do not, however, hastily catch up the notion that, in these ruptures, the bladder is always, or even generally, healed; for this I very much doubt. Such closures, however, most undoubtedly occur sometimes; and I have seen one very conspicuous instance of it. A woman, in the neighbourhood of this metropolis*,—for it is well to relate an illustrative case of this kind,—under smart labour, was delivered by the lever, with no small violence;—according to her own report. When the child's head was liberated from the pelvis, the perinæum was torn, and a copious gush of water issued. From this time, she laboured under incontinence;—the water issuing continually; and the parts becoming excoriated, inflamed, and swollen. A friend of mine,—a very excellent accoucheur,—being called at length to see this case, found her with the urine still flowing, and labouring under a great deal of excoriation and irritation in the vagina and parts adjacent. Led by these circumstances, he instituted an examination; when he perceived an aperture in the bladder, which he requested me also to investigate; when I plainly found a rupture, of length sufficient to admit two or three fingers at once. This woman I subsequently examined with more care;—for I was subpœned to give evidence respecting the case; as it became the subject of legal investigation. Some time after I had made the first examination, therefore, I saw her again; and I then found the neck of the bladder completely closed; and the woman could retain her urine sufficiently well; though not with the same power as before the accident occurred. Here is a case which, after considerable experience, I examined with more than ordinary attention; and where, though at first two or three fingers were introduced through the opening in the neck of the bladder, a complete closure was at last accomplished. The cure was obtained in the manner recommended;—by introducing a catheter, and keeping it there. A bottle was affixed to its inferior extremity; and the urine was, in this manner, continually withdrawn by the natural canal. Of course, the general health was made the subject of attention.

[Instead of *suppression* of urine, *incontinence* sometimes occurs after delivery; in which case a catheter left in the bladder often does good. I once cured a case by a blister to the sacrum; and this would often cure boys of wetting the bed. Cold bathing is generally recommended in incontinence of urine.†]

* London.

† Dr. Mackintosh's unpublished Lectures on Midwifery.

CHAPTER XVI.

DISEASES OF THE RECTUM.

SECTION 1.—HÆMORRHOIDS.

Varieties.—Women frequently become the subjects of diseases of the rectum; and though they do not strictly belong to obstetrics, yet I am induced to make a few remarks upon them; as they are brought more especially under the notice of the accoucheur. When a woman becomes the subject of hæmorrhoids, she has tumours, either external or within. Hence hæmorrhoids have been divided into *external* and *internal**. The cause of these hæmorrhoidal swellings, is not always distinctly stated. Indeed, it seems that they are not occasioned by any one single cause; but result rather from a combination of different causes; which may operate in different degrees on different individuals, or in the same individual under different attacks.

Causes.—The principal cause of internal piles, seems to be an elongation and expansion of the inner membrane of the rectum; which becomes broader and larger than it was in health, and thereby spreads out. There is a thickening of the membrane, together with a varicose state of the veins; to which may be added, occasional inflammation, and the tumefaction which is the result of that inflammation. When all this takes place, and the inner membrane of the intestine descends,—whether during the evacuation of the contents of the bowels, or at other times,—an attack of hæmorrhoids may be said to exist. A tumour sometimes appears at the verge of the anus, as large as a pullet's egg, or larger; and this tumour may continue to lie forth; or, as in most cases, it may be easily reduced by a little pressure of the fingers. The intumescence of external piles appears to be produced, first, by an elongation of the delicate skin which lies around the anus externally; secondly, by a varicose state of the veins; thirdly, by inflammation, giving rise to ordinary tumefaction, and ultimately (perhaps) occasioning a deposit of adhesive matter; which may become organized, and lay the foundation of a permanent tumour; the bulk of which may vary with inflammation. When the patient is not under the fit of the disease, the expanded integument may contract, and the vessels may shrink. The inflammation ceasing, the swelling may subside in a great measure (like an inflamed swelling on the finger); and thus the appearance of the disease may, in good measure, vanish.

Usually a Solitary Disease.—It will deserve your attention that, in general, hæmorrhoids are a *solitary* disease;—unaccompanied with any other graver affection. Nor is it often that they destroy life;

* See Note to Page 691.

though, by impairing the health, they may go far to destroy the happiness of the patient. It is not always, however, that hæmorrhoids are a solitary and independent disease. Carcinoma of the rectum, stricture of the rectum, prolapsus of the uterus, procidentia of an enlarged ovary,—not to mention other concurrent accidents of less importance,—are now and then observed; nor must we lose sight of this, when we are endeavouring to investigate the morbid anatomy of this disease.

Usually attack the Patient by Fits.—It is unnecessary to remark, that hæmorrhoids usually attack the patient by fits. For weeks she may labour under them; and for weeks together she may be free from them. As with the catamenia, so with hæmorrhoids (though far more rarely), there may be an evident transfer of action from the head to the rectum. Previously to the attack, the head may have been as giddy and aching as in cases of amenorrhœa; and when the piles come on, all the cephalic symptoms may be very much relieved, in the same manner as by a flow from the uterus.

Blind Piles. Bleeding Piles.—Under an hæmorrhoidal attack, patients are sometimes affected with the tumours merely, without bleeding; and accompanied with shooting pains, which may cause them to complain severely. These constitute what are denominated, by the lower classes of society, "the *blind* piles". In other cases, where there is a smart attack, there is also a discharge of blood;—that is, one or more of these varicose vessels,—veins, or arteries (generally the latter),—opens; and it is from those vessels that the discharge takes place. The quantity which escapes is various. Sometimes it is large. A pint, a quart, or even a greater quantity may be effused; and much alarm may be occasioned by the consequent collapse; though death itself is rare. If the hæmorrhoids are external, the blood gets away immediately; but if they are internal, the blood discharged may coagulate, and come away by the forcing of the patient; who supposes that the ordinary contents of the bowels require evacuation, and is greatly surprised and alarmed at observing a large effusion of blood.

Attended by a Mucous Vaginal Discharge.—[A discharge of mucus from the vagina, is a concomitant symptom of piles; for the internal iliac artery supplies with blood both the hæmorrhoidal vessels, and those about the vagina; and it will be found difficult to restrain this discharge, while the hæmorrhoidal tumours continue.*]

Their Effects on the Constitution.—Under the milder attacks, the health may be very good; and their relief of the head may render them desirable. But where the attacks are frequent, and the eruptions of blood large, there the health may be very greatly reduced;—debility, irritability, dropsy, and (in some cases) death itself, being the consequence. It deserves your notice, however, that although great reductions of health have been known to take place, yet it is very

* Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 11; Page 171.

rarely that persons die under the disease. They are often supposed to be in danger; but in most cases, I think, they escape this last extremity. But what is life, when deprived of that health which makes life valuable?

[*Ulceration of the Piles.*—When hæmorrhoidal tumours become external, ulceration frequently takes place upon the surface of them, and they discharge a puriform fluid. Upon inspecting these sores, they will frequently be found to resemble, in appearance, those of a venereal kind; and, as they may be such, practitioners should be very guarded in their prognostic till they are certain. Similar sores are also observed upon the sides of the anus, to the distance of two inches or more; and they are likewise formed, sometimes, within the labia *.

Sometimes mistaken for the Venereal Disease.—Patients who have been exposed, at any part of their lives, to the cause of venereal diseases, are very apt to fear that their complaints originate in such diseases; whilst the more virtuous but suspicious woman, may be led to attribute her disease to the inconstancy of her husband. It is to be lamented, that many well-meaning practitioners are themselves too apt to fall into a habit of considering almost every discharge from the neighbourhood of the sexual organs to be of a specific nature, and every ulcer near these parts to require the use of mercury. But it is degrading to an honourable profession to witness the infamous attempts made to impose upon the unwary and credulous, by describing in the public prints, as the effects of vicious propensities, diseases which spring from causes to which all are equally exposed. The authors of such impositions, make it an invariable rule to call every complaint about which they are consulted "venereal", or to give an opinion couched in obscure or unintelligible language;—in order to intimidate those who consult them. Such persons would do well to heed the observations of the excellent Sydenham; who,—speaking of those who think that the venereal disease ought not to be cured, in order that others may be deterred from falling into the cause of it,—says: "His ego non assentior; utpote qui existimem nullum fere locum charitati atque operæ mutuæ relictum iri, nisi ea quæ sibi suâ ipsorum culpâ improvidi accersunt mala humaniorum officiis sarciantur. Omnipotentis Dei est sontes castigare, nostrum vero miseris pro virili succurrere atque ægris opem ferre, non autem *curiosâ causarum indagatione* illos acrius urgere, aut censorio vexare fastu"†.—Sydenham; "Epistola Responsiva Secunda de Morbo Venereali."

* "Tertium autem ani vitium, est ora venarum tanquam capitulis quibusdam turgentia, quæ sæpe sanguinem fundunt. Αἱμορῤῥοιδας Græci vocant. Idque etiam in ore vulvæ fœminarum incidere consuevit".—"The third malady *peculiar to the anus,* is a turgescence of the hæmorrhoidal veins;—resembling little heads, which frequently pour out blood. The Greeks call them 'hæmorrhoids'. Females are subject to a similar discharge from the veins which are situated about the mouth of the womb."—*Celsus, Book* 6; *Chapter* 18.

† "I do not agree with them; for I think that scarcely any room would be left for kindness and mutual aid, if those evils which men, by their own unwise and

Diagnosis.—The ulcers on the outside of the anus, also resemble venereal sores; for the cellular membrane is absorbed more quickly than the skin; and this absorption gives an appearance of high edges to them. They also become very difficult to heal. But these ulcerations differ from venereal sores, in not having their surfaces covered with that thick yellow film, which is met with in chancres; and although the sores do sometimes run into each other, yet they do not spread with the same rapidity as chancres. Besides, chancres will heal by the use of mercury; but this will rather be injurious in the other ulcer; which will heal by the application of simple stimulants;—such as a solution of sulphate-of-copper, or of nitrate-of-silver.

Hæmorrhoidal Affection of the Labia and Nymphæ.—The labia and the nymphæ are also apt to be more swelled;—from their vessels being distended. Varicose veins of the labia and of the nymphæ, are by no means uncommon; and, in some women, who have borne many children,—especially when the pelvis has been sufficiently capacious to receive a large portion of the lower part of the uterus, even to the end of pregnancy,—tumours of a very large size have been formed. Such distension of the coats of veins has been frequently mistaken for cysts filled with fluid, or abscesses containing pus. The error above-mentioned, arises from the circumstance of the veins of the labia being more deeply seated than the hæmorrhoidal veins; and, secondly, from the parts which cover them being much more dense. Between the hæmorrhoidal tumour and the surface, there is nothing except the thin coats of the rectum; whereas, in the distended veins of the labia, the enlargement is covered by cellular membrane, and the common integuments of the body. Besides, varicose veins of the labia have not the same appearance of distended canals, as is usually met with in the legs and thighs. In some parts, the muscular coat of the vein yields much more readily than in others;—in which, perhaps, little dilatation takes place; so that the enlargement puts on the appearance of a circular tumour, more than that of a distended cylinder.

By such an error as that which has just been adverted to, the patient has sometimes been involved in difficulty; and the practitioner has been perplexed, at the moment of his discovering the true nature of the complaint. His conduct has called forth the animadversions of his "medical *brethren*", and the blame of the patient herself; whose mind is seriously alarmed by the immediate consequences of the inattention or ignorance of the surgeon.—A lancet has been plunged into the part. To the surprise of the practitioner, blood

improper conduct, bring on themselves, were not alleviated by their fellow-men. It belongs to the Omnipotent God to punish the guilty. It is for us to succour the wretched, and heal the diseased, to the utmost extent of our power; and not, by curiously prying into causes, wound them more deeply, or vex them by censorious arrogance."—*Sydenham's "Responsive Epistle on the History and Cure of the Venereal Disease."*—N. R.

alone issues from the orifice; or,—the opening in the skin shifting over that of the vein,—hæmorrhage takes place into the loose cellular membrane, which is rapidly filled with blood. A considerable enlargement of the whole labium is thus produced; and the blackness of its colour increases the apprehensions of the patient. In order to avoid these inconveniences, let the surgeon make a steady, long-continued compression of the tumour, by means of his fingers. If the disease be an encysted tumour, no alteration will be produced in it; if, on the contrary, it should be a distended vein, it will yield to pressure; but the bulk will almost immediately return, on the pressure being removed.*]

Treatment.—In treating an attack of hæmorrhoids, it should be your first endeavour to satisfy yourselves that the disease is merely hæmorrhoidal; and, more especially, that it is not piles joined with a large accumulation of fæces in the rectum,—with *stricture* of the rectum,—with *carcinoma* of the rectum,—with prolapsus of an enlarged ovary, or with disease of the womb; as your practice, and of course your prognosis, would be very much influenced by these complications. It is of great consequence in hæmorrhoids,—whether the attack be simple or connected with other diseases,—that the bowels should be kept open. Many of the slighter attacks will be relieved by the use of mild aperients;—such as castor-oil, manna, rhubarb, sulphur, and other laxatives of mild operation; for, in general,—unless particular symptoms require them,—the more urgent cathartics (especially aloes†) should be avoided, when under an attack of hæmorrhoids. Where there is a large swelling and inflammation, leeches should be applied. You may also apply cold water; take away blood from the arm; and, in short, treat the inflammation as you would an inflammation in any other part of the body. It is said, that you may very effectually relieve the piles, by making a few punctures in them with the lancet;—so as to take away a little blood from the part; and the patient may be taught (provided she is a woman of a little spirit) to perform this operation for herself. You will sometimes find there is a vast deal of pain in the pelvis;—felt, more especially, in the rectum. Hæmorrhoids in this state may be called "irritable"; and there is, I suspect, in many cases, a vertical fissure of the membrane lining the anus. If a fissure exist, it may be ascertained by examination; and should be treated as hereafter recommended‡. If there be mere irritability, leeches and other anodynes are proper. Anodynes may be taken into the stomach; or else, in the form of a suppository, they may be introduced into the rectum; but if you mix up soap with the opium,—which is the

* Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 11; Pages 167 to 173.

† Aloes produce hæmorrhoids; and are therefore employed by homœopathists to cure them. One physician declared that half an aloetic pill brought on the piles, in his own person; and the other half cured them.

‡ See Page 881.

way a suppository is generally formed for putting into the rectum,—I suspect you will find a good deal of pain produced; and it may not remain there. Some other mode may then be tried; and a very convenient method of administering the anodyne, is by mixing up two or three grains of opium with four or five drachms of mucilage. This portion may lie in the rectum, though a very large injection would be immediately refused. For injections, in this case, a small syringe may be used.

By Ligature.—If the piles bleed very largely,—so that life seems to be endangered,—the most effectual method of ascertaining and relieving the cause of the hæmorrhage, is by inspecting the rectum; whether by a "speculum ani", or otherwise. Sometimes, under urging, the bleeding parts may be brought into sight; and then, the parts being under view, you might take a ligature, and tie them up; when there would be an end to the bleeding;—at least, for a time. The operation is painful; but not dangerous. Dr. Copeland has applied ligatures to the inner membrane of the rectum, in more than two-hundred cases; and never, I believe, in one instance, lost a patient in consequence. You had better, however, try the other remedies, before you resort to the ligature. Pressure and cold water, together with the usual remedies of flooding, are the principal.

Let me add that, in the treatment of "bleeding piles" where the head is relieved by the bleeding, it may be better to leave the hæmorrhage unchecked; for a loss of blood from the rectum, is certainly far preferable to the risk of apoplexy. Often the attack of piles is foreshown by a throbbing in the parts; and in these cases you may, I suspect, reduce the subsequent violence, or totally prevent the attack, by the application of ten or twelve leeches. If the head were much affected before the attack, I would not do this; but would rather suffer the piles to appear, and the bleeding to proceed. But, in the majority of cases, the head is not much affected, and preventive means may be used; for I can at present by no means accede to the opinion of those, who consider that hæmorrhoids are frequently constitutional. When piles become old and indolent, they lie about the entrance of the bowel; and are sometimes not removed for a considerable length of time. Dr. Munro, of Edinburgh, used to recommend strongly an ointment, which consisted merely of galls mixed up with spermaceti-ointment; in the proportion of a drachm to an ounce. Extirpation by the knife can rarely be required.

Reduction of Protruding Piles.—When hæmorrhoids descend from within the bowel, and pass forth through the anus, they ought to be immediately replaced. The effectual mode of doing this, is not known to many. It consists, first, in bearing the piles upwards; and then, secondly, in allowing the sphincter ani to relax, as if the contents of the gut were to be evacuated. This opens the anus; and the parts immediately ascend. This little manœuvre is well worth recollecting. Nothing can be more unwise, than to make an effort to draw up the intestine when the replacement is attempted. Such an

effort is always attended with constriction of the anus; and thus the reduction is rendered impracticable.

Specific Remedies.—In hæmorrhoids, there are certain medicines, of the milder kind, which are recommended as specific; such as sulphur, copaiba, and especially "Ward's paste;" which is, I believe, principally made up of peppers*; and which seems to be a healthful stimulus to these parts. In the present state of my experience, I forbear to pass a judgment.

SECTION 2.—PROLAPSUS ANI.

Internal Membrane alone Descends.—You will sometimes find patients affected with another disease;—a modification of internal piles. It is called "prolapsus ani". In prolapsus of the bowel, you are not to suppose that all the three textures of the bowel (mucous, muscular, and peritoneal) descend;—for the lower extremity of the rectum is wholly destitute of peritoneum; and it seems to be nothing more than the inner membrane of the bowel that descends;—sometimes one inch; sometimes two, or three, or four. Where there is a great deal of thickening of it, and much enlargement of the veins and arteries, the mass altogether may constitute a large puffy swelling;—recognised immediately on inspection, or even by the touch;—provided the mind be previously alive to the probable nature of the disease.

Causes.—The most common cause, by far, of this most troublesome affection,—the prolapsus of the rectum,—is habitual constipation; and much of that effort of the bowels which is called "tenesmus". Naturally, as you see in the horse, the gut comes down a little way when the contents of the rectum are expelled; but if there is a great deal of urging-down, and if,—owing to the feculent matter being very large and hard,—it passes with much pressure, there is a disposition to a larger descent of the gut than is consistent with health; and, by repeated urging and descending, the inner membrane may become so greatly elongated, as to lay the foundation of a very grave form of the disease.

Palliative Remedies.—In these cases of prolapsus ani, the following, I believe, are the most powerful remedies;—to be used in the way of palliation. In the first place, let the bowels of the patient be moderately relaxed; so that the evacuations may be pulpy, instead of being large and indurated, and that they may pass away without effort. Manna, castor-oil, sulphur, and a little senna-electuary, or any of the milder laxatives, may be used for this purpose. Secondly, you should explain to the individual the effect which tenesmus or constipation has, both in inducing and in aggravating the disease; and, therefore, a principal rule to which she is to attend, is on no account to give way to the disposition to urge. When the patient labouring under this disease passes her fæces, the inner membrane of the rectum, and even the anus, may descend a little way; and this produces a feeling, that there is something more to pass; which may induce

* See Note to Page 691.

more urging, and a further descent, and desire to urge. On no account, therefore, is this forcing to be continued; but as soon as the contents of the bowels, wholly or in great measure, are passed, all further efforts of urging should be restrained. Again: when the rectum descends, you should direct your patient to get into the habit of refraining, as much as may be, from contraction of the sphincter ani, till the intestine has been replaced; for the sphincter ani is, in a great measure, a voluntary muscle; and if when the bowel is down beyond the anus, this muscle is strongly contracted, a strangulation of the part ensues. I have already explained to you what is the best mode of replacing the prolapsed part;—I mean, by forcing down, upon the one hand, so as to open the anus more widely; and, on the other hand, bearing the bowel upwards, while the anus remains relaxed. This operation ought always to be performed when prolapsus exists, without the needless delay of one moment; for the longer the parts lie forth, the more injury they are likely to sustain.

Tonics.—We are recommended, in cases of this sort, to use medicine to strengthen and brace up the parts; but, I believe, it rarely happens that those medicines are of any use. Cold water, astringent washes, and analogous medicines, may be tried. They will amuse the patient, and tend to sooth her mind; and may, therefore, be looked upon as so far valuable; but they will do nothing more.

Treatment of the Severer Forms.—These, then, are the principal points of treatment which I should recommend to your attention, in the milder and ordinary attacks of the disease. But I will suppose that the patient labours under an attack of the severer form; that the bowel descends a considerable way; that there is a great deal of bleeding;—insomuch, that the general health is greatly impaired by it; and, further, that the attack is altogether so distressing, that the patient is anxiously desirous to obtain a radical cure. What then can be done? In cases of this sort, it has been advised that, with the knife or the scissors, we should cut away the diseased parts; but this is, I believe, allowed to be, in some cases, an operation of no small danger; for it has repeatedly happened that patients have perished in consequence of the subsequent hæmorrhage. I understand that some of our great surgeons do not scruple to state, that they have lost more than one patient in this way. Is there no other mode of affording relief? Yes; there is a very simple and a very beautiful operation with which, I believe, I first became thoroughly acquainted from the information of Mr. Copeland; to whom I am indebted for some very valuable knowledge respecting this troublesome disease. I mean Copeland who has written so well, and so much to the purpose, upon the diseases of the rectum.* The bladder is to be emptied; the bowels are to be cleared; the patient labouring under prolapsus is to make efforts until the inner membrane pushes down into sight; and then the practitioner,—inspecting the parts which

* "Observations on the principal Diseases of the Rectum and Anus. By Thomas Copeland." London, 1824.

descend, and observing that there are one or more portions which appear a great deal redder than the rest, and from which the blood oozes,—takes a tenaculum; and, with the help of an assistant, draws forth this part or fold, and keeps it on the stretch. Then, taking a ligature of common silk, he ties up this part,—a fold of the inner membrane,—as tight as may be;—cutting away one end of the ligature, and leaving the other. If the whole can be contained within one ligature, it is well; if not, it is necessary that two or more should be applied;—one end of the ligature being left long, so as to hang forth at the anus; and the other being cut away close upon the knot. After this, an effort is made by the patient to open the rectum; and by the help of pressure, the parts are easily replaced. After reduction of the bowel, all is to be kept quiet; and, by the administration of opium, evacuations should be prevented till the ligatures come away. Under this treatment, no dangerous symptoms occur. After the ligature has been applied, and the parts have been replaced, we ought to keep the bowels at rest; and to subdue the pain, as far as possible, by the administration of opium;—according to the effect produced. It is not, in general, till the ligatures come away, that the bowels ought to be suffered to act. The first evacuation often gives great pain; but every succeeding effort is easier; till the healthy feeling of the part is restored. Castor-oil is, perhaps, the best aperient. The more the membrane descends, the more likely is the operation to succeed; for the cure seems to depend on an adhesive inflammation, which fixes the prolapsing membrane to the muscular tunic of the rectum, which remains above. The more the membrane descends when down, therefore, the higher will it ascend when replaced; and the greater will be the distance of the ligature, and the consequent adhesion above the anus. When an adhesion has been formed near the anus, there is a risk lest the parts above should double over it, and come down.

The pain which follows the operation is sometimes very severe and alarming; especially if the opium is not begun early enough, or given largely enough. I never saw any urgent danger arising from the operation; but my experience is not by any means extensive. Mr. Copeland (who has, I believe, performed it in one or two hundred cases, if not more) tells me, that in no one instance does he recollect its proving fatal. Like other operations, this, I presume fails now and then; but failures are rare. In general, it prevents the further descent of the membrane; puts a stop to further bleeding, even where gallons of blood have been previously lost; and is followed, frequently, by a very complete re-establishment of the health, unless it have been previously ruined by the hæmorrhage. Perhaps there are few parts of surgery more beautiful than this. It is amusing to observe general surgeons, whose business it is to administer help in the diseases of this,—the least honoured part of the human structure,—giving themselves airs of superiority over the obstetrician,—who undertakes the relief of the diseases of the generative organs;—as if their practice

were, from the nature of the parts on which they operate, of a more elevated character than that which belongs to the "vocation."

"Mænius absentem Novium cum carperet,—'Heus tu!'
Quidam ait, 'Ignoras te? An ut ignotum dare nobis
Verba putas?'—'Egomet mî ignosco!' Mænius inquit.
'Stultus et improbus hic amor est, dignusque notari!'"*

The gift of healing is, in a manner, sacred, and to be reverenced;—on whatever part of the body it is exerted.

SECTION 3.—FISSURE OF THE INNER MEMBRANE OF THE RECTUM.

There is yet another variety of disease about the aperture of the rectum, which deserves observation from us; and that is a fissure of the inner membrane,—vertical or oblique,—single or repeated. Patients labouring under this affection, are often supposed to labour under uterine disease; such as prolapsus, for example; or cancer; or some anomolous uterine affection.

Symptoms.—It is usually by paroxysms that the disease makes its attack; and then the patient suffers excessive uneasiness about the centre of the body. There may be shootings, throbbings, bearings, and pains, not easily described. When in the sacrum, there may be pain above the fold of the thigh, and frequent desire to pass urine. These symptoms are relieved, sometimes, by the recumbent posture, and an approximation of the knees and bosom; are aggravated, exceedingly, by the passage of solid and indurated substances from the bowels; and, perhaps, are first brought on by this cause.

Diagnosis.—Careful examination detects the fissure, or the cicatrix of a former fissure. For weeks together after an attack, the patient may remain comparatively well. If the attention be not vigilantly alive, you may long remain ignorant of the nature of this disease;—supposing the patient to labour under prolapsus, cancer, irritable piles, or affections of the bladder, vagina, symphysis pubis, or other parts.

Treatment.—When once understood, it is easily remedied;—first, by keeping the bowels in a soluble state; and, in the second place, by directing the patient to apply to the anus some gentle stimulus; which may encourage the healing process. Some of the best I know are the mercurial;—an ointment made with the "hydrargyri oxydum cinereum," or the "unguentum hydrargyri nitratis", properly weakened;—to be applied to the part diligently, and repeatedly;—say three or four times in the day. It is to Mr. Copeland, of Golden Square, that I am indebted for most of what I know respecting this disease. It is not uncommon; and is, I believe, frequently misunderstood.

* When Mænius censured the absent Novius, "O," said one who heard him, "Do you not know yourself? Do you intend to impose on us; as if we were ignorant of your character?"—"I deal tenderly with my own faults," replied Mænius. "This self-love" [rejoined the other] "is foolish and wicked; and deserves to be reprehended."—*Horace's "Satires"; Book* 1; *Satire* 3; *Lines* 21 *to* 24.—N. R.

SECTION 4.—ASCARIDES IN THE RECTUM.

[Whoever has attended to the diseases of the sexual organs, must have seen repeated instances of disease in one part producing symptoms in another; which symptoms have been regarded as the primary disease. Mucous discharges from the urethra, in males, are indicative of disease in the prostate gland, and in the testicle; and yet they are sometimes mistaken for, and treated as, a morbid condition of the urethra;—often with manifest injury to the patient. So, likewise, discharges of mucus from the vagina have been considered as originating in disease of that passage, or of the uterus; whereas the irritation arising from ascarides in the rectum has produced all the symptoms.

Symptoms.—Ascarides are endowed with a power of very rapid motion, and they have a pointed extremity, which is nearly transparent; with which they probably irritate the sides of the rectum. An extreme and insufferable itching, very distressing to the patient, is occasioned by them. A larger quantity of blood in the vessels of the neighbouring parts, is the effect of their being so stimulated; and from the increased circulation arises an increase of secretion. Ascarides will also travel from the rectum across the perinæum, into the vagina; the membrane of which will be itself stimulated by the presence of these animals in that passage.

Diagnosis.—Some care is required in investigating this case; for both the mucous discharge and the pruritus* attend many other complaints, requiring very opposite modes of treatment. Although children are seldom attacked by mucous discharge from the vagina, yet it sometimes appears; and may depend upon this cause. Irritation in the gums, at the time of dentition, will also excite it. An examination of the alvine excretions should be frequently made; when, if ascarides should be present, they may be seen upon the surface of the fæces.

Treatment.—As the rectum is especially the seat of the ascaris, or thread-worm†, the complaint may be cured by glysters. These act partly mechanically;—by washing out the intestine, and so removing the worms; and partly by being obnoxious to the ascarides. Solutions of bitter substances in water,—such as "decoctum anthemidis‡", "decoctum absinthii§", or a mixture of aloes and milk, are found to be useful in removing them; but a strong decoction of the "semen santonici‖", is the most efficacious of all the injections in use¶. With this the rectum should be filled; but the quantity thrown up should never be so great as to produce great distention of its cavity; lest, the coats of the bowel being stimulated, it should contract

* From *prurio*, "to itch."

† See Note to Page 620.

‡ Not in the *London* Pharmacopœia; but that of *Edinburgh* has a "Decoctum Anthemidis Nobilis."

§ Not in any of the three British Pharmacopœias.

‖ The seed of the "Artemisia Santonica" ("Southernwood", or "Wormseed").

¶ ℞ Seminis Santonici, ʒvi.
Aquæ Puræ, ℥xii.
Coque ad ℥x, et cola.—Fiat Enema.

hastily, and expel the glyster; which acts with more certainty if it remain for some time. This operation, repeated for a few successive days, will seldom fail to remove (for a time) the ascarides, and the symptoms which they produce.

Purgatives.—Purgatives employed alone, are of little service; but during the use of glysters, they ought to be occasionally exhibited. Those of a stimulating kind should be preferred;—such as jalap, or scammony with calomel. As the constitution of the patient is generally debilitated, preparations of iron, with a nutritious diet, will be advantageously employed. Generally, no remedies will be required to put an end to the discharge from the vagina; which is merely symptomatic. When the ascarides are removed from the rectum, the mucous secretion from the vagina will cease.

Soothing Glysters.—If the rectum should remain irritable after the removal of the ascarides, it may be tranquillized by the injection of two ounces of "decoctum amyli", or "decoctum seminum cydonii", with forty or fifty drops of "tinctura opii"; or by a suppository containing one, two, or three grains of opium mixed with starch.*]

SECTION 5.—CARCINOMA RECTI.

[Carcinoma recti is not a disease of frequent occurrence; but as it sometimes happens, and as, in some of its symptoms and in its termination, it resembles carcinoma uteri,—being attended by a mucous discharge from the vagina,—it deserves a place here. The lower part of the rectum being of a more glandular structure than some other parts of the intestines, renders it, perhaps, more liable to this disease than other portions of this canal†.

Symptoms.—The whole circumference of the rectum is most commonly affected; and,—the parts becoming thickened in consequence of the disease,—the capacity of the canal is diminished, and the passage of the fæces through it is impeded. The resistance produced by this cause, makes the discharge of the fæces very painful: and as piles are a very common disease, and are generally supposed by patients to be the cause of any pain or difficulty in voiding the fæces, this complaint has been mistaken for them; and the patient has suffered the inconvenience, without being aware of any danger. In consequence of this narrowness and obstruction in the rectum, the colon becomes gradually more and more distended; and, upon an inspection of the body after death, it has been found to contain several pints of fluid, resembling a mixture of fæces and water. Few cases present greater difficulties in practice, than this stage of carcinoma recti; which becomes a stumbling-block to the careless or unobservant, and which causes great hesitation to the informed practitioner. The former, misled by the fluctuation of fluid in the distended colon, mistakes the case for ascites; while the latter is aware of the true

* Sir Charles Mansfield Clarke's "Observations on Some of the Diseases of Females"; Part 1; Chapter 12; Pages 179 to 183.

† See Dr. Baillie's "Morbid Anatomy".

cause of the symptoms, and knows that the case admits of but one mode of relief, and that only temporary;—the introduction of a large bougie through the constricted and irritable part.

Diagnosis.—This disease has also been mistaken for membranous stricture of the rectum; and the patient has been much injured by the mode of treatment pursued in that disease;—so much so that even her death has been accelerated. Bougies* introduced into the constricted part, have produced a great degree of inflammation in the neighbourhood; and thus, by adding to the thickening of the rectum, have increased the symptoms which they were intended to alleviate. The pain attending the complaint, is of the darting or lancinating kind; and, being referred to the neighbourhood of the uterus, has led to a supposition that the uterus was the diseased part. This error with regard to the seat of the complaint, if its true nature is understood, is not very important; because, whether the complaint is in one viscus or in the other, the principles upon which it is to be treated are the same. In carcinoma of the rectum, the distress will be greatly increased by the passage of the fæces; and the pain will be such as the patient would feel upon the rough handling of any external tumour of a similar character; whereas, in the common stricture of the rectum, although there may be pain, it will be by no means so acute;—being occasioned merely by the resistance offered to the passage of the contents of the intestine. In carcinoma of the rectum, acute pain is occasionally felt, even when no endeavour is made to expel the fæces. In stricture of the rectum, the pain is felt only at that period, or for a short time afterwards. The constitution, also, is more likely to be affected in carcinoma, than in stricture of the rectum; and the sympathies between the part diseased and other parts, will be more likely to be excited in carcinoma than in stricture. The hæmorrhoidal veins are apt to become enlarged, and sometimes to bleed. The bleeding may have some effect in retarding the progress of the complaint. Small œdematous tumours about the anus, are also very liable to be formed; but both of these symptoms are likely to be met with in other diseases; where the action of the blood-vessels is increased, or the return of blood to the heart prevented.

Progress of the Disease.—When the uses of the rectum are considered, and its liability to be stimulated, it will appear probable, that carcinoma of the rectum will advance with greater rapidity to the more active stages of the disease, than when it attacks parts less exposed to pressure or disturbance. But, upon this subject, it will be difficult to form any precise opinion; because it is impossible to know how long the disease may have existed, before the practitioner was consulted; and it frequently happens that he is not consulted at all, until the commencement of that inflammatory action, which attends the conversion of the complaint into the ulcerated state. Moreover, —the disease not being frequent,—opportunities of collecting information respecting it, will not often occur.

* From the French *bougie*, "a wax candle."

Mesenteric Glands are Affected.—That the mesenteric glands are affected in the latter stages, may be learned from writers on morbid anatomy. Dr. Baillie states, that when a portion of the intestinal canal becomes cancerous, some of the absorbent glands in the mesentery also become affected with the same disease;—in consequence of the matter of cancer being conveyed to them by the absorbent vessels. This explains the great emaciation which commonly attends the disease. The mere irritation and pain, and the quantity of the mucous discharge from the vagina, during the first stage of this disease, may in some measure account for it; but if the parts concerned in the conveyance of the chyle into the blood have their structure likewise altered, it is reasonable to expect that the emaciation and loss of strength will be more quickly produced. An opportunity has never occurred to the author*, of examining the body of a patient in the first stage of the complaint, before ulceration has commenced; but,—as absorbent glands in the vicinity of carcinoma, in other parts of the body, occasionally appear to enlarge before matter forms, and, consequently, before it can be absorbed,—it is probable that they may do so here; and the mesenteric† glands may have undergone an alteration in the early stages of the disorder.

Few other symptoms attend this disease; and, under proper management, this state of things may continue for a long period;—producing no symptoms of a more alarming nature.

When the disease becomes cancerous, the symptoms begin to be more formidable. The mucous discharge is converted into one of a purulent kind; but the history and treatment of this stage, will be considered under the head of "purulent discharges"‡. It may here be remarked, however, that occasionally, in the ulcerated stage, a communication is made between the rectum and the vagina;—in consequence of the destruction of the parts which, in the natural state, separate these cavities from each other; that the pain becomes more acute; that the stomach is apt to be affected with vomiting; and that hectic fever sometimes supervenes.

General Treatment.—Carcinoma does not admit of cure, by any medical treatment hitherto known. That species of tumour which is found to degenerate into cancer, can be removed only by the excision of the part. Even when this operation is resorted to in other parts of the body, it is doubtful whether much benefit is often obtained; since the part where the incision was made, or parts in the neighbourhood, are very apt to continue the disease. Even admitting the utility of the operation where the disease is seated in other parts of the body, it must be wholly inapplicable when the rectum is the seat of the disorder. As the disease does not admit of cure, it is of great importance that no injury should be done by unnecessary interference or irritation. The endeavour to do much, in such cases, is worse than doing nothing. To look on and watch a disease; to know

* Sir Charles Mansfield Clarke.

† From *μεσος, the middle*; and *εντερον, an intestine.*

‡ In Sir Charles Mansfield Clarke's "Observations".

when to assist nature in her operations, and when to do nothing;—these are among the greatest qualifications of practical men, and the lot of but few. It should never be forgotten, that the natural resources of the constitution are equal to a great deal, if not interrupted by the interference of art.

Simple Applications.—Perhaps, in other parts of the body, when tumours of this description arise, and when it is not thought right to remove them by operation,—on account of the age of the patient, or the state of the constitution being unfavourable to the healing of the wound, or because glands in the neighbourhood are diseased,—the most simple applications are the best. Stimulating applications, designed to promote absorption of such tumours, should never be employed; as they produce no good effect, and may do irreparable mischief.

Impropriety of Plasters.—All plasters which adhere strongly to the surface of the skin,—notwithstanding that the ingredients of which they may be composed are of a sedative nature,—should be avoided; for, by the warmth which they produce, they may be injurious; and, in the removal of them the skin may be injured, and a breach of surface produced. In this way, any good effect which might have been expected from their sedative quality, will be defeated.

Protect it from Cold.—As a defence against external injuries, when the skin is very tender, the common soap-plaster*, spread upon thin linen, may be applied; and, while care is taken to prevent the part from suffering by any improper exposure to cold, it should also be a particular object of regard, that it be not kept too warm. Most patients who consult medical men on account of tumours, have applied flannel to the part;—"in order to keep the cold from them". The practitioner should endeavour to explain to the patient, the erroneous principle of her conduct; and should advise her equally to avoid the extremes of heat and cold. Another object of importance, is to prevent the unnecessary action of those parts near which the disease is situated.

No intermediate change is met with between carcinoma and ulcerated carcinoma, when it occurs in internal parts; so that, when once the inactive state is over, the active state immediately commences, and in many cases quickly destroys the patient;—especially when the complaint attacks parts in the neighbourhood of the vital organs; the functions of which frequently become deranged by it†.

Avoid all Stimulants.—In treating carcinomatous tumours, every thing should be avoided which can stimulate the diseased part, or increase the force of the circulation. If there should appear to be too great strength of the constitution, or inordinate vascular action

* The "Emplastrum Saponis" of the London Pharmacopœia.

† In a considerable number of cases in which the early symptoms of carcinoma recti have been present, they have been wholly removed by the abstraction of blood from the sacrum by cupping. This remedy is also very efficacious, even when the disease has made great progress.—*Sir C. M. Clarke.*

in the part itself, these are to be subdued by the removal of blood from the region of the os sacrum, by cupping-glasses, or by leeches. This should never be omitted; and the operation may be repeated as often as the urgency of the symptoms may demand it. The lancet also may be used, if the symptoms should be violent, and the patient strong. Great attention should likewise be paid to the state of the constitution; and we should be careful, while pursuing those measures which diminish strength, not to produce the opposite danger of debility. There are very few constitutions which will not bear the loss of a small quantity of blood from small vessels. Wherever, therefore, much pain is present, this remedy should always be had recourse to. If the hæmorrhoidal veins should spontaneously bleed, this may supersede the necessity of taking away blood by artificial means.

Prevent the Accumulation of Hardened Fæces.—Great attention should be paid to the state of the bowels; in which hard fæces should not be suffered to accumulate; because, in passing, they will irritate the diseased part, and cause pain to the patient;—which pain might be avoided. The purgatives adapted to this case, are expressed oils, sulphur, and manna. Whenever relief can be afforded by these means, they are to be preferred to all others; but if they should not be sufficiently active, senna may be joined with them, or a saline purgative may be taken separately. The object of saline purgatives is, that they may irritate the mucous membrane. To counterbalance this inconvenience, however, they possess the advantage of rendering the motions more fluid.

Vegetable Diet.—In whatever part a carcinomatous tumour may be situated, it will be right that the patient should live (as much as possible) upon *vegetable* food;—it being less nutritious and less stimulating than *animal* food. It is especially proper when the disease attacks the rectum;—such nourishment being most likely to pass readily through the bowels, and to keep them in that open state which is so much to be desired. Fermented liquors, distilled spirits, and spices, will be very injurious. They should therefore be avoided.

Avoid Irritation of the Vagina or Bladder.—From the vicinity of the rectum to the vagina, this latter part should not be subjected to any cause of irritation; and, therefore, if the patient be married, she should be cautioned against sexual intercourse. If the *lower* part of the rectum should be the seat of the disease, the sufferings of the woman, upon those occasions, would be alone sufficient to deter her from it. If the bladder should become irritable, the immersion of the hips in tepid water, will be found to afford relief. Opium, although so useful in relieving pain, should never be employed, except when absolutely necessary; for a time may come, when the patient will be indebted to it for all her comfort; and, therefore, it should not be used before it is wanted. It is, perhaps, the most powerful of all the medicines in use for relieving pain; but when the stomach has been long accustomed to it, it will produce but little effect, and

the other milder sedatives none. It also renders the bowels more torpid.

Vaginal Discharge not to be Restrained.—The mucous discharge should by no means be restrained by the use of astringents; because, if suffered to continue, it will retard the progress of the disease. If it should be hastily or incautiously checked, the symptoms will quickly increase. The pain will become very violent, and the disease altogether very sensibly aggravated. Tepid water may be thrown into the vagina, several times a day, with a female syringe; and the external parts may be frequently washed with it. This will prevent the discharges from becoming irritating, or excoriating the parts over which they run; and the neighbouring parts will be much soothed by it. The temperature of the water employed, should be below that of the body. When means have been employed to diminish the discharge from the vagina, it is not unusual for the patient immediately to observe an increase in the violence of the symptoms; and this remark leads, sometimes, to the knowledge of the state of the uterus, or of the neighbouring parts; which might otherwise have escaped observation.

The attention of the practitioner being called to the probable existence of some organic disease, he ought to satisfy himself by an examination. Perhaps the disease may be out of reach, either by the rectum or the vagina; and the nature of the complaint may not be ascertained. But if, upon a return to the use of astringent injections, there should be an augmentation of pain, it will be prudent to act as if such disease was known to exist. By such conduct no harm can be done; while from the reverse much mischief may ensue.*]

SECTION 6.—ULCERATED CARCINOMA OF THE RECTUM.

[The vicinity of the rectum to the uterus, the sympathy between these parts, and the effect produced by the action of the one upon the other, will account for an assemblage of symptoms of a mixed nature, in diseases of both of these organs; so that, without an accurate enquiry and an examination, it will be difficult to determine which part has become affected. Many instances have occurred, in which a complaint of the rectum has been treated as a disease of the uterus; and even a greater number, where alterations in the structure of the uterus, have been referred to the rectum.

Symptoms.—In proportion as the practitioner is engaged in treating the complaints of one or the other of these parts, he will be led to attribute the symptoms to that organ to which his attention has been chiefly directed. Whenever, therefore, symptoms of carcinoma in the rectum or in the uterus present themselves, it should be first recollected that, as the latter part is more liable to the complaint than the former, it is probable that the uterus is the seat of the disease.

* Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 13; Pages 185 to 206.

In the former section of this chapter, the first stage of carcinoma of the rectum, has been considered*; and it now becomes necessary to record those changes which take place in consequence of the ulcerating process, which converts the complaint into what has been familiarly called "cancer". The mucous discharge which attends the early stage of carcinoma of the rectum, gradually becomes of a purulent nature; and the quantity of pus secreted, will be found to be in proportion to the length of the intestine included in the disease. The appearance of pus at the anus, may lead to a suspicion that fistula exists; but an examination of the parts will quickly put this question at rest.

If the finger of the practitioner be carried into the rectum, it will be girt by a constriction of considerable thickness, through which it cannot be passed; and if any attempt be made to surmount the difficulty by violence, the patient will suffer excruciating pain, and a discharge of blood will be the consequence of such a rude examination. The surface of the constricted part, instead of possessing the smoothness of the villous coat of the intestine, will be sensibly abraded; and it will be scarcely possible to conduct the investigation without producing some discharge of blood.

Necessity of Early Attention.—The existence of the disease being once known, the surgeon should not be too solicitous to ascertain its extent; as no advantage can arise from such knowledge even when acquired; because it cannot here, as in the more superficial situations of the disease, be removed by operation;—previously to determining upon which, in the latter cases, it would of course become necessary to be acquainted with the boundaries of the disease. The most trifling case of carcinoma existing in an internal part, requires the same vigilant care, as that in which the disease has proceeded to a much greater extent; and the same fatal consequences will be found to ensue from a small carcinomatous thickening of the intestinal canal, as from a larger portion being involved in the disease;—the patient being frequently cut off, not so much by the symptoms arising from the disease itself, as from the effects produced by such disease upon the functions of the organ which is the seat of it. A large tubercle of the liver may exist during many years, without proving fatal; but a small tumour of that organ, if situated so as to compress the gall ducts, may destroy the patient in a much shorter time;—by producing jaundice, dyspepsia, emaciation, and dropsy. Very little is known respecting the diseases of the pancreas; but a trifling thickening of the head of that viscus, pressing upon the gall-ducts, may produce irremediable jaundice, dropsy, and death. An enlargement of the mesenteric glands may exist to a considerable extent, attended only by symptoms of debility; but such a consolidation of them may be produced, as to compress the large blood-vessels at the posterior part of the cavity of the abdomen;—so as to cause convulsions and death. A preparation of this nature, the author† has in his collection.

Progress of the Disease.—In like manner, carcinoma affecting not

* See Pages 883 to 888.

† Sir Charles Mansfield Clarke.

more than a quarter of an inch of the rectum, may,—by obstructing the passage of the fæces,—cause a distention of the whole colon; and the patient may die of inflammation of the coats of the intestine, produced by such distention. If three inches of the intestine had been involved in the disease, the symptoms would only have been the same; so that neither will the treatment be improved, nor the prognostic be assisted, by the knowledge of the extent of the complaint. When common ulceration attacks a part, such part is destroyed by it; but where the ulceration of carcinoma exists, the deposit of new matter by the arteries, more than counterbalances the effect produced by the action of the absorbents; and the thickening and the destructive process proceed simultaneously. The functions of the rectum, as a reservoir for the fæces, and as a canal through and by which they are to be ejected, render it impossible to maintain this part in a state of rest; and the constant pain belonging to the disease, will be materially aggravated by the disturbance to which the parts will be occasionally subject. Hence if the constipation attendant upon carcinoma of the rectum be not referred to its true cause, and if the patient be frequently exposed to the action of purgatives, the symptoms of the disease will be increased by the very means employed to alleviate them.

Diagnosis.—All the symptoms which attend the first stage of this disease, will be found to exist in a great degree in the second. The darting pain will be increased, both in frequency and in violence; the action of the heart will be greatly and permanently accelerated; the functions of the stomach will become more and more impaired; vomiting will be almost constantly present; temporary relief will be found only in opium; and permanent rest only in the grave. In the progress of the ulceration, blood-vessels will be exposed; and will pour out, according to their size, a larger or a smaller quantity of blood. Happy would it be for the patient, if such hæmorrhage should prove fatal! But such an event is hardly to be expected; and, unless in parts more abundantly supplied with blood than the rectum, such an occurrence is seldom met with.

Effects of the Disease.—The ravages of carcinoma extend in all directions; but chiefly where the disease is least resisted. Thus, it will occasionally happen that the parts which form the barrier between the rectum and the vagina, will be destroyed; and a communication will be formed between the two cavities; or it may happen that distention of the upper part of the rectum, by fæces above the seat of the disease, may cause common ulceration of the coats of the intestine, and of the vagina; and the fæces may, from this cause also, be voided through the latter passage, during the continuance of the patient's life. From this point of time, the disease in the rectum proceeds after the manner of external carcinoma; for the part in which it exists, having ceased to perform its accustomed functions, becomes no longer annoyed by serving the purpose of a canal*.

* In some cases, so great a degree of thickening takes place in the seat of the disease, as to obliterate the canal entirely. The fæces, having now no longer a

Great stress has been laid upon the fœtor of the discharges from cancerous sores. That they are offensive, is beyond doubt; but it is probably in consequence of the sloughing process, which commonly (in some degree) exists in such sores; and not from any peculiarity of the discharges themselves. Common pus to which the access of air is allowed, will become putrid; and it will be difficult to wash away the discharges from the parts, as soon as they are secreted. In those instances where a communication is formed between the rectum and the vagina, the mixture of the contents of the intestinal canal with the discharges from the vagina, will give them a feculent odour.

Treatment.—As ulcerated carcinoma of the rectum, and of the uterus, requires a mode of treatment nearly similar in both cases, the reader is referred to the observations which have been made upon the subject of "malignant disorganization of the uterus"*, with regard to that point.†]

CHAPTER XVII.

DISEASES OF THE EXTERNAL ORGANS OF GENERATION.

SECTION 1.—PRURITUS OF THE VULVA.

Attendant Symptoms.—Patients are sometimes affected with a very distressing disease, not of unfrequent occurrence;—"pruritus of the vulva", as it is called. Under this disease, there is a great deal of irritation of this part;—sometimes seated in the mons veneris, and the parts contiguous; and sometimes towards the perinæum. Together with the itching, there may be a smarting, a stinging, and a feeling of acupuncture (or, as it is popularly termed, "pins and needles");—the symptoms together being so severe, as to rob the patient of her rest at night, and destroy her comfort during the day. She cannot sit still in her chair, or lie in peace in her bed; but is continually harassed by the stings of this very troublesome disease.

Causes.—This pruritus, where it is found in the severer form,—more especially if it is idiopathic (that is, unconnected with any other more formidable disease as its cause),—arises, sometimes,—where there is inattention to purity,—from insects which infest the tufted growth on this part of the body. In this case, preparations of mercury, turpentine, tobacco, and so on, together with the removal of the hair, will speedily put an end to so disagreeable an affection. Pruritus may be produced by cutaneous eruptions; and is then

power of escaping, will distend all the great, and sometimes even the small, intestines; until, at length, their coats yield; when death quickly follows the escape of their contents into the cavity of the abdomen.—*Sir C. M. Clarke.*

* See Pages 784 to 792.

† Sir Charles Mansfield Clarke's "Observations on the Diseases of Females." Part 2; Chapter 13; Pages 204 to 212.

relieved by the various remedies for such diseases;—by tar, sulphur, and mercury, in all their various forms. Pruritus may, moreover, be produced by ascarides in the rectum*; for these worms may give rise to great irritation externally. A smart dose of calomel-and-scammony, is said to expel them;—at least, for a time. I apprehend they may be brought more certainly away if attacked locally. The strong decoction of worm-seed †, or any very strong bitter, or the oil-of-turpentine, properly prepared in the form of injection, may be thrown into the bowel;—with the fairest prospect of expelling or destroying these vexatious parasites.

Complicated with Pregnancy.—It not unfrequently happens, that pruritus is connected with pregnancy; and when this is the case, as gestation advances, the patient gets rid of the disease; or, when delivery takes place, the disease ceases. More especially the patient is distressed with the pruritus at night; and a very efficient palliative,—for it is nothing but a palliative,—consists in having a pailful of cold water by the bed-side, taking a sponge and dipping it into the water, and then applying to the vulva;—the sponge, as it gets warm, being refrigerated afresh. Lastly: pruritus, in the severest form, may arise without any very obvious cause. It seems to take place, more especially; about the time of the cessation of the catamenia. I have seen a few very obstinate and distressing cases of this kind; and I cannot say I am yet in possession of any effectual cure for it.

General Treatment.—In the way of palliatives, anodynes may be tried locally;—refrigeration by cold water, and the preparations of tobacco, digitalis, and lead. With a view of producing an altered action, mercurial ointments (blue, red, and white), and lotions, may be tried in their turn. As a temporary palliative, blisters are thought to be of service; and though blisters are not very convenient in this part of the body, yet women sometimes submit to their action, rather than to the continued irritation of the pruritus. While the blister is drawing, according to Haighton, relief may be expected. If the itching occur at the cessation of the flow of the catamenia, it is recommended that we should take away blood from the arm every two or three weeks;—in order that we may imitate the discharge of the catamenia; to the cessation of which the pruritus is referred. I have little experience of this practice. I have tried very strong solutions of the nitrate-of-silver; and certainly, as a palliative, the remedy seemed to be of service; but as a radical cure it failed; and I am afraid that, in the present state of our knowledge, we must, in this disease, look merely to the palliation of symptoms, by means of anodynes and other measures;—trusting the radical cure to time. In the course of a few months, it may become materially mitigated; but, unhappily, the disease may, to my knowledge, last for two or three years, or more; and sometimes much longer. Pruritus, be it remembered, does not carry with it any disposition to cancer. Let the patient clearly understand this; for she is then less likely to distress her mind with needless apprehensions. A fair trial has not yet

* See Page 882. † See Note to Page 882.

been given, as far as I can learn, to injections into the cavity of the womb; yet it is not impossible that, though a great deal of pruritus is felt about the vulva, the real seat of the disease may be in the membrane lining the cavity of the womb itself. Thus we find, where the stomach is disordered, that there is an itching about the nose; and where there are ascarides in the rectum, an itching of the perinæum and the parts adjacent, as before observed *, not unfrequently occur.

SECTION 2.—EXTREME SEXUAL SENSIBILITY.

Cases of excessive sexual sensibility occasionally occur. This excess of sexual sensibility in the vulva, may be connected with inflammation there; and when this is the case, it is the most effectually treated by leeches, poultices, and very frequent ablutions,—at first with warm water; so as to keep the parts perfectly clear from all acrimonious substances. Sometimes, however, the disease has little or no connexion with inflammation. It seems to be produced merely by irritability of the parts. In this case I should recommend, in the first place, the local trial of the antiphlogistic plan; after a few trials of which anodynes may be essayed;—preparations of opium, hyoscyamus, tobacco, &c., locally administered in the form of ointment or washes. When the principal seat of the sexual sensibility is the clitoris, or the parts adjacent, it has been proposed, in extremer cases, to extirpate this organ; and you will find, in Thomas's work upon the Practice of Physic, an account of a case of this kind, in which extirpation was tried, and apparently with success. This case, however, Dr. Thomas does not relate on the authority of his own observations; and it must, therefore, be received with the more caution.

There is yet a third variety of this excess of sexual sensibility; and a case of this variety was shown to me in St. Pancras Work-House, by a very solid and estimable practitioner, Dr. Roots. The patient laboured under a high degree of sexual excitement; of which she gave a very clear, and, at the same time, modest statement. She did not appear to be, by any means, of a depraved character. There was a great excess of irritation; and, as I thought, an evident disposition to an unsettled mind;—the case approaching to nymphomania†. I am not acquainted with any effectual remedy for this variety of the disease; but I cannot forbear remarking, that if the patient seems to be in great danger of losing her mind,—a dreadful calamity,—it might be worth consideration, whether the disease might not be terminated by extirpation of the ovaries. In nymphomania, more especially, this remedy might deserve attention.

SECTION 3.—INFLAMMATION OF THE LABIA PUDENDI.

Between the folds of the labia pudendi, there lies a full quantity of cellular web; containing but little adeps in more advanced age; but sometimes loaded with this substance in the vigorous and flourishing period of life. Like the mammæ of women, the labia pudendi

* See Pages 882 and 892.

† From *νυμφαι, the nymphæ;* and *μανια, madness.*

are attacked sometimes, though rarely, with phlegmonous inflammation; which, assailing the cellular tissue, tends strongly to the formation of matter. On this I will now offer a few practical remarks.

Progress of the Disease.—When the labium is affected with phlegmonous inflammation, it may become twice as large as it is in the healthy state; or it may even exceed these dimensions. In this state of enlargement it becomes red, and very painful and tender; so that the slightest pressure gives rise to uneasiness, and it is generally necessary to keep the limbs apart from each other. Suppuration is apt to occur very rapidly; insomuch that, in the course of four-and-twenty or six-and-thirty hours, a great quantity of matter may be produced; and the abscess may even show a disposition to point.

Early Treatment.—In treating cases of this kind, there will be little difficulty, provided their character be once clearly ascertained. If the patient be of a robust and plethoric habit, you may, if you are called early, bleed from the arm, purge, give digitalis, and (in a word) put the patient on the cooling antiphlogistic plan. Generally, leeches, fomentations, poultices, and perhaps refrigerating washes, may be applied to the part. All this is not so much in the expectation of preventing altogether the formation of matter,—for where you have a lively inflammation in these parts, matter is almost sure to form,—but with the hope that, when the matter is produced, the quantity will be much smaller; and, consequently, that the cavity of the abscess will be much less;—owing to the inflammation being moderated. Should the phlegmonous inflammation of the labia pudendi occur in weakly and irritable females, of lady-like constitution, this active treatment would be too violent. In cases concurring in such constitutions, leeches, poultices, fomentations, and cooling washes, will be found to give relief. If the woman is moderately strong, blood, perhaps, may be taken from the arm, but in small quantity; the bowels may be opened somewhat briskly; and digitalis may be given, in operative quantities; but with caution; and so as to act lightly on the system; for digitalis is a remedy not without its risk;—especially in constitutions of this kind.

Treatment of the Abscess.—When matter forms, it may be better not to puncture the abscess, and discharge the matter too hastily; for it is asserted that, when these abscesses break of themselves, they heal in a more kindly manner, than when they are opened by the lancet. In ordinary cases, therefore, I should poultice the abscess, and suffer it to open of itself; but if the woman suffered a great deal of pain under accumulation of the matter,—in consequence of the distension of the inflamed skin,—I should not hesitate to advise a small opening with the lancet; so as somewhat to relax the skin. If the accumulation of matter were very large,—say to the measure of half-a-pint,—I should consider whether the matter might be drawn off by little and little, in the way recommended by Mr. Abernethy;—not scrupling to open by the lancet, in such cases; in order to prevent the large chasm which forms, if the skin open spontaneously.

If the general health be bad, this must be amended during the healing of the abscess. Attend, also, to the state of the chylopoietic viscera; support the vascular system by bark, bitters, aromatics, chalybeates, and analogous remedies; send the patient into the country; and you will probably find that, in the majority of cases, the abscesses will heal pretty readily. Should the abscess still remain open, it then comes to be considered, whether you should lay it thoroughly open and bare;—letting it heal up from the bottom by granulations. I forbear, however, to dwell on this point of practice; as it falls more under the department of the surgeon than of the obstetrician.

SECTION 4.—EXTRAVASATION OF BLOOD INTO THE LABIA.

It sometimes happens that blood-vessels in the labia pudendi, or nymphæ, give way. This occurs where the parts are injured from delivery; or, perhaps, independently of parturition, or any very obvious and adequate cause.

Diagnosis.—When blood is effused into the labia pudendi, and the parts adjacent, the organ enlarges to an enormous size. It may become bigger than the child's head; may appear very black, and give rise to excessive pain (owing to the exceeding tension of the skin); and, of course, it alarms the patient exceedingly;—especially if she suspect mortification. In some of these cases, the skin bursts open, and the blood may be very copiously discharged. It is said the life of the patient may, now and then, be endangered by the bleeding; but this is certainly rare. I never saw a case of that kind.

Treatment.—Should the skin be ruptured, and the blood flow somewhat plenteously,—if you could find out and reach the bleeding vessel, the most effectual mode of giving relief, would be by securing it with a ligature. If this could not be accomplished, then you might plug the vagina with tow; so as to prevent internal bleeding;—following up this measure by a continued pressure on the part; while the patient was kept perfectly at rest. If blood is accumulating in the labia pudendi, and you are called early to the case,—the skin, as usual, remaining unbroken,—it may then be proper that you should puncture the labia pudendi, and, in that manner, discharge as much blood as possible.

This practice, however, is proper only where you have been called early, and where you believe the blood is in a fluid state; for if you are called in an hour after the accumulation has taken place, the blood may be coagulated and entangled, so that it may be impracticable to express it. But it should be remarked here, that where blood is received into the cellular web, or under the skin, there is reason to believe that it does not coagulate so soon as where it is received into a cup, where there is no vitality at all. Where blood is effused into the labia pudendi,—especially in the smaller quantities,—you may endeavour to get rid of a good deal of it by absorption. With this view, pressure may be made with a prospect of advantage; and sometimes astringents, in the way of a poultice, may be used with benefit. Of these latter, one of the most promising, though

somewhat antiquated, consists of the *lees of port-wine*, mixed up with linseed or bread;—so as to give it a proper consistency. This is to be applied to the vulva of the patient, three or four times in the course of the day. A case was narrated to me by a medical friend,—on whose authority I give it,—in which a man had received a blow on the muscles of the calf of the leg, and where there followed a considerable effusion of blood under the skin. A poultice of the port-wine-lees was applied to it; and though it was computed that, at least, half-a-pint-of-blood was effused under the skin, great part of it was absorbed in the course of a fortnight. Should all these means fail you,—as it is not unlikely they may,—the blood lying in the cellular web may be expected ultimately to excite irritation; and may, in this manner, give rise to more or less inflammation, and terminate in the formation of abscess; on the disclosure of which, the coagulated blood may come through the opening, in the form of sloughs. An abscess of this kind must be treated on the general principles of surgery;—great attention being paid to the constitutional health; and there is every reason to hope, that the patient will utimately recover from a disease not obviously dangerous. Let me add, however, that my own personal experience, in these cases, is small.

SECTION 5.—ŒDEMA OF THE VULVA.

The vulva sometimes enlarges exceedingly, in consequence of œdema. You may have the principal enlargement in the labia pudendi, or nymphæ, or clitoris, or in all the parts together; while there is very little effusion in the legs. Or, again, there may be, in concurrence with a swelling of those parts, an anasarcous swelling, of no small bulk, in the legs. If the enlargement be seated in the labia pudendi, and do not cause much inconvenience to the patient, you may then endeavour to palliate the evil by means of a well-adjusted tee-bandage;—bringing it to a full degree of tension; and thereby expelling much of the water into the surrounding cellular web; and so relieving the patient from much of the intumescence. Moreover, in these cases, it is proper to purge; and to have recourse to those medicines which are suited to anasarca. It will be asked here, perhaps, whether we may not puncture the skin? In general, the women themselves, being naturally timid, would not submit to this operation. Now and then, however, some (of firmer resolution) may wish such an operation to be performed. In coming to a determination, it should be recollected, that if the œdematous swelling of the labia pudendi is purely local, and unconnected with dropsy of the constitution, the probability is that you may puncture the skin with perfect safety; but if, on the other hand, this swelling be only a part of a general dropsy of the whole habit, then the puncturing of the skin is attended with some little danger; because, sometimes, mortification may ensue. Where the constitution is vigorous, then, puncture if you please; but where it is not, and where there is a disposition to general dropsy, it is better to refrain from the lancet.

If you do puncture, do not content yourselves (as some have done) with the mere division of the scarf-skin; but take care that you carry your lancet completely down into the cellular web beneath.

SECTION 6.—EXCRESCENCES OF THE VULVA.

Excrescences not unfrequently grow from the vulva;—sometimes verrucous*, sometimes fleshy, and varying exceedingly in size;—being as large as a pea, or as large as the fist; and of all the intermediate dimensions. Of these excrescences, some may be removed by caustic, red-precipitate†, savin-powder, nitrate-of-silver, or the like;—care being taken to apply the caustic to the root of the excrescence; for that seems to be the most effective mode of application. Those excrescences which resemble polypi, may be removed by ligature. If they hang by a peduncle, the application of the ligature is easy; if they have a broad basis, then take a needle; place it on the middle of a thread of proper thickness; carry the needle through the bases of the excrescence; and cut the needle away;—thus leaving two ligatures to be tied right and left. In some cases, extirpation of these excrescences by the knife may be necessary. All I have to remark upon this operation is, that when you do extirpate by the knife, you ought carefully to take away the whole of the diseased structure. As to the mode of operating, that is for the consideration of the surgeon. These excrescences may be connected with venereal affection;—a point, of course, to be investigated. They rarely terminate in cancerous affections; and this should be most distinctly stated to the patient.

SECTION 7.—VASCULAR TUMOUR OF THE MEATUS URINARIUS.

[This disease deserves particular notice in this place; both on account of the alarm which it creates, and the great pain attending it, and also because it differs, in its appearance and symptoms, from the case previously described‡. Like the warty tumour already described‡, this disease is attended by a mucous discharge.

Characters of the Disease.—There is, in most women, a degree of projection round the orifice of the meatus urinarius; and from this part sometimes arises the tumour, to which the above name ("vascular tumour of the meatus urinarius") has been applied. The texture of this tumour is seldom firm. It is of a florid scarlet colour;—resembling arterial blood; and if violence be offered to it, blood of the same colour is effused. Its surface is somewhat granulated; it is exquisitely tender to the touch; and, upon an accurate examination, it appears to shoot from the inside of the urethra. It seldom acquires a large size. Upon separating the labia and the nymphæ, the excrescence is immediately exposed. Its attachment is so slight,

* From *verruca*, "a wart." † "Hydrargyri Nitrico-Oxydum."
‡ In Sir C. M. Clarke's "Observations." See Section 6 of the present Chapter of this work.

and it is so moveable, that it appears almost like a detached body lying upon the parts.

The disease is common to the single and the married woman. In all the instances which the author* has met with, the patients have been under the middle age; and they have been chiefly *young* women. The disease is not of common occurrence. The author has, however, very lately seen three cases of it. One was in a young woman who had been married three months, and was pregnant. In this case, the pain was so intense, from the sensibility of the tumour, that the patient could not permit any intercourse with her husband. Another case occurred in a young single woman, of full habit; and in whom all the symptoms of puberty were present at an early age. The third case was in a young woman who had recently been delivered; and who was living very profligately.

Symptoms.—An exquisite degree of sensibility of the part, is a constant symptom of the disease. This acuteness of sensation is confined to the tumour itself; and does not extend to the neighbouring parts. Instances sometimes occur of great pain and tenderness to the touch, in the region of the meatus urinarius, accompanied by a thickening of the part;—so that, upon passing the finger into the vagina, considerable uneasiness is produced: but upon exposing the parts, no disease is visible. This variety of disease is attended by a mucous discharge. How far such a symptom may render it probable, that this disease is going on in the cavity of the urethra, it may be difficult to determine. In a patient under the care of Sir James Earle, in St. Bartholomew's Hospital, this symptom was present; and, upon exposing the parts, a tumour of a scarlet colour, and nearly filling up the orifice of the urethra, was brought into view. In such cases, relief is obtained by the introduction of a large bougie, and suffering it to remain in the urethra for some time. Patients labouring under the vascular tumour of the meatus urinarius, sometimes experience great pain in making water;—most probably, from the pressure of the fluid upon the tumour; and from the impediment which it may offer to the passage of that fluid. The author has never known or heard of a case, in which it was necessary to draw off the urine with a catheter, in consequence of the complete obstruction of the canal by this tumour.

The vascular tumour of the meatus urinarius, requires removal by a ligature, or by the scissors and caustic. The ligature is to be preferred; as the tumour is less likely to return, than when other means are employed. The ligature employed should always be so thick, as to press upon a large surface; and it should never be drawn so tight, as to cut through the neck at once. The intention of the ligature is to destroy the life of the tumour; and to cause the absorbents to throw it off, as an extraneous body. This may be effected in twenty-four hours; and, the operation being thus concluded, the tumour may not return. Notwithstanding all the care of the practitioner, however, the parts will sometimes give rise to the reproduction of the

* Sir Charles Mansfield Clarke.

disease. If the neck of the tumour should be cut through, in the application of the ligature, or if the scissors should be employed, the tumour will be especially likely to reappear. Whenever the tumour is removed by the scissors, the part from which it arose should be touched with caustic; and the "potassa-cum-calce", applied once lightly, will be more efficacious than repeated applications of "argenti-nitras" *. Much greater care is requisite in the use of the "potassa-cum-calce", than in that of lunar-caustic. The former should not be allowed to remain upon the part longer than two seconds. A piece of lint should be afterwards laid upon the part; and the patient should remain, for a few hours, in a state of rest. If there should appear any disposition in the disease to return, the timely use of the "potassa-cum-calce" will prevent its increase. †]

SECTION 8.—ENLARGEMENT OF THE NYMPHÆ.

It not very uncommonly happens that the nymphæ enlarge. In the Hottentot women, more especially, they are sometimes so large, that they form a sort of covering to the vulva; nor are our own females (of the Caucasian variety of mankind) altogether free from this defect. Of these enlargements there are two kinds. Sometimes the nymphæ increase in size, without altering in organization;—so that, as to their internal structure, they remain healthy enough; only the growth is morbid. In other cases, there is a total change of organization;—the parts becoming converted into a sort of scirrhous mass. The larger growths of the nymphæ should, I presume, be extirpated by means of the knife. Where the growth is small, a pair of scissors may answer the purpose; and, by a single cut, you may take away so much of the nymphæ as may be required to reduce them to their healthy dimensions. Ligatures are not generally required; for though there are many vessels in this part, yet they are all small. It will probably be sufficient to make a little pressure, with the thumb and finger, on the part that remains;—say for ten or fifteen minutes; when the hæmorrhage will cease. There is reason to suspect that the enlargement of the nymphæ may be connected with the venereal disease. In operating, therefore, upon those whose ethics are of the laxer kind, this fact should not be forgotten; but large nymphæ do not prove infection.

SECTION 9.—ENLARGEMENT OF THE CLITORIS.

As the nymphæ may enlarge, so also may the clitoris. Under this disease, the organ, though naturally very small, may sometimes

* Since the publication of the first edition of this work, the author has seen many cases of the disease;—the attention of the profession having been called to the complaint, by the history given of it by the author. He can now from experience state, that the mode of removing the tumour by the scissors, afterwards touching the surface with caustic, is perhaps the best; as, in many cases, the tumour possesses so little firmness, as to bleed upon the attempt to apply the ligature.—*Sir C. M. Clarke.*

† Sir Charles Mansfield Clarke's "Observations on some of the Diseases of Females"; Part 1; Chapter 19; Pages 303 to 308.

become as large as the corresponding organ in the male. If a woman be anxious to have this defect of the genitals remedied,—provided there is no change in the organization of the clitoris, but merely an increase of its bulk,—I presume that, by means of a knife, the exuberant structure may be very easily and safely taken away. If, on the other hand, as sometimes happens, there be a change of organization,—the clitoris being converted into a scirrhous mass, with irregular surfaces, disposed perhaps to malignant ulceration,—then, also, it may be extirpated with the knife; but you are less certain of success. When you are operating,—more especially when there is disease at the basis,—it should be your object to take away the whole of the disorganized mass.

When the genitals are thus partially obstructed, another consequence of the obstruction is that,—if the hymen be firm, and the patient too sensitive,—her person may not be penetrated; or if the obstruction be of the higher degree,—supposing the hymen (or whatever be the cause of the obstruction) to be unusually firm,—then, if the parties be resolute, the male organ may actually enter the urethra.

PART V.

PHYSIOLOGY, SIGNS, AND DISEASES OF PREGNANCY.

CHAPTER I.

PHYSIOLOGY OF GENERATION.

The perpetuation of the species, and the preservation of the individual, appear to be, with the Great Designer, objects of first interest; and all living beings appear to be formed, mentally and bodily (if I may be allowed to use the expression), in relation to these great ends. Bearing these two principles in mind, we may comprehend much of the "wherefore" of a great deal which strikes the attention in the make, the instinct, the dispositions, and other qualities of living beings. The conspicuous changes which the system undergoes, in both sexes, at the age of puberty, is a subject of common observation*; and the illustrious Harvey has described the metamorphosis, which changes the girlish form into the perfection of womanly grace and beauty, with a delicacy and a classic elegance, which may well deter his successors from the attempt. When vegetables propagate, they form their blossoms, and appear (like animals) in all their dignity and glory. When insects prepare for the formation of the new structures, their previous changes are truly astonishing. The unsightly and unwieldy grub, becomes decorated with all the colours and the splendours of insect elegance; and the butterfly, rising on new-formed pinions,—so light and airy, that the poet and the artist have winged the soul with such,—and with its little heart full of gaiety and gladness, frolics forth in search of its companion; in order to perform its last office in the economy of nature;—being often destined, like other victims of passion, to perish at the shrine! I believe it is agreed, on all hands, that the transformation of the larvæ into

* The changes at puberty, in the male, are as follows:—1. The beard appears. 2. The pubes becomes covered with hair. 3. Hairs grow in the axillæ. 4. The voice becomes hoarse. 5. The whole body becomes stronger. 6. The hips are contracted. 7. The genital organs become larger. 8. The venereal desire is awakened.—In the female, the changes are the following:—1. The breasts are developed. 2. Hair appears on the pubes. 3. The hips spread. 4. Bashfulness is exhibited. 5. The catamenia appear. 6. The genital organs increase in size. 7. The venereal desire is awakened. The cause of these changes is, in the male, sympathy with the development of the testicles; and, in the woman, sympathy with the development of the ovaries. What a man measures round the hips, a woman should measure round the shoulders. This is exemplified in the Apollo Belvidere, and the Venus di Medici.—*Dr. Fletcher's unpublished Examinations.*

winged insects, is, throughout the whole of this class, designed merely to adorn and fit them for the formation of the new structures; and Nature, with something more than a quakerly attention to sobriety and decency, seems to have taken a pleasure in lavishly adorning the bridegroom and the bride!

Two Genital Structures.—There are two grand varieties of genital structure, whereby impregnation is accomplished;—the hermaphrodite*, and that in which the genitals are divided into two portions; each of which is assigned to a separate individual. Hence the species becomes divided into two sexes;—the male and female. Of vegetables, most species are hermaphrodite; of animals, sexual. Yet this rule is not universal. The worm, the snail, and many of the white-blood animal class, possess, in the same individual, both the male organs and the female; and, among vegetables, the almond, the hemp, and the tobacco, are divided into sexes;—the different parts of the sexual apparatus becoming elaborated, annually, upon different stocks.

SECTION I.—DIFFERENT THEORIES OF CONCEPTION.

[It has been much disputed, whether conception† be merely an assemblage of small particles already prepared, and constituent of the kind; or first a production or change of, and then a coaptation of, particles designed for that purpose. But the first part of the process by which primordial existence is established,—owing to the minuteness and complication of the objects to be described, and the retirement of the attending circumstances,—is probably involved in too much obscurity to be discovered by the human faculties. Even when the first changes have been made, the parts remain too small to admit a very accurate examination. But neither the difficulty of the investigation, nor the acknowledged uncertainty of all reasoning, without the support of facts, has deterred ingenious and speculative men, in every age, from hazarding their opinions on the subject. It is true, that little satisfaction or advantage is to be gained; but if we do not profit by the knowledge of their opinions, we may be convinced that little has hitherto been said on this subject for our information.

Theory of Pythagoras.—The first opinion recorded is, I believe, that of Pythagoras. He supposed that, from the brain and nerves of the male, a moist vapour descended in the act of coition; from which vapour similar parts of the embryo were formed. These were thought to be the seat of the soul; and, of course, the parts from which all the senses were derived. All the grosser parts, he imagined, were composed of the blood and humours contained in the uterus. He said that the embryo was formed in forty days; but that seven, nine, or ten months were required for the perfection of the fœtus;—according to the laws of harmony. He also supposed, that

* From Ερμης, *Mercury*; and Αφροδιτη, *Venus*.
† From *concipio*, "to conceive".

the same laws which guided the formation of the fœtus, influenced the conduct of the man. It was a custom with the Scythians, to cut the veins behind the ears, when they intended to procure impotence or sterility; and it is remarkable that this custom remains, and an opinion like that of Pythagoras is entertained, among the inhabitants of some of the islands lately discovered in the South Seas. Changing the term "harmony" for "magic", "occult quality", and the like expressions,—by which an imperfect idea is conveyed, or a concession that we have proceeded to the extent of our knowledge is actually made,—many succeeding writers have given us their conjectures.

Theory of Empedocles.—Empedocles presumed, that some parts of an embryo were contained in the semen of the male, and others in that of the female; and that, by their mixture, an embryo was formed. He likewise thought, that the desire of procreation originated in the natural tendency of the separated parts to be united.

Theory of Hippocrates.—That conception took place in the cavity of the uterus, by the mixture of due proportions of the male and female semen, in which were equally contained the organic principles of the embryo, was the opinion of Hippocrates.

Theory of Aristotle.—Aristotle denied the existence of semen in the female. He imagined that the material parts of the embryo were formed by the menstrual blood; and that the semen of the male furnished it, when formed, with the principle of life;—by the operation of which it was brought to perfection. It is remarkable, that a philosopher with every advantage which a superior capacity and the most extensive opportunities of acquiring knowledge could give, should attempt to explain what is common to all animals, by a circumstance peculiar to one class.

Theory of Galen.—Galen thought that the embryo was formed by the substance of the male semen; and that the humour supplied by the female, served the mere purpose of nourishing it.

Theory of Harvey.—Harvey employed a considerable part of his life in observing the structure of the ovum, and the progress of conception in a variety of animals. When he had completed his discovery of the circulation of the blood, this seems to have been his favourite study; which he prosecuted with the true spirit of inquiry; and in which he made many observations, worthy of that sagacity and industry which were never exceeded. With his disposition, abilities, and advantages, it was reasonable to expect that he would either have been silent, or have said something satisfactory upon this subject. But, —after much previous apology for an opinion which admitted no other proof than an allusion to a circumstance, beyond all others, the most incomprehensible,—he tells us, that as iron by friction with a magnet, becomes possessed of magnetic properties, so the uterus, by the act of coition, acquires a plastic power of conceiving an embryo;—in a manner similar to that by which the brain is capable of apprehending and thinking!

Theory of Hamme.—The opinion of Hamme,—of the credit of which he appears to have been unfairly deprived by Leuwenhoeck,

—was afterwards received with great applause, because it was the doctrine of the schools; and gave universal satisfaction, because it was supported by a fact which, by the help of his microscopes, he presumed he was able to demonstrate. He asserted that, in the semen of all male animals, there was an infinite number of animalculæ; in each of which were contained the perfect rudiments of a future animal of the same kind; and that these required no other assistance from the female, but a proper bed for their habitation, and nutriment for their expansion.

Theory of Needham.—From him Needham, and many others, dissented; and,—after several other objections of less importance,—they adduced the observation of a mixed generation, as in the case of a hybrid or mule; which, being procreated by two animals of different species, partakes in an equal degree of the nature and likeness of the male and female parent. This seems to be a decisive and unanswerable refutation of the doctrine of animalculæ; and I believe that the sentiments entertained at the present time are, that the moving bodies, which Leuwenhoeck saw in the semen, were not animalculæ or organized parts, but parts fitted for organization.

From the manner in which the vagina and uterus are connected, it has been thought, that the male semen was not designed to be introduced into the uterus of the female; but that, being absorbed from the vagina, it passed into the common course of the circulating blood; and was conducted to one of the ovaria; where it performed its proper office, by impregnating one or more ova. But the examination of the uteri of animals in the act of coition, and even of many women who have died immediately in, or soon after it, has fully proved, that the semen of the male is first received into the cavity of the uterus.

It has been generally supposed that conception was produced by the substance of the male semen. But some have contended that the ovum, when enclosed in the ovarium, was impregnated by an aura, exhaled from the semen, and containing the principle and powers of life;—of which aura the semen was merely the vehicle.

Many objections being made to these and every other opinion which has been advanced upon this subject, the chemists undertook to solve all doubts, and to explain all difficulties, by the application of their principles. They presumed that the male semen was of an acid, and the female of an alkaline quality;—and that from their mixture an effervescence arose. From some particles which subsided on the conclusion of the effervescence, they fancied that the embryo was formed;—the fluid parts becoming the waters of the ovum. Others imagined, that the male semen had the properties of milk, and the female those of rennet, by which it was coagulated;—the fœtus being formed from the curd, and the waters of the ovum by those parts which resembled whey*. Various other notions have

* "Hast thou not poured me out as milk; and curdled me like cheese?"—*The Book of Job; Chapter* 10; *Verse* 10.

been proposed, with the view of explaining this very abstruse operation; but they leave us in a state of uncertainty. Some of them may amuse, because they are ludicrous; and in the description of the parts concerned, the uses they intended to answer, and the manner in which they are supposed to perform their respective offices, the imagination has been indulged with a freedom not very consistent with the dignity of philosophy.*]

SECTION 2.—TWO SUBSTANCES ARE NECESSARY.

Passing over the preceding theories, I have to observe, that whether generation be sexual or hermaphroditic, it well deserves remark that Nature, almost universally, makes use of two distinct substances for her purposes of organization. In vegetables, we have the seeds† and the pollen‡; in animals, the male secretions, and those which are lodged in the ova of the female. Why it is that the two forming substances should thus be formed at first apart, and afterwards mingled, in the formation of the new structures, I am unable to explain. Is there not, however, some great discovery latent here? Has galvanism§, or electricity, any share in the consideration of the Great Designer? Time, the discoverer of truth and falsehood, may, perhaps, solve this important question!

Contact of the Two Substances Necessary.—The two substances being generally necessary, in order that organization may be effected, it has often been inquired, by physiologists, whether it is further requisite, in all cases, that these two substances should come into contact with each other? So large a question it is difficult to answer. Indeed, we never could obtain an absolute demonstration of the affirmative, unless we were to make our observations on almost all the different species of living beings.

The ova of the frog are impregnated by the male, after they have left the body of the female, while they are yet on the verge of the vagina. Trembley (I think it was) interposed an impervious texture, — a sort of trowsers,— between the genitals of the two animals; and found that, while the rest of the eggs were productive, those which issued from the female while this veil was interjected, were incapable of producing;—so that in this oviparous‖ animal, at least, impregnation is accomplished by an obvious contact of the two substances with each other.

* Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Pages 118 to 121.

† It may be as well to remark, that the seeds of vegetables exist in the germen or ovary of the flower, in the same manner as the ova exist in the females of the animal kingdom; and, like the latter, are not developed or capable of reproducing their species, until they have been duly impregnated by the pollen or fecundating dust, furnished by the anther or nominal male organ of the vegetable.—*Dr. Castle.*

‡ From *pollen*, "flour" or "dust".

§ So named from the philosopher, Galvani; who discovered many of its principles.

‖ From *ovum*, "an egg"; and *pario*, "to bring forth".

Further Researches Necessary.—Still, however,—notwithstanding the labours of physiologists hitherto,—we are not, I believe, yet in possession of any regular system of experiments, tending to prove that the semen must have access to the rudiments of the fœtus, in those forms of brute generation that most nearly resemble our own. In the present state of our knowledge, the reverse of this position seems, at least, not improbable; for the experiments of Dr. Haighton,—a valued relative of mine,—have shown, that evidences of generation may be produced in the ovaries, although the semen has been excluded, previously to sexual intercourse, by the closure of the fallopian tubes. My principal object, therefore, has been to endeavour to contribute some little information towards the supply of this defect. I have endeavoured to show, that the semen must have access to the rudiments, in order that the young animal may be produced; and yet that generation,—although this access is necessary for its *completion*,—may, to a *certain extent*, be accomplished without it.

Structure of the Genital System in the Rabbit.—As the rabbit was the animal selected for my experiments,—on account of its natural aptitudes,—it may be proper, perhaps, before I enter on the recital of these experiments, to premise a few remarks on the genital system of that animal*. In the fallopian tubes, and ovaries, and (I may add) the external genitals of the doe, there is little,—when we view the organs as they are suspended in the glass,—to attract the attention of the observer. It is different, however, with the vagina and the wombs. These are so strongly contrasted with the corresponding parts of the human organs,—the wombs, by their tubular form, and the vagina by its length, its laxity, and the largeness of its diameter,—that they cannot be overlooked. The vagina, when full-grown, is about four inches long; and so capacious that, without much stretching, it will readily admit the extremity of the fore-finger. Its size, indeed, is so considerable, that it makes an approach to that of the human vagina; and greatly exceeds the dimensions of the same canal in a moderate-sized monkey, preserved in the Obstetric Museum at Guy's Hospital. The wombs,—the structure of which is scarcely less remarkable than that of the vagina,—are two tubular organs; when unimpregnated, about three-inches-and-a-half long, and about two-lines-and-a-half in diameter. It is obvious, therefore, that they are very unlike the human uterus; and rather resemble that of several of our domesticated animals; such as the cat, the bitch, and the females of the rat and mouse tribes. These two wombs,—it should be further remarked,—communicate with the vagina by two distinct orifices; and they are so completely independent of each other, that the one may be removed without injury to the other; except a slight and superficial wound of that part where their necks lie in contact, and cohere.

* It is scarcely necessary to remark, that this description is not addressed to those who have made a study of comparative anatomy.—*Dr. Blundell's "Researches, Physiological and Pathological"; Page* 34.

Both the wombs and the vagina are, in these animals, furnished with longitudinal and annular fibres of a muscular structure;—similar in kind to those of the intestines, but grosser and more distinct. In addition to these, along the inner margin of the wombs, from one extremity to the other, there runs a broad strip of fleshy fibres; which may, perhaps, not improperly be denominated "the mesometric".* I give the muscle this name, because it covers no inconsiderable portion of what may be called "the mesometry";—a delicate double membrane, the production of the peritoneum; and which—performing for the tubular wombs the office of a mesentery,—unites them, like the intestines, to the spine. It is allied to the broad ligaments of the human womb. All these fleshy fibres are animated with a very lively irritability. The mesometric muscle† changes the situation of the wombs. The wombs themselves perform a sort of peristaltic action. The vagina not only performs this action, but an additional movement; which I shall hereafter have occasion to describe ‡. Such are the most striking characteristics of the genital system in the rabbit;—those, at least, which the following experiments require me to notice. I may now proceed to the experiments themselves.

Experiments to prove the Necessity of Contact.—The first set of experiments was instituted with a view of ascertaining, whether the semen and rudiments must have access to each other, in order that the young animal may be formed. For this purpose, an incision was made into the cavity of the abdomen, immediately above the wombs; and these, together with the upper part of the vagina, were pushed through the opening. One of the wombs was then divided near its mouth, in a transverse direction (just as a piece of intestine might be); so as to separate it into two portions,—the superior and inferior; or, as they may be designated (from the annexed parts), the vaginal and fallopian. After this division, the organs were immediately replaced, and the wound was sewed up.

Notwithstanding this violence, in the course of a few days, or a few weeks at farthest, most of the rabbits recovered their health; and, at different intervals, became fit for the approaches of the male. But though the general health was restored, the recovery was not complete. The operation, as subsequent dissection proved, had the effect of interrupting the canal of the womb;—its tubular cavity growing up at the line of division; so that the communication between the vaginal and fallopian pieces became intercepted, and the semen and the rudiments could have no access to each other.

In this condition of the genitals, as soon as the sexual ardour was rekindled, the animals were submitted to the male; and, except in one or two anomalous instances, out of ten or twelve experiments, they all became pregnant from the first admissions. At different periods from impregnation, the sexual organs were examined after

* From μεσος, *the middle*; and μητρα, *the womb*.

† Is this muscle allied in function to the round ligaments of the human womb?—*Dr. Blundell's "Researches"; Page* 36.

‡ See Page 915.

death, with great care and deliberation; when young animals were invariably found in the sound womb, but none in the interrupted. The latter, it is true,—like the human uterus in extra-uterine pregnancy,—was in many instances enlarged, developed, and plentifully supplied with blood. Indeed, it often appeared as well adapted as its fellow for receiving and cherishing the rudiments; but with all its aptitudes for generation, it lay under one capital defect;—its canal was interrupted. This interruption prevented the access of the semen to the rudiments; and without this access, generation could not be accomplished.

To confirm this conclusion,—the accuracy of which I doubted at the time,—it was determined to submit it to the test of another train of experiments. In these, it was my object to preserve the principle of the preceding operation (the exclusion of the semen from the rudiments); and yet, at the same time, to vary its circumstances as much as possible;—in order to ascertain how far they had affected the result; for I need not observe, that circumstances often exert a silent and most fallacious influence over our experiments (our *negative* experiments, especially); which influence is to be the more deprecated, because, from its insidious nature, it is so frequently overlooked.

In this second series of experiments, therefore,—instead of operating upon rabbits that were full-grown,—I made use of those only that were under puberty; and instead of interrupting, as before, the canal of the *uterus*, I interrupted that of the *vagina*.

The vagina of the doe,—it has been already observed,—is at least three inches in length; so that although it is interrupted at the uterine extremity, there still remains sufficient room for the male organ. Of this peculiarity I availed myself, in conducting these experiments; and instead of cutting the uterus, I cut the vagina asunder (near to the mouth of the womb);—so as completely to interrupt its canal. In other respects, the experiment was conducted as before.

This operation proved dangerous;—much more so than the former. A number of the rabbits, however, recovered; and admitted, without repugnance, the approaches of the male. The result was decisive. Although the external genitals of these animals were turgid with blood, and the sexual excitement of some was remarkably lively; although, too, in some of them, intercourse was renewed, at intervals of a week or a fortnight, as many as twenty or thirty times on the whole, not one became pregnant. Desire, in one or two instances, seemed almost insatiable; and, in the rest, though suspended by coition for a time, in the course of a few hours, or a few days at farthest, it invariably recurred.

The same general appearances were observed, on dissection, in all. The vagina, if the operation had been properly performed, was completely interrupted. In both the ovaries there were corpora lutea. In some cases, the wombs appeared to have undergone little change; in others, they were very much enlarged, and evolved as completely

as in actual pregnancy; but in no one instance was there the appearance of a single ovum, either extra-uterine or in the womb. In these, as in the preceding experiments,—though in a different manner,—the access of the semen to the rudiments had been intercepted; and in these circumstances, notwithstanding repeated commerce with the male, the formation of the young animal could not be accomplished.

Nicety in the Performance of these Experiments.—In performing the experiments recorded in the preceding paragraphs, there are various little niceties in the mode of operating, the observance of which is necessary to ensure success. The incision which is carried through the abdominal coverings, may be made in the linea alba; and should be eight or ten lines, at least, in length;—in order that the parts may be replaced with facility. It should, too, lie as close to the symphysis pubis as possible; in order that the intestines,—which, in this (herbivorous) animal, are numerous and cumbersome,—may not, as they are apt to do when the incision is higher, protrude at the opening. It is true, indeed, that if the incision is placed in the vicinity of the pubes, the bladder, when it is distended, will fall in the way; but if the operator possess the requisite dexterity, there is no danger of wounding it; and a gentle pressure, persevered in for a time, will occasion it to withdraw into the pelvis. It deserves remark, however, that to produce this contraction, a little perseverance is necessary; for the bladder is not, in this manner, so readily excited to contract, as (from previous reasonings on its irritability) we might have been led to expect. To close the abdominal opening, the Glover's suture will serve as well as any other; nor does the including of the peritoneum in the stitches,—so far as I have been able to observe,—materially increase the risk of general inflammation. Exemption from this depends much more upon the habit of the animal, than upon the niceties of the wound. Here I may be permitted to remark,—in the way of digression,—that from various observations upon brutes, as well as my fellow-creatures *, I cannot forbear imagining, that the risk of extensive inflammation, from local injury of the peritoneum, has been exaggerated, perhaps greatly. The high importance of this principle in surgery, is too obvious to require a comment. Already a sufficient number of observations have been accumulated, to induce us to examine it with attention; and I may add, that it is one of those grand practical points, which ought not to be decided by a few casual facts; much less by authorities, however venerable; but, like every other principle of solid philosophy, by various, deliberate, and unbiassed experiments and observations.

* Operations for hernia, and on the abdominal viscera of rabbits and dogs. The rabbit, I suspect, is very liable to spontaneous inflammation of the bowels. I have known, in women, the malignant ulcer of the womb penetrate into the peritoneal cavity, between the rectum and the uterus, without exciting general inflammation of the abdomen.—*Dr. Blundell's "Researches"; Pages 41 and 42.*

If, in performing this operation (as in the first set of experiments*), the *womb* is divided, the incision should be made transversely near its mouth;—in order that we may leave the fallopian piece as large as possible, for the reception of the ova; in case the genitals should have power to form them. It ought to be carried from four to six lines into the mesometry; in order that the pieces,—thus liberated, and moving out of the sphere of apposition to each other,—may not reunite, so as to form anew a continuous canal. If, on the contrary (as in the second scheme of experiments†), the *vagina* be divided, a ligature should be applied to the orifice of that piece of it, which remains annexed to the womb; and the ligature should be fastened to the margin of the external wound. This precaution ensures the escape of the thread‡; and, at the same time, prevents the pieces of the vagina from falling into opposition, and renewing the continuity of the canal.

When the genitals are mature, the rabbit very frequently dies from this operation; which, in consequence of the large size of the vagina, is more violent than the former. It is better, therefore, on this account,—as well as for reasons already assigned†,—to operate before puberty. Previously to this change, the parts are comparatively small; and the interruption of the vagina does not, as we might have been led (from previous reasonings) to expect, prevent the subsequent developement of the sexual organs.

SECTION 3.—GENERATION MAY, TO A CERTAIN EXTENT, TAKE PLACE WITHOUT CONTACT.

Although it appears probable, from the preceding experiments, that the complete process of generation requires the access of the semen to the rudiments, it seems equally certain,—from a variety of appearances which I noticed in the course of my experiments,—that, to a certain extent, though imperfectly, it may be accomplished without it. These appearances I shall now proceed to state.

Development of the Uterus.—In both the uterine* and vaginal† experiments, the womb, though it contained no fœtuses, in many cases enlarged;—as in extra-uterine pregnancy. Its structure, too, became thoroughly developed; and it received more copious supplies of blood. In short, it frequently seemed as well prepared as its fellow, for receiving and cherishing the rudiments§.

* See Page 907. † See Page 908.

‡ In operating upon the viscera of small animals, I have occasionally used a very slender ligature, cut it short, and left it. In two rabbits, which had apparently recovered after the vagina had been tied in this manner, a general inflammation of the abdomen came on, about six months afterwards;—in the winter, when the health of the animals was impaired by the severity of the season. On inspection after death, it was found that the ligature still adhered to the vagina; and it seemed to form the centre from which the inflammation had spread.—*Dr. Blundell's "Researches"; Page* 43.

§ It deserves notice that, in the uterine experiments, it was generally the *fallo-*

Appearance of the Ovaries.—The ovaries,—I may further add,—although there was no genuine impregnation of them, were very obviously excited. A vesicle, in different parts of them, germinated; its fluids increased; the delicate covering opened; the little cavity discharged its contents; and corpora lutea, in all their perfection, were formed. As this appearance of the corpus luteum, notwithstanding the interception of the semen, is of considerable importance, and may help to clear away an objection to which the experiments lie open, it becomes necessary to examine it with attention.

Characteristics of the Corpus Luteum.—The corpus luteum in the rabbit, as long as it remains, is (I think) always marked by pretty strong characteristics; though its appearance differs considerably with its age. A mammillary projection of the ovary; an augmented vascularity; a minute cavity, which, when the luteum is cut through, recalls to mind the appearance of a printed asterisk (*);—these constitute the leading characteristics; and by these, I may add, it is so decisively marked, that (although the parts are on a small scale) an experienced eye may detect it at a glance. Colour is of little use in distinguishing these bodies in the rabbit. The younger the corpus luteum is, the more prominently the characteristics appear*.

These corpora lutea, thus characterized, were distinctly produced both in the uterine† and vaginal‡ experiments. In the uterine experiments, I had an opportunity of contrasting those of the fruitful and sterile ovary with each other; and yet, after the most deliberate examination, I could not discriminate the slightest difference between them. It deserves notice, also, that in some instances they were

pian portion of the womb to which the semen was *not* applied, and not the *vaginal* to which it *was* applied, that appeared to undergo these changes in the highest degree.—*Dr. Blundell's "Researches"; Page* 44.

* In giving the name of "corpus luteum" to the appearance here described, I merely adopt the nomenclature of preceding physiologists; and in stating my belief that this appearance is the result of impregnation, or (at least) of the sexual excitement when exalted to its highest pitch, I am only advancing an opinion which is, I conceive, *as far as respects the rabbit,* confirmed by observation. I have frequently examined the ovaries of the doe, in the virgin condition, and during heat; and, in one or two cases, after the animal had been under the influence of long-continued and lively desire. In the two first instances, I have never found the appearances described; though I dare not, from a negative observation of this kind, deny that, under these circumstances, their formation is possible. In the last case, on the contrary, I have invariably discovered them; and older or younger in their appearance, according as they were examined sooner or later after impregnation. There can, therefore, I apprehend, be little doubt, that these appearances, *occurring in the rabbit,* are the result of conception. This fact is sufficient for my reasoning. It may, indeed, seem irreconcileable with the opinion which a veteran physiologist* has formed, respecting the nature of the human corpus luteum (see "Philosophical Transactions"); but so long as it appears to be confirmed by observations, conformably to sound philosophy, it cannot be denied. I am far, however, from wishing rashly to impugn the opinion of Sir Everard Home. Truths once proved must be admitted; and their apparent inconsistency demonstrates our ignorance, and not their incompatibility.—*Dr. Blundell's "Researches"; Pages* 45 *and* 46.

† See Page 907. ‡ See Page 908.

* Sir Everard Home; who says he found a corpus luteum in the ovarium of a virgin.—N. R.

more numerous upon the *prolific*, and in others upon the *barren* side of the genitals.

The Fallopian Tubes also Excited.—In these experiments,—it may be further remarked,—the fallopian tubes, as well as the ovaries and wombs, seemed to be excited by coition. I observed repeatedly, in those experiments in which the vagina was interrupted *, that the abdomen of the doe enlarged in a few days after the sexual commerce; and that enlargement,—never noticed before, and gradually decreasing† in a few weeks afterwards, if the male was excluded,—might, by repeated coitions, be carried to a very great degree. There is now in my possession, a doe with an interrupted vagina; which doe has admitted the male from twenty to thirty times. In this animal, in consequence of these repeated connexions, the abdomen has gradually acquired so large a size, that it considerably exceeds the bulk of mature gestation; and reminds one of an ascitic tumour which requires the trocar. These enlargements,—as I have ascertained from repeated dissections,—result from the accumulation of a humour in the wombs. This humour, various in its consistency and colour, is, however, generally fluid, pale, and turbid; and always,—so far as my experiments have extended,—forms albuminous concretions at a temperature below boiling heat. Even in the *uterine* experiments‡ (for the preceding remarks refer to the *vaginal** only), the same essential appearances were observed. The wombs, in consequence of impregnation, become filled, on the sound side, with fœtuses; and on the barren with the humour described.

Inferences.—These facts are very significant. The formation of the corpora lutea; the developement of the wombs; and, above all, the repeated accumulations of fluid there, in consequence of coition;—all seem to indicate the descent of the rudimental material; and reflecting upon them, I cannot forbear imagining, that the tubes were excited; that they really transferred the rudiments to the womb; and that these rudiments engendered the watery accumulations there, in the abortive attempts of generation. This notion receives some little countenance from the generation of oviparous animals; for in many of the different species referred by naturalists to this class, the rudiments may be discharged independently of preceding impregnation. The common fowl is an example of this; as well as are the frog, the toad, and a numerous tribe of fishes. This opinion, however, is merely conjectural; and I must acknowledge, candidly, that it is the less entitled to confidence, as it rests on a sort of accidental observation; made subordinately, and perhaps with some degree of remissness, at a time when others, of greater importance in the inquiry, occupied a principal share of my attention. This remark I take the liberty of introducing here; as I conceive it to be the duty of every experimental inquirer, to distinguish between his *conjectures* and

* See Page 908.

† It did not, however, subside completely.—*Dr. Blundell's "Researches"; Page 47.*

‡ See Page 907.

demonstrations; and thus, by the exercise of a philosophical frankness, to prevent error from insinuating itself, from its association with truth.

On the whole, then, it seems probable,—judging from the appearances related,—that generation may be carried forward to a certain extent, although the access of the semen to the rudiments be intercepted. In these circumstances, it is true, the young animal cannot be formed; but corpora lutea may be generated; the wombs may be developed; and the rudiments,—if we may judge from the facts already stated,—may even be transferred to the uterine cavity, by the play of the fallopian tubes.

It should be remarked, however, in dismissing this part of our subject, that these imperfect attempts at generation, do not always equally occur. Corpora lutea, I believe, will be found to form invariably after sexual intercourse, if the genitals are excited at all; but in some anomalous instances, there is no consequent developement of the wombs; and in others, no accumulation of the uterine fluid. The first of these failures has occurred to me once in twelve experiments; and the last of them five times*. But these *negative* irregularities merely prove, that the genitals may be more extensively excited at one time than another. They by no means invalidate the principle, which it has been my endeavour to establish on positive facts;—that the ovaries, tubes, and uterus, are capable of an imperfect excitement, even when the semen and the rudiments are kept apart from each other.

Objections to these Experiments.—Against the experiments and reasonings advanced in the preceding pages, various objections may be urged; to which it may now be proper to advert.

Sterility sometimes Accidental.—First, it may be objected that sterility is sometimes an accidental occurrence. We frequently observe this in human generation. In the experiments under consideration it would perhaps have occurred, even although the interception of the semen, to which it is ascribed, had not taken place. To these objections, however, I would reply that, in the rabbit, the accidental failure of impregnation is rare; and does not occur in one doe out of twenty, if the animal be in health; that both the appearance of the genitals, and the behaviour of the female when the male was admitted, indicated inclination and aptitude for generation; that these experiments were not solitary, but frequently repeated; and that sterility was not an accidental occurrence, in a single instance only, but an invariable result of them all. Nor must it be forgotten, that the formation of the corpora lutea, and the evolution of the uterus, are themselves sufficient proofs that the genitals were not accidentally inactive; nor that, in the uterine experiment in which the semen was intercepted on one side only, the formation of the young animals on the other†, was an undeniable proof of generative excitement.

* In one or two instances, the orifice formed by dividing the uterus, remained open in the fallopian piece. This accounts for some of the failures of uterine accumulation.—*Dr. Blundell's "Researches"; Page* 50.

† See Pages 907 and 908.

Sterility produced by the Debility resulting from Operative Violence.—But there is another objection to which the experiments lie open; and which,—on a cursory consideration, at least,—may appear to bear with considerable weight. In these operations, there was a division either of the wombs or of the vagina. It may be asserted, therefore, that sterility ensued, not so much in consequence of the interception of the semen, as from the debility induced in the genitals by operative violence;—the germs afterwards perishing because the soil was become unfriendly. To this plausible objection, however, it might be sufficient to reply that, from the form of the parts, the injury of the operation is merely local; that when the vagina is cut through, before puberty, the genitals suffer so little from it, that they are afterwards brought to maturity, in the same manner as if no operation had been performed; and that, in both sets of experiments (whether uterine or vaginal), the wombs frequently become enlarged and developed; and,—like a fruitful and well-dressed soil (to resume the figure already adopted),—are brought into high condition for raising the rudiments to perfection. To obviate this objection, however, in a still more satisfactory manner, the following experiments were instituted:—I divided the vagina of two young does, just before their puberty; but instead of securing the uterine piece to the verge of the abdominal wound, I allowed it to remain in apposition with the other. In consequence of this method of operating, the parts reunited; the canal of the vagina was renewed; and, the sexual desires appearing a few weeks after recovery, both the rabbits became impregnated. The inference is obvious. The second set of experiments, turning on the same principle, was executed on the wombs themselves. In these, both the wombs were divided;—one of them in two, and the other in three places; in such a manner, however, that the incision was not carried completely across into the mesometry; and thus the pieces were retained in mutual apposition, and reunited without interruption to the uterine canal.

The result of these experiments was decisive. From the very method of operating, it is obvious the wombs were more roughly handled in this, than in any of the preceding experiments. Accordingly, a large number of the rabbits died; and yet, notwithstanding this violence, the very first doe which recovered, produced no less than nine fœtuses from her first intercourse with the male. Indeed, so complete was the action of the uterus, that there was not one of the little masses of rudimental matter which it failed to mature; for it was found, on a careful comparison of the wombs with the ovaries, that the number of fœtuses and corpora lutea was the same. To these remarks I may add, that the human womb, although it may have been cut or torn, or partially destroyed by ulceration, still retains the power of maturing the rudiments. Healthy children have been born, not only after recoveries from uterine rupture and the Cæsarian operation, but even at the time when the neck of the womb had been ulcerated. A case of this kind has fallen under my own knowledge; and others are recorded by obstetric writers.

The Semen, in the Rabbit, not injected into the Uterus, on account of the Length of the Vagina.—There yet remains a third objection; which, it is conceived, may be completely obviated; though, at first sight, it wears a very formidable aspect. The vagina of the rabbit is very long and very large; its course is not direct; the organ of the male can neither fill it nor penetrate to the orifices of the wombs. How, then, can the semen be injected into the uterine cavity;—even granting that it might meet the rudiments there? This objection,—felt in all its force by those who have examined the genitals merely in a preparation-glass,—falls at once when they are viewed in the rabbit while it is living; or, to avoid unnecessary severity, immediately after the dealer has killed it. Both the vagina and the wombs perform a sort of peristaltic action;—the wombs somewhat obscurely, the vagina in a manner scarcely less lively than the intestines of the animal. This canal, indeed, during "heat", is never at rest. It shortens; it lengthens; it continually changes its circular dimensions; and, especially when irritated, will sometimes contract to one-third of its quiescent diameter. Now this peristaltic action, resembling the intestinal, is itself sufficient to explain the transmission of the semen*. In addition to this action, however, the vagina performs another;—easily comprehended on inspection; although, as frequently happens, the verbal description of it may perhaps appear a little obscure. The action to which I here allude, consists in the falling-down, as it were, of that part of the vagina which lies in the vicinity of the wombs; so that it every now and then lays itself as flatly over their orifices, as we should apply the hand over the mouth, in our endeavours to stop it. So close is this application, that I have sometimes fancied I could perceive externally something resembling a little dimple, occasioned by the sinking of the surface of the vagina into the orifice of the womb. How well adapted the whole of this curious movement is for the introduction of the semen at the opening, it is needless to explain. The mere performance of it furnishes no contemptible argument, in proof of that approach of the semen to the rudiments, for which I have been contending.

Before I close these observations†, I cannot forbear adverting to some other points of genital physiology, which they may contribute to illustrate.

Is the Corpus Luteum a Sign of Genuine Impregnation?—It has been asserted by some naturalists, that the corpus luteum is an evidence of genuine impregnation. It seems certain, however, from the facts related, that this evidence cannot be relied on; for the corpus luteum, in these experiments, was generated in circumstances in which, as

* There is some little reason for surmising, that even the *human* vagina can perform a sort of peristaltic movement. Two facts, leading to this opinion, have been related to me; but they are of a character too delicate for public exposure.—*Dr. Blundell's "Researches"; Page 55.*

† The observations in question, extending from Page 906 to Page 918 of the present work, originally constituted a paper presented by Dr. Blundell to the Medico-Chirurgical Society; and afterwards published in his "Physiological and Pathological Researches" (Pages 32 to 62); whence, with slight modifications, we have extracted them.—EDITORS.

the event proved, impregnation was impossible.* Indeed, there seems to be little reason for doubting, that the corpus luteum may be produced, even independently of sexual intercourse, by the mere excitement of desire in a very high degree. Mr. Saumarez has recounted experiments, in his "New System of Physiology", in which the corpus luteum appears to have been generated in this very manner. I have now in my possession a preparation (for which I stand indebted to Dr. Cholmeley and Mr. Callaway), consisting of the ovaries of a young girl, who died of chorea, under seventeen years of age; with the hymen, which nearly closed the entrance of the vagina, unbroken. In these ovaries, the corpora lutea are no fewer than four. Two of them, it must be acknowledged, are a little obscure; though an experienced eye, I conceive, would readily detect them. The remaining two are very distinct; and differ from the corpus luteum of genuine impregnation, merely in their more diminutive size, and the less extensive vascularity of the contiguous parts of the ovary. In every other respect,—in colour, and form, and the cavity which they contain,—their appearance is perfectly natural; indeed, so much so, that I occasionally circulate them in the class-room, as accurate specimens of the corpus luteum upon a small scale.

Dr. Haighton's Experiments.—On this point I have been the more explicit, because the principle is of some importance in forensic medicine; and also because it removes, at once, an objection to which these experiments lie exposed; and which is taken from those of Dr. Haighton. In these experiments,—very ingenious, and extremely beautiful,—my valued relative has shewn, with his usual accuracy, that the corpus luteum may form, though the fallopian tube has been obliterated in some part of its course; and the access of the semen to the rudiments, therefore, has been intercepted. When, however, he infers from this,—in opposition to the principle here asserted,—that the ovary has been impregnated, notwithstanding the interception of the semen, he certainly falls into one of those errors, from which the most wary physiologist is never absolutely exempt; for the corpus luteum, in the rabbit, is not a certain evidence of impregnation. The appearances related,—I may further remark,—afford, when combined with others, a plausible proof that the semen sometimes penetrates as far as the ovaries;—a point which has been much controverted.

In the varieties of human generation, we sometimes meet with extra-uterine pregnancies; in which the ovum not only lodges in the tubes, or in the peritoneal cavity, but in the ovary itself†. Indeed, this form of the disease seems, on the whole, to be the most common.

* See Pages 908, 911, and 912.

† Extra-Uterine Conception is of four kinds:—1. Ovarian. 2. Fallopian. 3. Abdominal. 4. Uterine (between the coats of the uterus). All the signs of pregnancy are present; and labour comes on at the usual period. In the case of fallopian pregnancy, the tube sometimes bursts; and the woman dies from hæmorrhage. The fallopian tubes are liable to stricture, especially (according to Dr. Baillie) in prostitutes; and he thought that was the reason why they do not have children. But if they reform and marry, they often have large families. Their sterility is probably from the absence of orgasm in sexual intercourse;—the generative parts not being in a state of tension.—*Dr. Fletcher's unpublished Examinations.*

If it be true,—as I have endeavoured to prove,—that the young animal cannot be formed, unless the semen have access to the rudiments, it is evident, that in those pregnancies in which the fœtus is generated among the graafian vesicles, the semen must have made its way up to the ovaries themselves. It must not, however, be too hastily inferred from this, that the semen always penetrates into these remote recesses of the genitals. Facts have been related, which give a shade of probability to the conjecture that, without the contact of the semen, the rudiments may sometimes descend into the uterus; and certainly, although the opinion is not without its difficulties, it is not impossible that they may meet each other there *.

SECTION 4.—SEMEN TRANSMITTED THROUGH THE ABSORBENT SYSTEM, POSSESSES NO GENERATIVE POWER.

There is yet a third point in the physiology of generation, which the preceding experiments may contribute to elucidate. It has been contended, by some naturalists,—and not without a shew of reason,—that the semen, in generation, is transferred to the blood-vessels; and,—as a purgative or an emetic, when ejected into the veins, exerts its peculiar influences on the stomach or the bowels,—so also, in their opinion, this active fluid, transmitted by the absorbents, makes its first impression on the vascular surface; and its second, by a similar sympathy, on the genitals themselves. What effects might be produced by injecting the semen directly into the veins, when the genitals are in a state of excitement, I shall not venture to determine. As yet, I am in possession of no decisive experiments upon the point; and it would be a mere waste of mind to speculate without them. It seems evident, however, from the facts related, that after transmission through the absorbents and their glands, the semen retains no such generative influence. It will be readily conceded, that when a rabbit admits a large male, in vigorous health, and in the flower of its age, as many as twenty or thirty times, a large quantity of the genital fluid must be imbibed by the absorbents of the vagina; yet neither in the uterine nor the vaginal experiment, in which these repeated coitions sometimes took place, was impregnation by absorption accomplished. The simple exclusion of the semen from the rudiments, always prevented the formation of the young animal. In the *vaginal* experiments, it was not produced at all; in the *uterine*, it was formed only on that side where the womb remained pervious †.

On a review of the whole inquiry, it will (I conceive) appear not improbable that, for the completion of generation, the semen must have access to the rudiments; and yet that, notwithstanding the necessity of this access for its *completion*, the process, to a *certain extent*, may be accomplished without it. These are the two leading propositions, which it has been my endeavour to establish. At the same

* Is the transfer of the semen beyond the womb, the cause of extra-uterine pregnancy?—*Dr. Blundell's "Researches"; Page* 59.

† See Pages 907 and 908.

time, I have subordinately attempted further to shew, that the corpus luteum is not a proof of genuine impregnation; that the semen,—at least, occasionally,—penetrates as far as the ovaries; and that, however copiously this fluid may be absorbed into the vessels, it is incapable of giving rise, by any impression there, to the complete circle of the generative actions.

Whether these principles of brute-generation may be transferred to our own, I will not venture to determine. Analogical arguments,—generally the best that physiology furnishes,—are, it must be admitted, never absolutely demonstrative; but as the generation of the rabbit, in its other principles, resembles that of the human female, there seems to me but little reason for supposing, that there is an essential difference here. Granting this,—and there seems to be nothing unreasonable in the assumption,—we may, I think, from the whole inquiry, draw a few practical inferences. These I am the rather induced to state, because some well-meaning persons of weak minds,—incapable of perceiving the connexion between speculation and practice,—are led to condemn investigations of this sort, as idle, and (therefore) as unjustifiable and cruel; because, until instructed, they do not know how to use them.

1. It may be inferred, that when the womb is extirpated by a ligature, there is no danger lest, from commerce afterwards with our sex, extra-uterine pregnancy should be produced.

2. It follows, that when the Cæsarian operation is performed, the possibility of a second need of that operation may be precluded, by removing, on either side, a small portion of the fallopian tube;—so as to intercept its calibre*.

3. It is obvious, that when the pelvis is so small, that delivery cannot be accomplished (after seven months are completed) without breaking open the head of the child, the need of this murderous operation may be prevented by the simple expedient just mentioned. The sexual desires would, I believe, remain; but sterility would be produced; and though certainly not wholly unattended with danger, the operation is perhaps safer and less painful than the extraction by embryotomy; which has hitherto been used as a substitute. It demands, too, no sacrifice of a helpless fœtus; and would require performance only once.

Should these suggestions be verified, and brought into operation in the practice of future ages, I think it must be admitted, that they will amply justify the experiments which give birth to them, and will render those experiments a benefit to mankind.

SECTION 5.—GENERAL REMARKS ON GENERATION AND SEXUAL INSTINCT.

Mode of Preventing Impregnation.—To some women, impregnation is death. The pelvis is so contracted, that, without the Cæsarian

* See Page 25 of Dr. Blundell's "Researches"; and Page 757 of the present work.

operation, delivery cannot be effected by any artificial means. In such women, sterility might be ensured by the division of the tubes; —as formerly advised*; and I think I know of cases in which this operation, though an evil and a danger, might have been prudently recommended, and thankfully undergone. These operations, however, are neither to be rashly commended nor condemned. They require in the operator many qualities. If the fallopian tubes are divided to ensure sterility, a small piece (say of a line or two in length) ought to be removed; lest the divided portions should again fall into apposition, and the canal become renewed.

Where does Mixture take Place?—It has often been asked, whether the male fluid ever rises up to the ovary, or whether the mixture takes place elsewhere? For myself, I incline to think that, in general, the rudiments and the fecundating fluid meet each other in the uterus; for the formation of the corpora lutea, the developement of the uterus, and the accumulation of water in the uterine cavities,—as in the experiments narrated †,—seem all of them to show, that the rudiments may come down into the uterus, without a previous contact of the semen. It is certain, however, that the secretions of our sex sometimes reach the ovaries. Ruysch, who examined a woman struck dead by a knife when in the act of adultery, found the fluid in the fallopian tube; and granting what cannot, I conceive, be denied,—that there can be no full formation of the fœtus without mixture of the two substances, it is clear that, in ovarian pregnancy, such deep penetration must occur. Perhaps the overaction of the genitals, and the conveyance of the semen too far, may be the exciting cause on which extra-uterine gestation depends‡.

Quantity of Semen necessary for Impregnation.—But although, in generation, the formation of the new structure cannot be accomplished, perhaps, without commixture of the semen with the rudiments, yet it is remarkable that, in some species of animals,—our own among the rest,—very minute quantities of the semen are sufficient for the purpose. Four impregnations in which the hymen remained unbroken, have fallen under my notice;—the diameter of the vaginal orifice not exceeding that of the little finger; and this, too, though the organ of the male parent was of ordinary dimensions. Chambon has related the case of a French girl, who, on marrying, suffered so much pain, that she was obliged, in about a fortnight afterwards, to separate from her husband, and return to the maternal roof; yet she became pregnant, notwithstanding, and produced twins. When delivery occurred, it was found that the hymen remained unbroken;—there being two small apertures, scarcely larger than a surgeon's probe. The urethra, however, was dilated; and readily suffered the introduction of the finger; so that the whole nature of the case was rendered intelligible enough. In these circumstances,

* See Page 757. † See Pages 910 to 912..

‡ Harvey said that the semen does not enter the uterus; for that the os uteri, being a valve, allowed *e*gress, but not *in*gress. Hence the opinion of an "aura seminalis" came to be entertained. Spallanzani, however, shewed that the semen really does enter; and it was found to be so in three cases of dissection immediately after coition.—*Dr. Fletcher's unpublished Examinations.*

I think, there can be no doubt that only a very small quantity of the semen could have entered the vagina or uterus; and the rather, because a separation took place between the parties within a fortnight after the marriage; but still she was delivered of twins within the nine months; and, therefore, impregnation must have taken place in the course of a few days.

If you ask me how it is that impregnations are accomplished, when there is merely a deposition of semen on the vulva, I reply, that it is most probably by an admixture of the male fluid with the secretions of the female;—for dilution does not destroy fecundating power. If a tall glass were filled with water, and sugar were thrown into the bottom of it, the latter, on solution, might soon be perceived in the upper part of the fluid;—especially if agitation occurred. So the fecundating secretion may, by admixture, penetrate to the inmost recesses of the genitals;—more especially if the secretion of the genital surface be copious.

To these facts I may add those of a second class; namely, cases in which impregnation takes place unexpectedly; and where the parties guilty of incontinence, have been desirous of preventing it. I know of three cases in which the male organ was not suffered to enter the vagina at all; and where, nevertheless,—I suppose from the mere deposition of the semen upon the vulva,—impregnation took place. I have known women astonished to find themselves pregnant;—being persuaded that impregnation was impossible; until, to their sorrow, this unwelcome truth was unfolded. In a word, from several facts of this kind,—too delicate for full disclosure,—I am satisfied that, where there is an aptitude to become pregnant, very small quantities of the semen, introduced into the lower part of the vagina, will give rise to the new structure.

Nor must we forget the experiments made by physiologists; and by Spallanzani among the rest. Spallanzani says, that he has taken three grains (by weight) of the male fluid of the frog, and mixed it with seventeen ounces of water; and found, almost invariably, that an impregnation of the egg was produced by so much of this exceedingly weak mixture, as would adhere to the point of a fine needle; though, in a globule so minute, the quantity of the plastic agent must clearly have been inconceivably small. He tells us, also, that where the male material was mixed with a much larger quantity of water,—about a gallon, if my memory serve,—even by this exceedingly dilute mixture, impregnation was frequently produced. It seems, then, that although, for the purposes of formation, it is essential that there should be a commixture of the male and female substances, yet, if the female genitals be apt to conception, the requisite quantity of the male material is small.

"Be fruitful and multiply," say the Hebrew Scriptures*. "Plant trees, and beget offspring," says the doctrine of the Magi. In speculation, I acknowledge, I am not of the opinion of those who, with some admirers of the doctrine of antipathies, have taken it into their heads that there is a most wonderful virtue in abstaining from the

* Genesis; Chapter 1, Verse 28; and Chapter 9, Verse 1.

proper use of the sexes. Why, in the name of sense and reason, were the powerful impulses given? Why were these wonderful structures elaborated, if they were not originally designed to be used by every one who is possessed of them? Remember, however, that society, in its present form, is not, perhaps, constructed with a philosophical regard to our natural instincts, and our original rights. Remember, too, that, in consequence of this fundamental defect (which is perhaps irremediable), society cannot subsist without a mutual concession of a part of these rights. Remember, too, that those are justly stigmatized with public infamy, who, living in society, refuse (in turn) to their associates those concessions, which they are themselves receiving; and while we refuse to be intimidated by the wholesale bullying of fanatics,—who, with all their arrogance, seem frequently to place our duties upon a wrong foundation,—let prudence,—let self-respect,—let a regard to health,—let a just consideration of social duty, put a check upon these follies! Awkward accidents sometimes occur, to those who conceive themselves most knowing! Let the disciples of the sensual school beware!

> "Hic murus aheneus esto;—
> Nil conscire tibi, nullâ pallescere culpâ!"*

Although, in human formation, it is not essentially necessary that the male material should be deposited in the upper parts of the vagina of the female, yet there seems to be little doubt that the deep entrance of this substance conduces to impregnation. Children are sometimes not procreated, for want of sufficient penetrative power in the male organ. Much, and often needless, misery results from this infirmity. The birth of a child is one of the best auxiliary remedies, as it lays the passages open; and if the male fluid do but enter the vagina, it seems often to matter little how.—Verbum sat!† One of the most intellectual families in Europe seems, at length, to have become extinct, in consequence of an impediment to generation of the kind to which I have alluded; and which, I conceive, there can be little doubt that a little art would have remedied.

Anomalous Impregnation.—In generation, it is not necessary that mixture should take place in the individual who is pregnant; and, therefore, it is not physiologically impossible, that a woman, though a virgin, should be with child. It is well known,—with respect to some animals in the lower class, especially,—that one impregnation will serve for several generations. Thus,—to go no further than that common insect which is called the "vine-fretter",—if a female is impregnated, she will produce young; and these young will go on to produce others, without further impregnation. This process may be repeated, until eight or ten generations have been produced; so

* "Let this be a wall of brass;—not to feel chargeable with any crime, or to grow pale with conscious guilt"!—*Horace's "Epistles"; Book* 1; *Epistle* 1; *Lines* 60 *and* 61.—N. R.

† "Let a hint suffice".—N. R.

that, in these animals, you have a proof of the very principle for which I am contending;—namely, that virginity is not of necessity lost by the individual who conceives.

Some years ago, I was shown by Mr. Highmore, of the West, a preparation of a child,—on the whole not very imperfectly formed,—of the size of six or seven months; and which had been taken from the body of a boy between fifteen and sixteen years of age*. The boy (literally, and without evasion) was "with child"; for the fœtus was contained in a sac communicating with the duodenum; and was connected to the side of the cyst by a short umbilical cord. This fœtus did not make its appearance, till the boy was eight or ten years of age, or more; when,—after much enlargement from this "pregnancy", and much pain and flooding,—the boy died. This case is not singular. There are others on record. A seed, or an egg, though fecundated, may lie for years without becoming evolved. A serpent may, I believe, become enclosed under the egg-shell of the goose;—the shell, I presume, forming over it as the animal lies in the oviduct of the bird. These facts explain, very clearly, the phenomenon just narrated; for, when this unfortunate child was begotten, a twin was begotten at the same time; but while the brother formed in the usual manner, the impregnated ovum of his companion lay dormant; and, without resistance, became closed up within the fraternal abdomen;—like the viper in the egg-shell. Like the seed in its bag, or the egg upon the shelf, these living rudiments lay quiet for a few years, within the body of the brother; and then, formation commencing, the wonder and the catastrophe ensued. The boy became pregnant with his twin brother! His abdomen formed the receptacle; where, as in the nest of a bird, the formation was accomplished. Now, if a child, without impregnation of the bearer, may form within the abdomen of a boy, you will, I am persuaded, allow that it may also form in the uterus of a virgin. To me, therefore, it seems to be not physically impossible, that a girl may become pregnant with her own brother or sister. Here then is, indeed, a physiological triumph of the sex; though I feel persuaded they have too much virtue to make use of it! Among all the precursors of the modern gentleman,—the knights of old,—where is the champion who, with his lance, defended the unsullied honour of his idol, with half the effect of this simple principle of physiology? "Senuerunt Jupiter et Mars"†. To the demi-gods of an absolute superstition,—to the airy creations of the middle ages,—paternity can no longer be ascribed! But this principle of physiology may take upon itself the defensive office of the other two; and, in the womb first, and at the bosom afterwards,—under the protection of science,—a lady may now, it seems, nourish her sister without a blush! Louis Quatorze presented a richly-embroidered jupe‡, to

* This case, which occurred at Sherborne, in Dorsetshire, in the year 1814, was published by N. Highmore, Esq., of that neighbourhood.

† "Jupiter and Mars have grown obsolete".—N. R.

‡ Petticoat.

clothe an offensive statue, which formed a sort of aqueduct in one of the cities of the Netherlands. The image of Doumourier, formed in plaster, was (as report goes) very properly screened from the view of the sex, some few days after it had been set up in the Place des Victoires. But the conscious innocence of our countrywomen, places them above such prüderies; and I will not despair of seeing my favourite science honoured with a statue;—not robed and shaded, but in Grecian nudity;—a fit companion for the Achilles*. It should have two inscriptions; the one—"To the defender of innocence, the grateful sex";—the other—Φυσις ειμι, και το μεν πεπλον ουδεις των θνητων αποκαλυπτει†;—mysterious words, which, inscribed under such a figure, will become intelligible enough!—But I beg pardon for this levity.

From all that is said, we may (I think) infer that, in formation, Nature generally uses two substances; that these two substances must mix; that of the male material, frequently, little is required; and that it is not necessary that the contact should take place in the individual who bears the child;—so that virgin pregnancy is not physically impossible.

Different Degrees of Fecundity.—There is one other remark I shall offer; and shall then conclude this speculative subject. Different genera of animals, and different animals of the same species, are found to possess very different degrees of fecundity. A sturgeon produces, at a single spawning, a million of eggs; *our* females are usually uniparous‡. In the strength and prolific energy of the genital system, also, there is a good deal of variety, even in the same species. In our own race, for example, some women are sterile; while others produce two, three, four, or even five children at a birth. When women are sterile, we generally ascribe the defect to their part of the genital apparatus;—and, I believe, with good cause; but when they are unusually fruitful, we are willing to arrogate the merit to ourselves. This claim of ours, however, is (I believe) generally unfounded. When the sex is more prolific than ordinary, it is, I conceive, generally owing to their own powers; nor can I, by any means, commend the corporation of one of our provincial towns, which presented a piece of plate to an old gentleman, whose age lay near eighty, in commemoration of his felicity in being blessed with four children at once! A lady, related to one of my own pupils, conceived four children together; and this lady had three sisters, who all produced to their husbands either twins or triplets. It is clear, therefore, that it was in the *female* system that the fecundity existed. Of this hint you may avail yourselves hereafter, when searching for a bride! Mr. Knight, in one of his excellent papers on vegetable physiology, tells us, that when a herd of cows is served by the same bull, some of

* Alluding to the Statue of Achilles, clothed only with a vine-leaf, erected in Hyde Park, "to Arthur, Duke of Wellington; and his Brave Companions in Arms; by their Countrywomen".—N. R.

† "I am Nature; and no mortal removes my veil".

‡ From *unus*, "one"; and *pario*, "to bring forth".

the cows are noted for being more prolific than the rest. Suckling is no certain preventive of pregnancy; though, in general,—especially in the earlier months,—the wet-nurse remains sterile; and, in the second or third month, gestation dries up the milk.

Impregnation not Periodical.—Human generation seems to know no annual variation; but almost all brute-animals and vegetables, after puberty, propagate at certain seasons only;—in spring, summer, autumn, or winter;—once or twice in the year, or oftener; and the genitals undergo a periodical developement for the purpose. But although it may certainly be denied, that the human female has periodical aptitude, yet I have sometimes thought that there is something genial in the spring season; and we all know that, of the vernal months, May is the one which may put in the fairest claim to be the emblem of the blooming virgin * !

Superfœtation.—Genitals pregnant already, cannot (so far as I know) be impregnated again, unless at a very short interval. At a very short interval †, a second impregnation may be accomplished. Bitches, I am told, produce puppies engendered by different dogs; and women have produced twins begotten respectively by a white and black parent, as the characters of the offspring clearly showed. Several cases of this kind are on record ‡.

Double Uterus.—I lately, in presence of my able friend, Mr. Waller,

* In a memoir on the influence of the seasons, climates, periods of labour and repose, abundance or scarcity of provisions, and social habits, on the number of conceptions in women, M. Vellermé states, as one of his conclusions, that the six months of the year in which there are most births, occur in the following order:—February, March, January, April, November, September. These periods of *birth* refer the *conceptions* to the months of May, June, April, July, February, and March. He regards the same agent which produces marsh-miasm, as amongst the greatest obstacles connected with the climate (and therefore, indeed, with season) to fertility. In the year 1817, one of great scarcity of provisions in the eastern part of France, a diminution of the number of conceptions by one-half of the ordinary number, was a marked result.—*Dr. Castle.*

† Some writers maintain that superfœtation is possible during the two first months of pregnancy. The majority hold it possible for 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, in concluding 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 afterward.—*Dr. Ryan's "Manual of Midwifery;" Third Edition; Page* 125.

Dr. Mason 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.—"*Transactions of the College of Physicians*"; *Volume* 4.

A woman was delivered at Strasburgh, on the thirtieth of April, 1748; at ten o'clock in the morning. In a month afterwards, M. Leriche discovered a second fœtus; and on the sixteenth of September, at five o'clock in the morning, the woman was delivered of a healthy full-grown infant.—*Briand's "Manuel Complet de Medecine Legale."*

Dr. Ryan also relates other valuable cases. See his "Manual of Midwifery"; Third Edition; Page 126.—*Dr. Castle.*

‡ Buffon relates the case of two impregnations, produced (in succession) by a white person and a negro with the same woman;—the result being a white child and a mulatto. De Delmas has related a case exactly similar, which fell under

of Bartholomew Close, met with two wombs, opening by separate orifices into the vagina*; and my distinguished colleague, Mr. Key, showed me a uterus with two bodies. Mr. John F. South showed me another. Should any of you hereafter meet with a superfœtation, pray observe whether the womb is double.

[L. B., aged thirty, of a robust constitution, had been in labour for two days; when Dr. Geiss, who describes the case, was sent for, he observed that the pains were confined to the right side, where the uterus reached almost to the true ribs; while, on the left side, it did not rise higher than the navel. The external genitals were regularly formed; and as it now was found that the shoulder presented, the operation of turning was resorted to, and a healthy female child extracted. Soon after delivery, the right side of the abdomen collapsed, while the left half retained its size. An hour after the birth of this child, the labour pains returned; and, on examination, it was found that, at the side of the os uteri, and quite distinct from it, there existed a circular opening, through which the distended membranes of another child protruded. It was a full-grown boy; and, after its birth, Dr. Geiss, having introduced his hand into the left cavity, convinced himself that the latter had no communication with the right half of the uterus; which had already contracted. The left uterus contracted rather slowly; and the patient lost much blood from it. Two months afterwards, both children, as well as the mother, were perfectly healthy. Two years afterwards, she was again delivered; but of one child only.†]

In a few rare instances, the uterus and vagina are said to have been found double. Dr. Tiedemann informs us, that he has met with two instances of this monstrosity. The organs constituting one of the cases, are preserved to this day in the Heidelberg Museum. The individual had been pregnant in one of the sets; and the uterus is here larger than that on the opposite side; where it is of the ordinary size. The woman reached her full time; but died nineteen days after delivery‡. An interesting case of double uterus, with conception, is also described in a paper read before the Royal Society, by Dr. Purcell, of Dublin§.

Sexual Instinct.—When the genital system is once prepared, Nature,—never at a loss,—accomplishes, by numerous expedients, the mix-

his observation. In his case, there was only one placenta for the two children.—"*Bibliothèque Medicale*"; *Volume* 14; *Page* 254.—"*Edinburgh Journal of Medical Science*"; *Volume* 3; *Page* 322.

A white woman, near Philadelphia, is said (by Dr. Dewees) to have been delivered of twins, one of whom was perfectly white, the other black. The latter had all the characteristics of the African; whilst the former was delicate, fair-skinned, light-haired, and blue-eyed.—*Richerand's "Elements of Physiology"; translated by Dr. Copland; Fifth Edition; Page* 711.

* See the "Lancet"; No. 26; 1828; Volume 1; Page 55; October 11, 1828.

† See the "Lancet"; No. 219; 1828-9; Volume 1; Page 423; January 23, 1829.

‡ Dr. Mason Good's "Study of Medicine"; Third Edition; Volume 5; Page 10. (Physiological Proem to Class 5.)

§ "Philosophical Transactions"; Volume 54; Page 474.

ture of the two substances. She entices,—she impels,—she forces! In the instance of vegetables, she employs the ministry of intermediate agents; and a shower, or a breeze, or the busy flight of insects (accommodated, perhaps, without being conscious of it, with some pretty contrivance, generated for this express purpose);—these, and other accidents, in one way or another, furnish our wise parent with the means by which she accomplishes an object all dear to her heart,—the perpetuation of living beings! Bees and butterflies are sad go-betweens!

When animals are divided into sexes, and perhaps under hermaphroditism too, Nature brings the two parts of the genital apparatus together, by means of impulses to which the human mind is no stranger; and the study of which in ourselves may, I think, serve to give us the best idea of the nature of those strange impulses in the lower animals, called "instincts";—impulses which drive an animal, by pain or pleasure, upon a course of action, without any regard to its end. Adam, according to our great poet, ruined the whole human race,—his children,—for the love of our first mother*. This was pretty well! "A frog†" says Blumenbach, "will continue to impregnate the ova, even after removal of its head." This is better still! The strength of the sexual necessity is, in some parts of animal nature, truly astonishing; nor is it weak in our own race. The emanation of love,—a feeling so refined and delicate,—from instincts so coarse and vehement, might remind the imaginative of the transformation of the evil spirit into the semblance of a beautiful angel‡; while the more sober and useful naturalist, may probably bethink him of the metamorphosis of the caterpillar into the volatile and airy being, to which it is indebted for its existence! It is by the touch, ear, and eyes, in part, that these feelings become excited among men; but principally, perhaps, by the eyes (whence the advantage of being short-sighted); for the Graces§ do not *find* Love blind; but when they bind, they bandage him‖. In animals, too, the ear and eye have their influence;—"uritque videndo feminam"¶; but in them, the males especially, the sexual instinct is brought into operation frequently by the action of a very different sense. That sense is the smell.

In the agreable fictions of mythology, Cupid, like Bacchus, is sometimes mounted on a tiger. Different beings are differently

* "He scrupled not to eat,
Against his better knowledge;—not deceived,
But fondly overcome with female charms."
Milton's "Paradise Lost"; Book 9; *Lines* 997 *to* 999.

† In reptiles, there is an *embrace* without *connexion*.—*Dr. Fletcher.*

‡ "Satan himself is transformed into an angel of light."—*St. Paul's "Second Epistle to the Corinthians"; Chapter* 11; *Verse* 14.

§ The three Graces were Aglaia ("splendid"), Thalia ("flourishing"), and Euphrosyne ("mirthful"). According to Hesiod, they were the daughters of Jupiter, by a sea-nymph; but, according to other authors, their parents were Bacchus and Venus.—N. R.

‖ Cupid bound by the Graces, is a favourite subject of pictorial representation.

¶ "He is inflamed at the sight of the female".

armed. The bull has his horn; the pole-cat his scent; the viper his tooth; and the scribbler his slander! The fairer part of our species, too, is defended; but by a different weapon; and,—some two thousand years before the birth of Moore,—Anacreon, in softened numbers, told to the world the irresistible influences of female beauty! The Indians, I am informed, can fascinate the most poisonous serpents; and rat-catchers, in our own country,—as is well known,—can wheedle these animals on to their destruction. The more knowing of these fellows will, I am told, lie at length on the floor; and, with some preliminary measures or other, bring all the vermin from their haunts about them. I have been told by Mr. Hallum, of a drummer, who, when he knew the haunt of a wild animal (the otter, for example,), had a certain secret, by which he could, on lying near, bring the creature forth about his person;—disarmed of much of its ferocity, and suffering itself to be hauled and handled with impunity. Like Daniel in the lion's den, he seemed to possess a protection against brute-violence*. As seducing as these fellows are to animals, so may our own females, if we are youthful and unguarded, become to ourselves; and it was this reflection which first led me to think,—what I feel persuaded will not, hereafter, be found erroneous,—that the whole of this power depends upon sexual instincts. These influences, I conceive, contain within them the principle which fascinates the serpent; which seduces the rat; which tames, for a time (and equally), the otter and the tiger; and which, among our own species, has made both old and young play the fool in all ages;—"nam fuit ante Helenam mulier teterrima belli causa"†. Dinah‡ first, and Helen§ afterwards! In the well-known *chanson* ‖,—"We all love," &c., a very great physiological truth is contained. Accordingly I have learnt, respecting the man above mentioned, that he was accustomed to get and keep by him, in some mode of preparation or other, the genitals and bladders of the females of different animals, during "heat"; and, mixing this into a sort of pulp, he formed out of this mess the delicious sop, by which Cerberus was tamed¶. "Chacun à ses gouts"**! A putrid carcase is, to a blue-bottle fly, a bed of roses! On these principles, probably, house-breakers silence dogs.

Rats are fond of oil of rhodium; and cats are delighted with the smell of valerian. I suspect that, when oils, &c., are used as irresistible baits to animals, it is because their smell resembles that of the sexes.

* "Daniel was taken up out of the den; and no manner of hurt was found upon him".—*The Book of Daniel*; *Chapter* 6; *Verse* 23.

† "For even before Helen, woman was the cause of frightful wars".—*Horace's* "*Satires*"; *Book* 1; *Satire* 3; *Lines* 106 *and* 108.

‡ Whose seduction by Shechem caused the death of all the men of the city where the occurrence took place.—*Genesis*; *Chapter* 34.

§ Whose elopement with Paris gave rise to the Trojan war. See Page 742.

‖ Song.

¶ When living persons visited Tartarus, they quieted Cerberus, the three-headed watch-dog of Hell, by throwing to him a soporific cake, or "sop".—N. R.

** "Let every one gratify his tastes".

In all this, we may see a new and powerful system of means for getting a control over brutes; and,—in a temporary way, at least,—of bending them to our will. Of all baits, I think, there can be no doubt that, during "heat",—and for male animals, especially,—none would prove so alluring and intoxicating as the sexual scents; and they might be artificially compounded. Galen and Rabelais knew something of this secret.

CHAPTER II.

IMPOTENCE AND STERILITY.

[A knowledge of this subject may become necessary, in various ways, before judicial tribunals. An individual accused of committing rape, has been known to plead that he was physically incapacitated; while the legitimacy of children has been contested on a similar plea. These examples are sufficient to shew the necessity of a brief notice of the physical signs of impotence; even were they not connected with the subject of divorce.

The laws of Moses, and afterwards the Roman law, permitted divorce at the pleasure of either party. The Christian law, however, declares marriage to be indissoluble; and Justinian, legislating on this principle, was the first monarch who prescribed the mode of obtaining divorce by law, and at the same time promulgated statutes as to impotence. He ordained, that if the imbecility continued for two years after marriage (which period was afterwards enlarged to three years), the female should be entitled to a divorce.

The law of England, as laid down by Blackstone and his editor, is as follows:—"A total divorce is given whenever it is proved that corporeal imbecility existed before the marriage. In this case, the connexion is declared to have been null and void "ab initio"*. Imbecility may, however, arise *after* marriage; but it will not vacate it; because there was no fraud in the original contract; and one of the ends of marriage, the procreation of children, may have been answered†". There is, however, one case on record, which was decided on very different principles. I refer to that of the Earl of Essex, in the reign of James the First.

We have now to consider the causes of impotence in the female. And here it is to be observed, that even if the causes of it be removed, yet sterility, or an inability to conceive, may still exist. It will, therefore, be proper to notice the causes of "impotence" and "sterility" in succession. They may each be divided into "incurable" and "curable".

* "From the beginning".

† Blackstone's "Commentaries"; with Notes by Christian; Volume 1; Page 440.

SECTION 1.—INCURABLE CAUSES OF IMPOTENCE.

The *incurable* causes of impotence are:—1. An obliteration or thickening of the sexual organs;—so as to prevent any introduction. 2. A natural or fistulous communication of the vagina with the bladder or rectum. 3. Prolapsus of the uterus or vagina. 4. Cancer of the uterus or vagina. 5. Extreme shortness of the vagina.

Obliteration of the Sexual Organs.—The vagina and womb have been found closed with a dense fleshy substance. Morgagni mentions cases, in which there was a continuity of parts, without any aperture. A recent case related by Dr. Mott, as occurring in this country*, deserves to be mentioned in detail. The individual was aged twenty-three; and had been married upwards of two years. Her health was extremely good; but she had not seen the least indication of the menses. About every twenty-eight days, she felt some slight uneasiness about the pelvis; followed, for a day or two, by active diarrhœa. This occurrence she had noticed since about the age of seventeen or eighteen. As no connexion could be effected by her husband, she at length consented to an examination. The external parts were fully formed; but no vagina could be discovered. On a plane with the meatus urinarius, or about the situation of the hymen, there was a complete septum or partition. It had a firm appearance, though it yielded somewhat to the finger; and there was not the least opening into it in any part. Imagining that it might possibly be an imperforate hymen, Dr. Mott made an incision into it, about an inch in depth; but without success. After this closed, he made a second attempt; until he proceeded between two and three inches. No marks of a vagina, however, could be discovered. Dr. Mott was of opinion that both vagina and uterus were wanting. She had never experienced the least sexual desire†.

Foderé also relates the following case from the "Causes Celébres‡".

* America.

† "New York Medical and Physical Journal"; Volume 2; Page 19. A case, probably of the same nature, is mentioned in the "London Medical Repository"; Volume 8; Page 347. Other cases are referred to in Davis's "Obstetric Medicine"; Page 112. "Richerand", says Dr. Dunlop, "mentions a similar case, in which nature was periodically relieved by a discharge of bloody urine". Dr. Robert Lee (in the "Cyclopœdia of Practical Medicine," Article, Diseases of the Ovaria), states the following case, as communicated to him by Professor Elliotson:—"A young married female had never menstruated; yet had violent pains every month. Connexion went on; but with severe pain. On examination, which was finally consented to, no vagina could be discovered;—the part, on opening the labia, being as flat as the palm of the hand". Mr. Cline attempted twice to remove the difficulty by an operation within the labia; but without success. It is justly supposed that the uterus was here wanting; but, from the appearance of the breasts and other circumstances, that the ovaria had been fully developed. Such was actually found to be the case in an instance of imperforate vagina (as it is called), where that organ was found closed by a thick, muscular-looking surface; and which was operated on by Dr. Macfarlane of Glasgow. The patient died; and, on dissection, no uterus was found; but the ovaries were large and well formed. In this female, the breasts were fully developed.—See the "Medico-Chirurgical Review"; Volume 22; Page 450.—*Dr. Beck's "Medical Jurisprudence".*

‡ "Remarkable Trials".

In 1722, a young woman, aged twenty-five, in good health, was married at Paris. Six years elapsed without consummating the nuptials; at the end of which, she consented to be visited by a midwife. This person declared, that she could find none of the sexual organs; and that their place was occupied by a solid body. At this time, the female stated that, though in good health, she had never been subject to the menses. A surgeon, named Dejours, was afterwards called in; and, on examination, he supposed that an incision into this solid mass might remedy the inconvenience. He accordingly performed it (in 1734), but without success; for, after cutting down two inches, he still found the mass in equal quantity; and the hope of its being a superficial obstruction was destroyed. He contented himself with keeping the wound open; and an aperture was thus preserved. In the year 1742, the husband applied to the court to annul the marriage. Levret and Saumet, on being consulted, stated that they had found an aperture of two or three inches in length; that the cicatrix of the former operation still remained; and that,—either through the fear or the prudence of the surgeon,—it had not been sufficiently extensive to remove the obstacles. Ferrin, Petit, and Morand, on the other hand, deposed, that the operation had been properly performed; and that it was not probable that the parts necessary for generation had ever been present, either before or after marriage. The court, however, refused to annul the connexion;—from an idea that a cure was practicable. The female died at Lyons, about ten years afterward; and, on dissection, the vagina and uterus were found to constitute one solid mass; without any cavity in either *.

In other cases the vagina is entirely wanting; and yet, on dissection, or by operations during life, the uterus is found present. Thus, in one case mentioned by M. Villaume, the hymen was present; but there was merely a mass of cellular tissue in the place of the vagina; and, by an operation, an opening was made to the uterus†. In another, by Dr. Moulon of Trieste, there was no exterior trace of the external organs; but, on dissection, the uterus and its appendages were seen of their natural size, and well formed‡. Professor Warren, of Boston, recently operated in a case where the vagina was wanting; although the aperture of the urethra was well formed, and the clitoris and nymphæ appeared as usual. The female was twenty-three years old. The breasts were natural; but no uterus could be discovered on examination. The operation ended favourably; a sanguineous discharge, resembling the catamenia, occurred; and Dr. Hayward supposed that he could distinguish something like a uterus§.

A Communication between the Vagina and Rectum or Bladder.—Another cause (as assigned by systematic writers), both of impotence and sterility, is a natural or fistulous communication of the vagina with the bladder or rectum. Foderé mentions cases of this nature,

* Foderé; Volume 1; Page 385.
† Littel's "Monthly Journal of Foreign Medicine"; Volume 1; Page 376.
‡ "American Journal of Medical Sciences"; Volume 2; Page 193.
§ "American Journal of Medical Sciences"; Volume 13; Page 79.

where the female menstruated by the rectum, and every possible remedy failed of success. There are, however, exceptions to this; for, in one or two instances, we have accounts of impregnation, and of delivery being effected by the malformed passages. Louis's famous case was of this description. The thesis that he wrote on this subject,—"In uxore sic dispositâ, uti fas sit, vel non? Judicent theologi morales!"*—was made the subject of a prosecution by the parliament of Paris; and the doctors of the Sorbonne interdicted him from addressing the casuists. The Pope, however, allowed him to publish it, in 1754†.

Prolapsus of the Uterus and Vagina.—A prolapsus‡ or retroversion§ of the uterus, or a prolapsus of the vagina‖. These are, of course, curable during their first stages; but instances have occurred where they are of long standing, and cannot be reduced; since the introduction of the fingers causes the most vivid pain¶.

Cancer.—A cancer of the vagina or uterus, from the pain that accompanies it, may be considered as an absolute cause**.

Extreme Shortness of the Vagina.—Extreme brevity of the vagina (congenital), would seem to be occasionally an incurable cause, so far as relates to the pain caused by connexion; although possibly it may not be accompanied with sterility. Dr. Gooch says, that he once met with a case of this kind; and relates, that Dr. Hunter was consulted by a lady in a mask, labouring under this affection. He told her she was the most unfortunate partner a man could have; as there was no cure††. Dr. Dewees appears to have met with two cases. In one, the whole distance to which the finger could be passed did not exceed one inch, or an inch-and-a-half; in the other, it was apparently connected with an absence of the uterus; as the vagina terminated in a *cul-de-sac*. This female had never menstruated; yet she had all the marks of womanhood, and enjoyed sexual intercourse‡‡.

SECTION 2.—CURABLE CAUSES OF IMPOTENCE.

The *curable* causes of impotence, are:—1. A dense substance covering the orifice of the vagina. 2. An extreme narrowness of the vagina. 3. Narrowness from accidental causes. 4. Imperforate os uteri‖‖. 5. Long-continued hæmorrhage. 6. Recent prolapsus of

* "Is it lawful to have connexion with a woman thus formed? Let moral theologians decide!"

† "Medico-Chirurgical Review"; Volume 5; Page 299.

‡ See Page 703. § See Page 671.

‖ See Page 690.

¶ Pregnancy is, however, possible, even with an external prolapsus of the uterus. See cases quoted in the "Cyclopædia of Practical Medicine"; Volume 3; Page 493.

** In the "New England Journal" (Volume 9, Page 161), is a case by M. Lasserre; which evidently proves the position in the text. Dr. Beatty (of Dublin) had, however, a pregnant female labouring under this disease.—*Dr. Beck.*

†† Gooch's "Midwifery"; Page 45.

‡‡ Dewees, on the Diseases of Females.

‖‖ "Medico-Chirurgical Review"; Volume 17; Page 553. A case by Professor Delpech.

the uterus or vagina. 7. Leucorrhœa. All these circumstances prevent connexion;—either from the pain that occurs, or from the diseased state of the parts.

Obstructions in the Orifice of the Vagina.—Paré, Ruysch, Fabricius, and many others, relate cases of this kind; in some of which the membrane, which is generally the hymen, was so strong that the menstrual blood was accumulated behind it in large quantities. Foderé quotes a case from Fabricius, where the husband demanded a dissolution of the marriage;—from the impossibility of having perfect connexion. The female, however, declared herself pregnant; and, by an incision into the membrane, the obstacle was removed, and the pregnancy completed at the time indicated*. Dr. Physick is also stated to have operated, with success, in a case where the vagina was entirely closed up, to a considerable distance within the os externum†.

Extreme Narrowness of the Vagina.—Should pregnancy intervene, no apprehension need be entertained of the result, in this case; as it has been repeatedly observed that a dilatation gradually takes place, before the period of delivery. It may be remarked, however, that this occurs more readily in young females than in those of advanced years‡. Independently of the natural narrowness just mentioned, there is a similar affection that occasionally originates from accidental causes; such as tumours, callosities, and cicatrices remaining after the cure of ulcers, or from lacerations after difficult labour§.

* Foderé; Volume 1; Page 389.

† Dorsey's "Surgery"; Volume 2; Page 368.

‡ Dr. Davis mentions a case, in which the narrowness returned after the first delivery; and was only completely relieved after the second birth. See his "Obstetric Medicine"; Page 102.—*Dr. Beck's "Medical Jurisprudence."*.

§ These cases are so numerous and various, that I will only refer to some of the more remarkable:—Davis's "Obstetric Medicine"; Pages 116 to 120.—Cæsar Hawkins, on "Obliteration of the Vagina", in the "London Medical Gazette".—"Cyclopædia of Practical Medicine"; Volume 2; Page 601; Article "Impotence", by Dr. Beatty.—Dr. Williams, in the "American Journal of Medical Sciences"; Volume 11; Page 408. He refers to several cases.—Dr. Hoillemin in the same; Volume 15; Page 407.—A case by Dr. Barret of Kentucky, where death followed from rupture of the uterus in a second delivery;—having been maltreated in the first. On examination, there was found a complete adhesion of the vagina; leaving only a septum of one or two lines at the lowest part. Through this, impregnation must have been effected. See Drake's "Western Medical and Physical Journal"; Volume 3; Page 206.—A case by Professor M'Naughton, in the "New York Medical and Physical Journal"; Volume 6; Page 252.—A case by Dr. Stedman, in the "Edinburgh Medical and Surgical Journal"; Volume 37; Page 26.—A case by Dr. Turnbull, in the same; Volume 39; Page 128.—In the "Medico-Chirurgical Transactions" (Volume 11, Page 445), a case is related of a negress in Jamaica, in whom there was a complete adhesion of the labia; and she asserted that it was owing to an operation performed in Africa, for the purpose of preserving the chastity of the female. This appears, indeed, to have been an ancient custom; as it is mentioned by Strabo. That it is the practice, is proved by the observations of Burkhardt; who says that the daughters of the Arabs, Ababde and Djaafeere,—who are of Arabian origin, and who inhabit the western banks of the Nile, from Thebes as high as the Cataracts,—and generally those of all the people to the south of Kenne and Esne as far as Sennaar, undergo excision of the clitoris at the age of from three to six years. The healing of the wound is contrived to close the parts, except at one place; where an aperture is

A dilatation of these constrictions may be made;—according to the rules of modern surgery*.

SECTION 3.—CAUSES OF STERILITY.

Incurable Causes of Sterility.—The causes of sterility, of an *incurable* nature, and sensible to the sight or touch during life, may be stated thus:—1. A schirrous or cartilaginous uterus. 2. Stricture in the cavity of that organ†. 3. A polypus in the interior of the uterus. 4. Enlarged and schirrous ovaria. The want of the uterus, should that occur, is seldom positively known till after death‡.

Curable Causes of Sterility.—The causes which may be *curable*, are:—1. Obliquity in the position of the uterus. 2. Too great irritability of the organ. 3. Excessive menstruation. 4. Leucorrhœa. 5. Retention of the menses§. This last, however, is not by any means a certain cause of sterility; as women have become pregnant without the menses ever occurring.

Constitutional Sterility.—In concluding this subject it is proper to add, that there are many cases of constitutional sterility, which we cannot explain. Ashwell, in his Treatise on Parturition‖, ascribes it to four principal causes:—1. Too early marriage. 2. General ill-health. 3. Too frequent sexual intercourse. 4. Dysmenorrhœa.

left for the passage of the urine and menses; and the adhesions are not broken through until the day before marriage, and in the presence of the intended bridegroom. Some have the parts sewn up; and, like eunuchs, become more valuable on account of their unfitness for sexual connexion. See Elliotson's "Blumenbach"; Fourth Edition; Pages 456 and 457. (Section 37; Note A.) See also Browne and Leigh's "Travels".—*Dr. Beck's "Medical Jurisprudence".*

* Dupuytren, in his Essay on Laceration of the Perinæum during Labour, mentions two cases; which I extract, for the purpose of caution to the medical jurist. He delivered a young woman secretly. The perinæum was ruptured; but, by the use of a suture, it again united. Several years afterwards, a man and woman visited him: the husband was unable to consummate his marriage. On examination, the aperture of the vagina was found very narrow, and there was a cicatrix in the perinæum. It was his old patient. He advised patience; and, in a short time, the female became pregnant, and was safely delivered. In a parallel case, the husband deemed it a most unequivocal proof of previous purity! See the "London Medical Gazette"; Volume 11; Page 128.—*Dr. Beck's "Jurisprudence".*

† Baillie's "Morbid Anatomy"; Page 371. "Slight inflammation," he observes, "may induce this; and the obliteration particularly occurs in that part where the cavity is narrowest."

‡ "Memoirs of the Medical Society of London"; Volume 4; Page 94. See also Burns's "Midwifery", Book 1, Chapter 10, Section 24; and Morgagni, Letter 46.

§ Foderé and Mahon mention dropsy (hydatids) and tympanites of the womb as causes. Denman, however, observes that, according to his experience, they have not prevented conception.—*Dr. Beck's "Medical Jurisprudence."*

‖ See the review of his work in the "American Journal of Medical Sciences"; Volume 4: Page 149. Sterility is considered, by the laws of various countries, a legal ground of separation. It is so among the Hindoos. By the law of China, barrenness and talkativeness are two among the seven causes of divorce. The Koran also permits it. By the English and Scotch law, sterility is a ground for divorce "a mensâ et thoro"*. See the "Edinburgh Encyclopædia"; Article "Barrenness".—*Dr. Beck's "Medical Jurisprudence".*

* "From bed and board".

It is obvious, however, that these are far from being invariable; yet the frequency of barrenness among prostitutes, has led to some examinations, and afforded us several interesting facts. Some have referred it to a state of exhaustion of the uterine system, produced by excessive excitement; and, in illustration, it is asserted that some of the most abandoned, on going to Botany Bay and marrying there, become the mothers of large families. An anatomical change would, however, seem to cause it in certain instances. Thus, Mr. Langstaff, in several dissections, found the fimbriated extremities of the fallopian tubes, on one or both sides, adherent to some of the neighbouring parts; and it is evident that the constant state of inflammatory turgescence, in the generative organs, must lead to this*.

From a review of the causes of impotence, it is evident that the absolute ones are few in number; that they are mostly palpable to the senses; and that the number formerly assigned to this class, has been greatly reduced by the improvements in surgery. The medical witness must, of course, regulate his testimony by these facts†].

CHAPTER III.

RAPE.

[No case can occur in which public feeling is more warmly or justly excited, than where an attempt is made to injure or destroy the purity of the female. According to our‡ system of laws, the testimony of the insulted individual is sufficient to condemn the criminal; yet, notwithstanding this correct regulation, it not unfrequently occurs that the opinion of the physician is required, in order to elucidate various difficulties connected with the accusation. I§ shall, therefore, follow the plan pursued by all systematic writers on this subject; and commence with a notice of the signs of virginity. A knowledge of these is generally required, in cases where children of a tender age have been abused; and, again, they need to be known in those instances where malicious charges have been made by abandoned females. No remark can be more correct than that of Sir Matthew Hale, concerning this crime:—"It is an accusation easy to be made,

* "Medico-Chirurgical Review"; Volume 4; Page 405. Paris's "Medical Jurisprudence"; Volume 1; Page 215. See also Dr. Elliotson's Clinical Lectures, in the "Lancet"; Eberle's "Medical Review", Volume 2, Page 394; and the "Medico-Chirurgical Transactions", Volume 8, Page 505.

† This Chapter is taken from the "Elements of Medical Jurisprudence, by Theodoric Romeyn Beck, M.D.; and John B. Beck, M.D." Sixth Edition; Pages 49 to 66.

‡ The American.

§ Dr. Beck.

and hard to be proved; but harder to be defended by the party accused, though innocent".

SECTION 1.—SIGNS OF VIRGINITY.

Existence of the Hymen.—The physical signs of virginity, have been the subject of keen discussion among anatomists and physiologists; and none of them has led to greater inquiry than the *existence of the hymen.* This is understood to be a membrane of a semilunar, or (occasionally) a circular form, which closes the orifice of the vagina; leaving, however, an aperture sufficiently large to permit the menses to pass. A great difference of opinion has existed concerning its presence. Some distinguished physiologists have denied its existence altogether; or, in the cases where it is found, consider it a non-natural or morbid occurrence. Among these may be enumerated,—Ambrose Paré, Palfyn, Pinnæus, Columbus, Dionis, and Buffon. "Columbus", says Zacchias, "did not observe it in more than one or two instances; and Fallopius, in not more than three females out of thousands whom he dissected"*. "Paré", says Mahon, "considers the presence of the hymen as contrary to nature; and states, that he searched for it in vain in females from three to twelve years of age"†. Those, on the contrary, who, from dissection, have believed in its presence previously to its being destroyed by sexual intercourse, or some other cause, are Fabricius, Albinus, Ruysch, Morgagni, Haller, Diemerbroek, Heister, Riolan, Sabatier, Cuvier, Blumenbach, and (I‡ may add) Denman. Haller appears to have observed it in persons of all ages§. Cuvier has not only found it in females, but also in mammiferous animals; and thus gives strong evidence of its existence by analogy‖. Gavard, who appears to have dissected a great number of subjects at the "Hopital de la Salpetrière", and also at the dissecting-room of Desault, states that he constantly found this membrane in the fœtus, and in children newly born. In others of a more advanced age, he also observed it; and, in particular, he found it untouched in a female fifty years old, whom he was called to sound; as well as in another, whom he attended with Professor Dubois¶.

* Zacchias; Volume 1; Page 376.

† Mahon, Volume 1; Page 118.

‡ Dr. Beck.

§ I have indeed found it in all virgins, some of whom were grown up; nor have I ever found it wanting, nor do I believe it to be wanting, in a pure virgin. I have seen the hymen twice in the fœtus, six times at birth, twice in a girl of about seven months, thrice in one of a year old, once in one eighteen months old, once in one of two years old, twice in one of six years old, once in one of two years old, once in a girl of fourteen years, once in another of seventeen years, once in an old woman".—"*Elements of Physiology*"; *Volume* 7; *Part* 2; *Pages* 95 *and* 97.

‖ See, on this point, Godman's "Anatomical Investigations", Page 72, &c.; and Lawrence's "Lectures on Physiology", Chapter 6, Smith's Third Edition, Page 174.

¶ Foderé, Volume 4; Page 339.

The weight of testimony is thus evidently in favour of the affirmative of this question; and the general sense of the profession, is certainly decidedly opposed to considering it as a non-natural appearance. The following circumstances, however, require to be noted, before we form an opinion concerning it as a sign of virginity:—It may be wanting from original malconformation; or it may be destroyed by disease or some other cause, and yet the female be pure. Thus, the first menstrual flux, if the aperture be small, may destroy it; or an accident (as a fall*), or a disease (as, for example, an ulcer), may totally obliterate it. There have, certainly, occurred instances, where the pressure of the confined menstrual fluid has produced its destruction. Again, in the place of the hymen, are sometimes found the carunculæ myrtiformes. Tolberg (according to Foderé), and also Belloc, have made this observation on dissection. They were, however, round and without a cicatrix; and in this respect very distinct from the organs usually so termed†. This membrane may, on the other hand, be present, and yet the female be unchaste;—nay, she may become pregnant without having it destroyed. Zacchias remarks, that it will not be ruptured when it is thick and hard. A disproportion between the organs, or connexion during the presence of menstruation, or fluor albus, are also mentioned by him. Gavard, whom I‡ have already mentioned§, found it perfect in a female thirteen years of age; who was labouring under the venereal disease‖.

In those cases where this membrane is found thickened, an operation has often been necessary. Paré relates the case of a mother who applied to him to examine it in her daughter; and, on dividing it, it was seen to be of the thickness of parchment¶. A similar case happened to Ruysch;—that of a female during labour, in whom he had not only to divide the hymen, but also another non-natural membrane placed further back. Immediately after the operation, the child was born**. Baudelocque, Mauriceau, Denman, and other writers on midwifery, adduce many instances illustrating the same fact.

These observations certainly lead us to doubt, whether the pre-

* Or as in the following case of a young woman admitted into St. Thomas's Hospital, in July 1828, under the care of Dr. Elliotson. She stated that, about six months previously, she was lifting a person out of a coach; when she suddenly felt intense pain in the back, and the uterus descended and protruded beyond the os externum. The descent was accompanied by profuse hæmorrhage. She recovered, and was married; and now came into the hospital for prolapsus uteri. She declared, that before her marriage she was intact; and Dr. Elliotson remarked on this, that a lesion of the hymen may result from *internal* as well as from *external* causes.—*Dr. Beck's "Medical Jurisprudence"*.

† Foderé; Volume 4; Page 343. Belloc; Page 45.

‡ See Page 935. § Dr. Beck.

‖ Foderé; Volume 4; Page 340. Ricord, Surgeon to the Venereal Hospital at Paris, mentions a similar case; in the "Monthly Journal of Medico-Chirurgical Knowledge"; No. 3; Page 37.—*Dr. Beck's "Jurisprudence"*.

¶ Mahon; Volume 1; Page 118.

** Foderé; Volume 4; Page 340. See also Volume 1, Pages 389 and 390, for similar and even more extraordinary cases.—*Dr. Beck's "Jurisprudence"*.

sence or absence of the hymen deserves much attention; and I believe the opinion of physiologists generally is, that it is an extremely equivocal sign. I* am, however, unwilling to go as far as most of the later writers on legal medicine, who virtually reject it altogether. While it must be allowed, that it can very often be destroyed by causes which do not impair the chastity of the female, we are justified, I think, in attaching considerable importance to its presence. It would be difficult to support an accusation of rape, where the hymen is found entire†. I feel, therefore, justified in retaining it among the signs of virginity; although it should always be considered in connexion with other physical proofs‡.

Narrowness of the Vagina.—In children, this part is extremely small; but it increases in size as they approach the age of puberty. At that period, the development produced by the determination of blood to the sexual organs, causes a turgescence and enlargement which naturally place the parts in closer contact. In chaste females, also, rugæ are observed on the inner surface of the vagina; and these are removed by frequent connexions, and destroyed by one or two deliveries. It has been objected to this as a sign, that it varies according to the age of the individual, the temperament, and the state of health. Some of these circumstances deserve attention. In individuals of a sanguine temperament, the parts will be most contracted; while, on the other hand, if fluor albus, chlorosis, or menorrhagia be present, there will be great dilatation.

Appearance of the Caruncuiæ Myrtiformes.—I§ have already mentioned that, in the place of the hymen, certain fleshy tubercles,

* Dr. Beck.

† Gordon Smith; Page 397. A case is, however, given in East's "Crown Law" (Volume 1, Page 438), where two surgeons swore that the hymen was entire. "But as this membrane was admitted to be in some subjects an inch, and in others an inch-and-a-half, beyond the orifice of the vagina, Judge Ashurst left it to the jury, whether any penetration was proved; *for, if there had been any, however small*, the rape was complete in law. The jury found the prisoner guilty". In this case the female was ten years of age; and the parts were stated to be so narrow, that a finger could not be introduced. This decision was, however, at variance with the evidence usually required in such cases in England; and, according to the present statute law of that country, it would hardly be again made. On the trial of Gammon, for a rape on a child under ten years of age, Mr. Woollett, a surgeon, stated that he found considerable local inflammation about the parts of the child; that the hymen had been recently ruptured; and that he had no doubt that penetration had taken place. Baron Gurney, who presided, observed,—"I think that if the hymen be not ruptured, there is not a sufficient penetration to constitute this offence. I know that there have been cases in which a less degree of penetration has been held to be sufficient; but I have always doubted the authority of those cases; and I have always thought, and still think, that if there is not a sufficient penetration to rupture the hymen, it is not a sufficient penetration to constitute this offence". Carrington and Payne's "Reports"; Volume 5; Page 321.—*Dr. Beck's "Medical Jurisprudence"*.

‡ "In examining for the hymen in cases of rape, or for purposes of professional opinion or treatment in many other cases, it will be necessary to separate the labia, and even the thighs, to a considerable distance from each other, before the hymen, in the event of its being present, can be distinctly seen".—*Davis's "Obstetric Medicine"; Page 99.*

§ Dr. Beck.

termed "carunculæ myrtiformes", have been observed by anatomists; and shall now add, that a variety in their appearance has been considered indicative of chastity or unchastity. Zacchias remarks that, in the former, they are red, tumid, and connected together by fleshy cords; but, in married women (being situated at the entrance of the vagina), they are found pale, flaccid, and the cords torn asunder*. They are generally considered as the remains of the hymen; "et corruptæ adeo pudicitiæ indicia"†. They are then found thick, red, and obtuse at their extremities;—somewhat resembling a myrtle-berry; and, from this supposition, their name is derived. They generally disappear after frequent connexions or deliveries. It has, however, of late years been asserted with positiveness, that the carunculæ and the hymen may be co-existent. Of this opinion are Dr. Hamilton of Edinburgh, Dr. Blundell‡, and Dr. Conquest;—all, as it would seem, from actual observation.

Other Signs of Virginity.—In addition to the above, various signs have been enumerated by authors. These I§ will barely state; and will refer the inquirer, for more minute details, to works on anatomy and midwifery. Pain during the first connexion, is deemed a proof; although the presence of menstruation or of disease may prevent this. Similar observations apply to blood from the rupture of the hymen‖. The red and tumid appearance of the labia and nymphæ, on connexion, and the rupture of the fourchette, are each extremely uncertain signs; since the latter does not generally occur until delivery, and the former may be present in the unchaste. It should be observed, with respect to the signs last enumerated, that although they may be produced, notwithstanding the previous unchastity of the female, yet their absence is a proof against her. If the labia and nymphæ have the appearance which indicates previous connexion; if the fourchette be ruptured, and the fossa navicularis obliterated, the only deduction we can draw must be an unfavourable one. Capuron, a disbeliever in the physical signs, suggests that a foreign body,—such as a pessary,—introduced with too much violence into the vagina, may have ruptured the fourchette; or that the menstrual fluid, by becoming acrimonious, may have eroded it¶. Both these suggestions, however, are equally improbable; and deserve little attention in forming a general rule.

Systematic writers have added other signs to these; but they are generally equivocal. The bright red colour of the nipples; the hardness of the breasts; and, in fine, the general appearance of the female; —all these deserve attention; but can seldom be of any practical utility, in determining the point under examination.

From the above statement, an opinion may be formed concerning

* Zacchias; Volume 1; Page 378.

† "And therefore signs of virginity being lost".

‡ See Page 52. § Dr. Beck.

‖ This is indicated in the Jewish law. The curious will find some extraordinary discussion on this point in Zacchias, Volume 1, Page 376; and Michaelis, Volume 4, Page 192 to 199.—*Dr. Beck's "Medical Jurisprudence"*.

¶ Capuron; Page 29.

the dependence that is to be placed on the physical signs of virginity. It is not to be denied that many may be equivocal; but, notwithstanding, it is the duty of the medical examiner to notice them; and that in connexion with one another. It cannot be possible that all those which we have mentioned as present during the chaste state, can be wanting, without justifying a strong suspicion against the female. Midwives should always be associated with physicians, in such cases; and they would be the proper examiners, provided their information and knowledge of the system were sufficiently extensive. It is also necessary to recollect, that these appearances are most striking in females of a tender age; and, as a general rule,—guided, however, by the climate and the habit of body,—they are found most perfect in females not further advanced in life than twenty or twenty-five years of age *.

SECTION 2.—SIGNS OF DEFLORATION AND RAPE.

The marks of defloration (that is, connexion without violence) are, of course, the reverse of those which we have stated in the preceding section. It is not necessary to recapitulate them in this place; but it is proper to observe, that they will most readily be seen if the examination be made within a very short period after the event complained of; and, again, the most striking proofs will occur where it has been the first connexion on the part of the female. Here the parts are generally found bloody, inflamed, and painful †. Marks of rupture of the hymen, or disunion of the carunculæ, will also be present; together with an extreme sensibility to the touch, a sensation of heat, and a difficulty in walking. In married women, or libidinous females, the detection is more difficult; and, in truth, in a great degree impossible;—and that whether they accuse or are accused. The reasons for this will readily suggest themselves.

Definition of Rape.—By the term "rape", however, is understood not only defloration, but a commission of it against the will of the female; and, again, the commission of this violence against a person of a tender age; who has, as yet,—in the legal sense of the term,—no will. Here not only the signs of defloration already enumerated will be present, but also others indicative of the employment of force; —such as contusions on various parts of the extremities and body. These, however, are compatible with final consent on the part of the female.

* The following remark of Foderé on this subject, deserves quotation:—"Having often been engaged in such examinations, and finding the above-named physical signs of virginity wanting, I have declared the female unchaste; and the pangs of childbirth have, in a few months, confirmed my decisions, although they were considered harsh at the time". (Volume 4; Page 352). We must add, however, that the faculty of medicine at Leipsic, declared that there does not exist any true and certain sign of virginity; and Morgagni was of a similar opinion.—*Dr. Beck.*

† It is important not to mistake the menstrual secretion, or blood placed on the parts, for the effects of violence. Dr. Campbell, of Edinburgh, detected a case of pretended rape, by finding a stocking-wire, covered with blood in a dried state; which wire had been applied to the vagina. See his "Midwifery"; Page 53.—*Dr. Beck's "Medical Jurisprudence".*

It also deserves attention, that disease has produced the appearance of external injury, and led to suspicions against innocent persons. Dr. Percival relates a case of serious importance in medico-legal investigations:—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 twentieth of February, the child died. The coroner's inquest was taken; previously to which the body was inspected, and the abdominal and thoracic viscera were found free of disease. From these circumstances, Mr. Ward,—the surgeon attending the case,—was induced to give it as his opinion, that the child's death was caused by external violence; and a verdict of 'murder' was accordingly returned against the boy with whom she had slept. Not many weeks elapsed, however, before the occurrence of several similar cases, 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. "In these cases," says Dr. Percival, "the disorder was a typhus fever, accompanied with a mortification of the pudenda."*

A complaint resembling the above, in many respects, has also been

* "Medical Ethics"; Pages 103 and 231. Capuron relates two cases of children, the one aged four, and the other six years; both of whom were affected with a white and very acrid discharge from the vagina; accompanied with swelling of the external parts, severe pain, and (indeed) ulceration; a high fever was also present. In one instance, the parents loudly declared that violence must have been used towards their child. Professor Capuron, however, ascribed both to an epidemic catarrhal affection, then prevalent in Paris; and considered the local complaint as entirely dependent on it. By the use of a proper regimen they readily recovered.—*Dr. Beck's "Medical Jurisprudence".*

Judging from my own experience, in a large town, cases like those related by Capuron, are by no means unfrequent. I have met with at least a dozen during the last five or six years, principally in children four or five years of age. They have been various in the severity of the symptoms, and in their duration; but have always terminated favourably.—*Dr. Darwall.*

lately described by Mr. Kinder Wood. It is preceded by all the ordinary symptoms of fever, for about three days. The patients then call the attention of parents to the seat of the disease, by complaints in voiding urine, &c.; and when the genital organs are examined, one or both labia are found enlarged and inflamed. The inflammation is of a dark tint; and soon extends internally over the clitoris, nymphæ, and hymen. Ulceration succeeds; and the external organs of generation are progressively destroyed. This affection has proved very fatal; and seems to constitute a peculiar kind of eruptive fever*.

Mr. William Lawrence, in his Lectures on Surgery, when speaking of this disease, mentioned that he had been called as a witness in such a case at the Old Bailey, on a capital indictment. The idea was that the complaint was syphilis. He remarks, that "there is an excessively deep-coloured inflammation, with great disturbance of the health of the child, in the very commencement of the affection; and the ulceration that succeeds is foul and sloughing, and of a tawny colour;—totally different from the character of any primary venereal sore†.

It is of great importance that the physician should understand the possibility of such diseases occurring; "but we must take care not to run into the opposite error of ascribing inflammation, ulceration, and discharge, in cases where violence has been alleged, to this disease, without sufficient grounds; for it is extremely improbable that diseases which occur so rarely, should happen to appear in a child to whom violence was offered, unless that violence had some effect in producing it"‡. The proper distinction to be made, in these cases, undoubtedly is, not to attribute laceration, tumefaction, and consequent inflammation to this disease. It resembles gonorrhœa; and the examination of the person suspected, if early made, will lead to a definitive opinion§. Marks of external injury, therefore, are to be considered as *corroborating* but not as *certain* proofs of the commission of a rape. The weight which they deserve depends on several circumstances which it is proper to notice.

* "Medico-Chirurgical Transactions"; Volume 7; Page 84. Out of twelve cases seen by Mr. Wood, only two appear to have recovered. See also the "Quarterly Journal of Foreign Medicine", Volume 2, Page 224; the "American Journal of Medicine", Volume 2, Page 468; and the "North of England Medical and Surgical Journal", Volume 1, Page 479. Sir Astley Cooper says that he has seen at least thirty cases of this discharge in one year. See the "London Medical and Surgical Journal"; Volume 4; Page 48. Additional cases are mentioned by Dr. Beatty as occurring in Dublin; and where charges of rape were about to be made. See the "Cyclopædia of Practical Medicine"; Article "Rape". Cases are also mentioned by Dupuytren ("Medico-Chirurgical Review", Volume 25, Page 524); and in the "North American Archives", Volume 1, Page 201.—*Dr. Beck's "Medical Jurisprudence".*

† "London Medical Gazette"; Volume 6; Page 828. A similar case occurred in London in 1829; where the prisoner was convicted of an assault, and sentenced to six months' imprisonment. Dr. Gordon Smith, and others, interested themselves in the man's behalf; and shewed that it was disease, instead of the result of violence.—See the "London Medical and Surgical Journal"; Volume 4; Page 48.

‡ "Edinburgh Medical and Surgical Journal"; Volume 13; Page 491.

§ Dr. Beatty, in the "Cyclopædia of Practical Medicine;" Article "Rape".

1. Consider the age, strength, and state of mind of the respective parties.—However we may doubt whether a rape can be committed on a grown female, in good health and strength, yet there can be no question but that it can be perpetrated on children of a tender age. Previously to the age of sixteen, or rather before the period of menstruation, the female is not only deficient in strength, but is also ignorant of the consequences of the act; and fear may induce her to consent to libidinous desires. Again: should a female accuse a man who is cachectic, or valetudinary, little credit is to be given to her charges; as the respective strength of the parties will shew the improbability of the commission of the act. For a similar reason, the probability is increased when the accused is vigorous and the accuser infirm; and, above all, should the female labour under imbecility of mind,—to such a degree as to render her incapable of judging concerning the morality of her actions,—her age ought not to be taken into account. An individual of this description at twenty-five, is less capable of resistance than another of sound mind and body at fourteen. We must also add, that all accusations against persons above sixty years of age, should (as a general rule) be rejected; and if maintained, the accuser should prove the presence of greater strength and virility, than is the ordinary lot of that period of life*.

2. A comparison of the sexual organs may be necessary; since cases have occurred in which the male has proved impotency or defective organization, or has exhibited proofs of the destruction of parts by the venereal disease. In the female, however, it must be remembered, that it will be difficult to find the physical marks of rape, provided she is subject to the diseases formerly enumerated†, or has had several children. In opposite cases, severe marks of the violence will be more evident; and these have sometimes been of the most striking kind;—inducing, in one instance, according to Teichmayer, great inflammation, and an incurable paralysis of the lower extremities.

3. A speedy examination of the parts, is all-important in disputed cases. The body of the male should also be inspected; in order to ascertain whether there be scratches or bruises on it‡.

I have intimated that doubts exist whether a rape can be consummated on a grown female, in good health and strength. It has been anxiously inquired whether this violence, if properly resisted (and this is included in the very definition of "rape"), can be completed. In the consideration of this question, it is needless to observe that those cases in which insensibility, by violence or soporifics, has been

* "I have known", says Professor Amos, "a person aged sixty left for execution for a rape; and, in 1803, a youth aged seventeen, was convicted of perpetrating it on a girl of nine, and was executed".—"*London Medical Gazette*"; *Volume* 8; *Page* 314. (*No.* 175; *April* 9, 1831).

† See Pages 936, 940 and 941.

‡ "The great points to be looked to", says Mr. Allison, "are:—1. Whether they made resistance and cried out *before* they were discovered. 2. Whether they had received *blows and actual injury*; it being quite certain, that at least *that* violence was inflicted against the will."—"*Principles of the Criminal Law of Scotland*"; *Page* 187.

previously produced, or where many are engaged against one female, are of course excluded*. Some hesitation is doubtless proper, in deciding on a question of this magnitude. The opinion of medical jurists, generally, is very decisive against it. "En un mot," says Mahon, "d'après la connoissance physique que les médecins ont de l'homme et de la femme, relativement à cet attrait impérieux qui porte invinciblement les deux sexes l'un vers l'autre; d'après, surtout, l'impossibilité presque entière où est un homme seul de forcer une femme à recevoir ses caresses, on doit rarement ajouter foi à l'existence du viol. Je crois, même, qu'il seroit prudent de ne l'admettre, que lorsque plusieurs hommes armés se sont réunis pour commettre ce crime"†. "An *attempt*," says Farr,—"under which is to be understood a great force exercised over a woman to violate her chastity, but where a complete coition is prevented,—may be possible. But the *consummation* of a rape,—by which is meant a complete, full, and entire coition, made without any consent or permission of the woman,—seems to be impossible, unless some very extraordinary circumstances occur. For a woman always possesses sufficient power, by drawing back her limbs, and by the force of her hands, to prevent the insertion of the penis, whilst she can keep her resolution entire"‡. "Indépendamment de l'arme que la loi met dans la main de la femme pour repousser l'injure, elle a infiniment plus des moyens pour se defendre que l'homme n'en a pour attaquer; —ne fut ce que le mouvement continuel"§. And again‖;—"J'estime qu'une personne du sexe, qui a atteint l'âgè de dixhuit à vingt ans, ne peut plus être prise par force par un homme seul, quel qu'il soit; à moins de la menace d'une arme meurtrière, et que la crainte de la mort ne soit plus forte que celle de perdre l'honneur"¶. Metzger only allows of three cases in which the crime can be consummated:

* We must, however, remember, that the administration of soporific drugs for the purpose of the commission of the crime, will justify the charge of rape. This was the case with Luke Dillon, at Dublin, 1830. He was convicted; and exchanged execution for transportation, only at the earnest solicitation of the female and her relations.—See Alison's "Principles"; Page 213.—*Dr. Beck's "Jurisprudence"*.

† Mahon, Volume 1; Page 136.—"In short, after the physical knowledge which physicians have of the male and female,—with respect to that invincible attraction which draws the two sexes to each other; and considering, especially, that it is almost impossible for a man alone to force a woman to receive his caresses;—one ought rarely to give credit to charges of rape. I believe, indeed, it would be prudent never to believe them; unless when several armed men join together to commit the crime".—N. R.

‡ Farr; Pages 41 and 42.

§ "Independently of the weapon which the law puts into the hand of the female, to enable her to repulse violence, she has many more means of defending herself, than the man has of attacking her;—were continual movement the only one."—N. R.

‖ Fodere; Volume 4; Pages 359 and 360. Capuron advances the same opinion, Page 54; and Brendelius, Page 96.

¶ "I consider that a female who has attained the age of eighteen or twenty years, cannot be forcibly violated by one man, whoever he may be; unless by means of deadly menaces; and unless the fear of death be stronger than that of losing her honour".—N. R.

—1. Where narcotics have been administered. 2. Where many are engaged against the female.—3. Where a strong man attacks one who has not arrived at the age of puberty*.

Notwithstanding these united authorities, it may with justice be supposed that, in addition to the cases allowed, fear or terror may operate on a helpless female. She may resist for a long time; and then faintness from fatigue, or the dread of instant murder, may lead to the abandonment of active resistance†.

Cases in which false accusations of rape have been made against individuals, are scattered through most of the works on medical jurisprudence‡. I shall quote one;—both from its having happened not long since, and also as it shews the course pursued in such instances in France. A female of Martigues, in 1808, accused eight or ten of the principal persons in the place, of having violated her grandaughter, aged about nine years and a half, at an inn. She had laid her complaint before the justice ("juge de paix"); but stated, that she would withdraw it, provided the accused would accommodate the matter with her. She had procured a daughter of the innkeeper,—aged sixteen, and idiotic,—as a witness. As the charge was obstinately persisted in, Foderé, with two officers of health, was ordered to

* Metzger; Page 255.

† I am aware that, in the previous edition of this work, I spoke too strongly and exclusively; and I fully recognise the correctness of Dr. Ryan's criticism. In a trial at Edinburgh. in 1828,—where the counsel for the prisoner did me the honour to quote this work, and the opinion now under consideration,—the Lord Justice Clerk, in his charge to the Jury,—in reply to the argument, that there could be no rape without assistance, blows, or drugs,—shewed, that a case had occurred in 1811, "where the woman swore that she was overcome on the sands; though there were no others near. There was no proof of blows; but her evidence was confirmed by persons who had been looking in that direction with a spy-glass; and the man suffered the last punishment of the law".—See Syme's "Justiciary Reports"; Page 332. I presume, however, that there can be no doubt in cases like that cited by Professor Amos, of a woman, at Derby, who proved the rape; but, on examination, was positive as to the time it had lasted;—exactly ten minutes. "How did you know it?"—She had counted.—"How did you count?"—"One, two, three", &c.—"Did you count sixty ten times over?"—"I did."—See the "London Medical Gazette"; Volume 8; Page 35; No. 175, April 9, 1831.—Dr. A. T. Thomson, in his Lectures recently published ("London Medical and Surgical Journal"; No. 151; December 20, 1834; Volume 6; Page 647), agrees in the main with the authors that I have quoted. He suggests, that in this struggle "with a healthy female of adult age, who is really anxious to preserve her chastity unsullied, the mind of the man must necessarily be so much abstracted from the act itself,—in overcoming the resistance offered to him, and in repelling the attacks of the female upon him,—that, independently of corporeal exhaustion, the state of his mind will render it utterly impossible for him ever to effect that penetration which constitutes the criminal intent".—*Dr. Beck's "Jurisprudence."*

‡ See the case of one Stephen Nocetti, which was referred to Zacchias, and where there was an actual deficiency of parts. The accusation was made four months after the supposed commission of the crime. ("Consilia"; No. 34, Volume 3; Page 62). Also, the case of Erminio.—("Consilia"; No. 41, Volume 3; Page 74). Foderé also quotes a case from Devaux, where there was nothing but a slight excoriation of the parts; and, of course, it was decided that there were no evidences of a rape having been committed. Volume 4; Page 371. I will only add a caution, not to mistake menstruation for the effects of defloration.—*Dr. Beck.*

examine the child in the presence of the judge; and suspicion was immediately excited, from the delay used in admitting the visitors. On examining the parts, he found the hymen untouched, and the vagina extremely narrow. Around the pudenda, however, a red circle, about the size of a crown, was observed. It appeared to have been induced recently; and this was indeed the fact; for, at the end of half-an-hour, the circle had decreased in size, and the redness disappeared. Had this redness been the effect of great violence, it is natural to suppose that it would have increased in intensity of colour. A report was prepared, stating the above facts; and the consequence was, that the accuser was put in prison; and, finally, ordered out of the city *.

" It happened, at an early period of the author's life, in a Welch country town, that a child of about eight years of age, of low connexions and mendacious habits, was induced to prefer against a respectable minister of religion, an accusation of an attempt to violate her person. It was averred, on the part of her friends, that she became the subject of ulcerations of the pudendum, in consequence of the imputed assault; and the gentleman in question was committed to prison, and confined there for several weeks. The grand jury ignored the bill;—on the ground that the prisoner had proved himself free from the disease which he had been accused of communicating, and also from other and conclusive moral and circumstantial evidence. The ulcerations on the child's pudendum, were proved not to have been derived from a venereal source."†

Instances sometimes occur, in which death has followed the consummation of a rape;—owing to the violence employed. Here, if the physician be called on to examine the body, he should particularly notice the condition of the sexual organs, both internal and external; and also ascertain whether any proofs are present, from which the exertion of violence may be presumed;—such as the introduction of

* Foderé; Volume 2, Page 456; and Volume 4, Page 371. The distinction made in Deuteronomy, Chapter 22, between the commission of the crime *in the city* and *in the field*, deserves attention in the consideration of this point.—*Dr. Beck's " Medical Jurisprudence".*

† Davis's "Obstetric Medicine"; Page 78. Mr. Roberton, of Manchester, mentions a curious case of a female found in a field, near Warrington, apparently dying;—in consequence of a rape, as she said, committed on her by two ruffians. Mr. R. found her in a paroxysm of hysteria. She complained of severe pain in various parts of her body; but excused herself, on account of exhaustion, from an examination. Two men were arrested on suspicion; and, on being confronted, she immediately identified one as the violator; and he was sent to gaol. On further inquiry, however, the injury on the body was found to be slight; while, on the inner surface of the pudenda, were simply two slight wounds, such as might have been inflicted by the finger-nail. The investigation ended in proving her, on her own confession, to be an impostor; who pretended these injuries, and also admirably imitated the paroxysms of hysteria, for the sake of exciting charity. Whenever she was hard pressed with unpleasant questions, a fit of hysteria came to her relief. She was tried and punished as an impostor; but succeeded, for years afterwards, in imposing on individuals. Another of her devices was suddenly to fall down in labour. See the " London Medical Gazette"; Volume 15; Pages 505 and 506; No. 371; January 10, 1835.—*Dr. Beck's "Medical Jurisprudence".*

substances into the mouth to prevent crying out; contusions; or dislocation, or fracture of the extremities. He should notice whether the labia are dilated and flaccid; the state of the hymen, clitoris, nymphæ, and vagina generally; and, also, whether the fourchette is ruptured. The fluid (if any be present) contained in the vagina, should be examined;—whether it be sanguineous, mucous, or purulent; and the presence or absence of tumefaction and extraordinary dilatation should be remarked *.

It may be considered an omission not to notice the chemical investigations of Orfila, for the detection of semen, if its presence should require to be proved; and I† therefore add a brief notice of them.

Semen forms, when dry on linen, irregular spots of a light yellow or grayish colour; but so indistinct, that frequently it is necessary to hold them between the eye and the light, to discover their presence. On pressing them with the fingers, the linen appears as if starched. When dry, they are inodorous; but as soon as they are moistened, the spermatic odour is given out. If the linen be gently heated, they assume a yellow fawn-colour; and this, indeed, will indicate spots, which otherwise would pass unnoticed. This property is important in distinguishing the discharge. It is also found, if the linen be left for some time in distilled water, that the above result will not be reproduced on heating it. The semen has become mixed with the water; and no change of colour is occasioned.

In water, the spots become completely moistened; which is not the case if they have been caused by grease; and, on being rubbed, they give out their peculiar odour. The fluid itself is of a flocculent, milky appearance; and, on being evaporated, is found alkaline, and assumes a mucilaginous appearance; and if the process be continued to dryness, it leaves a semi-transparent residue, resembling gum-arabic, and of a light fawn-colour. This, again, if the mixture be shaken in distilled water, is decomposable into two parts;—one soluble; the other glutinous and insoluble in water, but soluble in potash. The soluble portion yields a white flocculent precipitate with alcohol, chlorine, acetate-of-lead, or corrosive sublimate. Pure nitric acid gives it a slight yellowish tint; but does not render it turbid. Alcohol dissolves but a very trifling portion, if the linen, spotted as above, be left in it for twenty-four hours.

When blennorrhagic‡ matter, obtained from syphilitic females, was treated in a similar manner, the linen took a yellowish green colour; but the spots did not become yellow, when held to the fire. The peculiar odour is wanting; but the solution is also alkaline. When evaporated, the product is of a white yellowish colour, opaque, and decomposable by heat. It dissolves with difficulty in distilled water; but alcohol, and the other re-agents already named, yield a white precipitate; and nitric acid also a white one. Leucorrhœal matter wants many of the characters of the spermatic fluid; and the

* Foderé; Volume 4; Page 372.
† Dr. Beck. ‡ From βλεννα, *mucus*; and αγω, *to compel.*

re-agents cause but a slight precipitate, if it be treated in the same manner as already described*.

SECTION 3.—LAWS OF VARIOUS COUNTRIES CONCERNING RAPE.

There are two reflections which are of deep weight in all our investigations on this subject; and which should particularly be kept in mind, when noticing the laws concerning it. The first is the nature of the crime. It is an offence against the weaker sex; is committed in secresy; and being of so detestable a character, and so difficult to be proved, the law has wisely ordained that the testimony of the injured person shall be sufficient, unless impeached, to convict the criminal. But again,—and this is the second remark,—false accusations are frequently made, for the gratification of malice and revenge. The Scriptures, and the records of courts in all countries, bear testimony to this. In this point of view, the medical jurist may often aid the ends of justice in punishing the wicked, and absolving the innocent.

I† have thought that a sketch of the laws of various countries, concerning this crime, might prove interesting; and, in some degree, useful. I shall therefore notice the laws respecting the commission of the crime, both on the female of tender age, and on the female who has arrived at maturity.

As this crime can be committed with the greatest facility on children under the age of puberty,—in consequence of their want of strength, but particularly from their ignorance of the consequences of the act,—the law has wisely directed that the consent or non-consent of the female under age is immaterial; "as, by reason of her tender age, she is incapable of judgment and discretion".

Law of England, in reference to Females within Age. In the third year of Edward I, by the statute of Westminster, the offence of ravishing a damsel within age (that is, *twelve* years old), either with her consent or without, was reduced to a trespass, if not prosecuted by appeal within forty days; and the offender was subjected to two years' imprisonment, and a fine at the king's will. This lenity, however, was in a short time found very injurious; and, by a statute of the eighteenth of Elizabeth, Chapter 7, carnally knowing and abusing a child under the age of *ten* years, was made felony, without benefit of clergy. "Sir Matthew Hale", says Blackstone, "is, indeed, of opinion, that such actions committed on an infant under the age of *twelve* years (the age of female discretion by the common law), either with or without consent, amount to rape and felony, as well since as before the statute of Queen Elizabeth; but that law", he adds, "has in general been held only to extend to infants under *ten*" ‡. By a recent act, however (the ninth of George IV, Chapter 31), passed in 1828,

* Orfila's "Leçons"; Second Edition; Volume 1; Page 573.
† Dr. Beck. ‡ Blackstone's "Commentaries"; Volume 4; Page 212.

it is ordained, that any one unlawfully and carnally knowing and abusing any female under the age of *ten* years, shall be guilty of felony, and shall suffer death. If the same be committed on a female *above ten* and *under twelve*, the offence shall be deemed a misdemeanor, and liable to imprisonment. In Scotland, it is held that consent cannot be given below the age of twelve years*.

Law of England, in reference to Females of Mature Age.—The law at present in force in England, is the statute "Eighteenth of Elizabeth, Chapter Seven"; in which rape is made felony, without benefit of clergy. It is a necessary ingredient in the English law, that the crime should be against the woman's will; and in this it differs from the Roman; which prescribed the same punishment, whether the female consented or not. The civil law, also, does not seem to suppose a prostitute capable of any injuries of this kind; while the English law holds it felony to force even a concubine or harlot, because the woman may have forsaken that course of life. At present, also, no time of limitation for making a complaint is fixed; but the jury will rarely give credit to a stale accusation. We may add, that the common law considers a male infant, under the age of fourteen, as incapable of committing a rape; and therefore, cannot be found guilty of it. "For though", says Blackstone, "in some felonies, *malitia supplet ætatem*†; yet as to this particular species, the law supposes an imbecility of body, as well as of mind‡".

Law of France.—The French code of 1810 ordains, that if the crime has been committed on a child of *fifteen* years, the offender shall be condemned to hard labour for a limited time ("travaux forcés à temps")§. But it would seem that consent on the part of the minor female, modifies the nature of the crime in France. At least, such was the decision of the Court of Assize, at Strasburg, in 1827; when an individual escaped from the punishment of rape, for this reason ||.

Law of Scotland.—In Scotland, according to Baron Hume, the following facts are necessary to be proved on a charge of rape:—1. Penetration¶; but there is no distinct reference made to emission**. 2. Actual force in the consummation; but it is held to be "forcible knowledge", if the female discontinue her resistance out of fear of death, or be rendered incapable of it by the giving of narcotic drugs,

* Alison's "Principles"; Page 213. † "Malice supplies the want of age".
‡ Blackstone's "Commentaries"; Volume 4; Chapter 15; Section 3.
§ "Code Penal"; Article 332. || Briand; Second Edition; Page 10.
¶ The penis is erected by *retention* of blood; and not by increased *determination* of it. De Graaf said that the blood was retained by the penis being pressed against the symphysis pubis; but erection rather *depresses* the penis; and the "erector penis" would rather impede the flow of arterial blood into the organ, by embracing the crura. Erection, like blushing, seems to be produced by *relaxation* of the vessels, and not by *compression*. The vessels are first constricted by a stimulus (generally the passions); and are then relaxed from fatigue.—*Dr. Fletcher.*
** The emission of semen in the male, and of the ovum in the female, are analogous. In fishes, the roe of the female is emitted, like the melt of the male.—*Dr. Fletcher.*

or be under the age of puberty. So, also, if she faint during the struggle, from terror or fatigue; or be incapable of opposition, from natural infirmity. Thus James Mackie was condemned, in 1650, for a rape on a cripple, lame lass, sixteen years old, lying bedridden in her father's house alone. No limitation as to the time of making the complaint exists at present; although a long delay might doubtless prejudice a jury against the prosecutor*. The ravisher is exempted from the pains of death, only in case of the woman's subsequent consent, or her declaration that she went off with him of her own free will; and even when he is to suffer an arbitrary punishment;—either by imprisonment, confiscation of goods, or a pecuniary fine.

Laws of the United States.—In the state of New York, death was formerly the punishment for committing a rape on a married woman or a maid. The act was passed February 14, 1787. It was also ordained, at the same time, that if a woman had been ravished, and afterwards consented to her ravisher, her husband, father, or next of kin, might sue by appeal against such offender†. These laws, however, have been repealed; the punishment altered; and appeals of felony abolished. The acts now in force, prescribe the punishment of imprisonment for ten years in the state-prison, on the offender and his accomplices,—if he have any,—for ravishing by force any woman-child of the age of ten years or upwards, or any other woman. An assault with an intent to commit a rape, may be punished by fine, or imprisonment, or both. The following enactment has also been recently added:—"Every person who shall have carnal knowledge of any woman above the age of ten years, without her consent, by administering to her any substance or liquid which shall produce such stupor, or such imbecility of mind or weakness of body, as to prevent effectual resistance, shall, upon conviction, be punished by imprisonment in a state-prison, for a period not exceeding five years‡". In the states of Massachusetts, Rhode Island, Delaware, and South Carolina, the punishment prescribed is death§; while in Connecticut, Georgia, Illinois, Indiana, Ohio, Maine, New Hampshire, New Jersey, Vermont, Pennsylvania, Virginia, and Michigan, imprisonment for a term of years, or for life, is directed. In some few cases, the punishment is fine, or imprisonment, or both‖. In Louisiana, imprisonment and hard labour for life, is the punish-

* Hume's "Commentaries on the Laws of Scotland"; Volume 2; Pages 3, 5, 6, and 14. Brewster's "Edinburgh Encyclopædia"; Volume 11; Page 823; Article "Law of Scotland".

† Jones and Varick's Edition of the Laws; Volume 2; Page 57.

‡ "Revised Statutes"; Volume 2; Pages 663 to 666.

§ "Laws of Massachusetts"; 1807; Volume 3; Page 340. "Revised Laws of Delaware"; 1829. "Public Laws of South Carolina", edited by Judge Grimke; Page 30. "Fourth Report of the American Prison-Discipline Society".

‖ See Prince's "Digest of Laws of Georgia"; 1817; Page 349. "Laws of Pennsylvania"; 1803; Volume 5; Page 2. "Revised Laws of Virginia"; 1803; Volume 1; Page 356. In New Jersey, a second offence is punished with death. See its "Laws"; 1828.—*Dr. Beck's "Medical Jurisprudence".*

ment*. In the state of Missouri, and also in the territory of Arkansaw, the punishment prescribed is castration†. The attempt to commit this crime, or its actual completion by a negro or mulatto, is made a subject of special legislation in several states. Thus, in Tennessee, Alabama, and Louisiana, even the attempt on a white woman is made a capital offence‡. In Virginia and Missouri, the same is punished by castration§.

What constitutes Carnal Knowledge?—Rape is the carnal knowledge of a female, forcibly and against her will. It has been a subject of some legal discussion, as to what constitutes this "carnal knowledge." Some judges have supposed that penetration alone was sufficient; while others have contended that penetration and emission are both necessary. All seem agreed, that the latter without the former will not suffice. The following abstract, taken from Chitty's "Treatise on the Criminal Law", will give an idea of the fluctuating state of jurisprudence on this subject:—"Lord Coke, in his 'Reports', supposes both circumstances must concur; though he does not express himself so clearly in his 'Institutes'. Hawkins, without citing any authority, or hinting a doubt, declares the same opinion. Hale, however, differs from both; and considers the case in Coke's 'Reports' as mistaken. In more modern times, prisoners have been repeatedly acquitted in consequence of the want of proof of emission. In one instance (Rex *v.* Russen, 14 Petersdorf. 116), on the other hand, the prisoner was found guilty, under the direction of Justice Bathurst; who did not consider this fact as necessary to the consummation of the guilt. But in Hill's case, which was argued in 1781, a large majority of the judges decided that both circumstances were necessary; though Buller, Loughborough, and Heath, maintained a contrary opinion. This, then," he adds, "seems to be the stronger opinion; and, at the present day, if no emission took place, it would be more safe to indict for an *attempt* to commit; by which means a severe punishment might be inflicted."‖

Mode of Proving Emission.—Although the definition of the crime seems thus to be settled, yet if we proceed to notice the mode in which the emission is to be proved, we shall find some discordance. East observes, that penetration has *primâ facie* evidence of it, unless the contrary appears probable from the circumstances; and adds, that Hawkins is express to that purpose¶. Chitty observes,—"It is

* "Digeste Générale des Actes de la Legislature de la Louisiana"; 1828; Volume 1; Page 441.

† "Revised Laws of Missouri"; Page 125; Volume 1; Page 31. Nuttal's "Journey to the Arkansaw"; Page 224.

‡ "Laws of Tennessee"; 1833; Page 94. "Laws of Alabama"; 1830. "Code Noir" of the Louisiana Digest; Volume 1; Pages 234 to 297. Virginia punishes actual rape on a white woman by a slave with death.—*Dr. Beck.*

§ Mr. Jefferson,—who was appointed a reviser of the Laws of Virginia, in 1778,—proposed castration as the punishment in all cases of rape. (See his Works; Volume 1; Page 126.) This plan was not, however, adopted.—*Dr. Beck.*

‖ Chitty's "Criminal Law"; Volume 2; Page 810.

¶ East; Volume 2; Page 440.

certain that no direct evidence of the emission need be given; for that will be presumed on proof of penetration, until rebutted by the prisoner. And it will suffice to prove the least degree of penetration; so that it is not necessary that the marks of virginity should be taken from the sufferer" *. So also Baron Richards, in the case referred to below†,—although he deemed emission essential, and the woman was not sensible of it,—yet told the jury, that it was for them to deliberate whether, on a careful examination of all the other collateral circumstances of the case, they had reason to be satisfied that this part of the crime, as well as every other, had been actually consummated. If there be any truth in the views already intimated concerning the possibility of committing this crime, and the cases in which it may be completed, certainly the necessity of establishing the fact of emission, must prove an insuperable barrier to any conviction. We may divide females, with reference to this subject, into two classes;—the young unmarried persons; and the married, or those accustomed to sexual intercourse. As to the first, it may be considered very improbable that they could be conscious of this emission, while labouring under the influence of terror, severe pain, faintness, or insensibility. And to this class belong, also, those of a very tender age; who are totally ignorant of the nature of the crime, and of what is necessary to complete it.

It is urged, however, that there is great propriety in requiring this testimony from married females; and that if they are not sensible of that "which constitutes the very essence and climax of feeling", their declarations do not deserve much credit, as to the other parts in which a less degree of poignancy of sensation is requisite‡. I§ confess that language of this kind appears to me misapplied. If proper resistance be made, where the contest is solely between two individuals of strength in any degree proportionate, the crime can scarcely be completed, without violent personal injury to the female. The exhaustion that must be present, superadded to mental agitation, leave us some reason to doubt whether this enjoyment can be realised; and it also deserves consideration, that if the resistance has been complete throughout, such pain may ensue from the repeated attempts to effect the crime, as to dull all sensation on this point. I§ forbear pressing the case mentioned by Judge Buller; although it is probable that other females, like the one mentioned by him, may not be sensible of it.

The diversity of opinion that I§ have noticed, has extended to our own country‖. In a case tried some years since at the Albany Circuit, in this state¶, by the late Justice Platt, he declared the law to be as laid down by the judges in Hill's case. In Pennsylvania, however, emission is not deemed essential. In a case tried in 1793, when

* Chitty; Volume 2; Page 812.
† "Edinburgh Medical and Surgical Journal"; Volume 12; Page 208.
‡ "Edinburgh Medical and Surgical Journal"; Volume 12; Page 209.
§ Dr. Beck. ‖ America. ¶ New York.

it was urged that both penetration and emission should be proved, the judge said:—"We are inclined to the opinion that the crime is sufficiently proved when *penetration* is proved. It is not to be expected that the woman, especially agitated by such an outrage, should be able to give explicit proof of this circumstance"*. So, also, in South Carolina, in 1813, Judge Nott said he had strong doubts whether it was necessary to prove emission; and the court refused to disturb the verdict†.

The difficulties attending such conflicting decisions in England, probably led to the enactment of a recent law there; by which it is ordained, that on trials for the crime of rape, and of carnally abusing girls under the respective ages of ten or twelve years of age, it is not necessary to prove actual emission, in order to constitute carnal knowledge; but that this shall be deemed proved upon testimony of penetration only‡. This law was passed in 1828 (ninth of George IV); and is often called "Lord Lansdowne's Act"; as that nobleman introduced it.

Scarcely, however, had this become the statute-law of the realm, when difficulties occurred in its construction. In August, 1831, on a trial before Justice Taunton, the female proved penetration; and also that she felt warmly in her private parts; but could not prove emission. The counsel for the prosecution submitted, that this was a case exactly coming within the late law. The judge, however, said that all that constitutes carnal knowledge should have happened. The jury must be satisfied, from circumstances, that emission took place; and although it was not necessary specifically to prove it, yet the circumstances should be such as to infer it. The prisoner was accordingly acquitted§. I must be permitted to agree with the reporter of the case, in saying, that this decision makes the statute of George IV. inoperative. Even before its enactment, it was unnecessary to give *direct* evidence of emission. It was enough if the circumstances were such as to satisfy that it had taken place. But how can Judge Taunton's opinion be reconciled with the statute; which says, that it is *sufficient to prove penetration only?* His decision, however, appears to have been subsequently over-ruled. In Rex *v.* Cox, at the Worcester Assizes, in 1832, before Justice Littledale, the jury found that there had been a penetration, but no emission from the prisoner; and the judge, after passing sentence on

* Commonwealth *v.* Sullivan; Addison's "Pennsylvania Reports"; Page 143.

† State *v.* Le Blanc; "South Carolina Constitutional Reports"; Volume 2; Page 351. In Illinois, the statute requiring proof of emission was formally repealed. See "Acts passed in 1819"; Page 219.

‡ Professor Amos questions whether, under this law, a *eunuch* may not be found guilty of a rape; and, again, he suggests the possible case, where no penetration is proved, but emission only. See the "London Medical Gazette"; Volume 8; Pages 33, 34, 35, 36, 37, 38, 39, and 96; Nos. 175 and 176; April 9 and 16, 1831. In this last case, however, the jury would doubtless infer the one from the other; particularly as Lord Hale has pronounced emission an *evidence* of penetration.—*Dr Beck's "Medical Jurisprudence".*

§ Moody and Malkin; Volume 2; Page 122; "Rex *v.* Russell".

the prisoner, reserved the case for the consideration of the fifteen judges. They held the conviction to be right*.

In Scotland, after much diversity of opinion, the point now considered was settled in 1821, by Lord Gillies; who "laid it down, with the concurrence of the court, that rape may be perpetrated by complete penetration without emission; and that when the injured party is below the age of puberty, it is enough if her body has been entered; though not to the degree which takes place with a full-grown woman."†

SECTION 4.—MEDICO-LEGAL QUESTIONS CONNECTED WITH THIS SUBJECT.

Three questions relating to the subject before us have, at various times, been discussed; and they all deserve a brief notice.

1. *Whether the Presence of the Venereal Disease in the Female Violated, is a Proof in favour of, or against, her Accusation.*—If, on examination, the marks of this disease be found recent, it will be proper to consider them as corroborating circumstances. It is necessary to remark, however, that the symptoms of venereal infection do not commonly make their appearance until three days after receiving it; while the examination should be made *within* that time. Should the appearances indicate any thing like a disease of long-standing, they must, of course, tend to weaken the complaint of the female.

2. *Can a Female be Violated during Sleep without her Knowledge?*—If the sleep has been caused by powerful narcotics, or intoxication, or if syncope or excessive fatigue be present, it is possible that this may occur‡; and it ought then to be considered, to all intents, a rape. In such cases, the quantity of stupifying drugs administered may be so great, as to render her unable, even if awakened by the violence, to withdraw from it. The proof of the crime is to be obtained from the injury sustained; from the symptoms attendant on the exhibition of narcotics (if they have been given); and, finally, by (what may certainly happen) pregnancy occurring, and its term corresponding to the above era. As to rape during natural sleep, I totally disbelieve its possibility with a pure person; although the medical faculty of Leipsic, in 1669, decided that it might be accomplished. I prefer, however, the opinion of the juridical faculty of Jena; who, in a similar case, only allowed the exceptions already stated. As to females accustomed to sexual intercourse, it has been supposed practicable; but if we do agree to that opinion, the circumstances certainly should be very corroborative. Some degree of scepticism may, I think, be permitted concerning it§.

* Carrington and Payne; Volume 5; Page 297. "American Jurist"; Volume 11; Page 459. Chitty's "Medical Jurisprudence"; Part 1; Page 379.

† Alison's "Principles of the Criminal Law of Scotland"; Page 210.

‡ See Pages 942 and 943.

§ See, on this question, Foderé, Volume 4, Page 367; Capuron, Page 52; Smith, Page 401; and Brendelius, Pages 96, 98, and 99. This last author doubts its possibility; even in the exceptions stated in the text.—*Dr. Dunlop.*

Does Pregnancy ever Follow Rape?—On this question a great diversity of opinion has existed. It was formerly supposed that a certain degree of enjoyment was necessary in order to cause conception; and, accordingly, the presence of pregnancy was deemed to exclude the idea of a rape. Late writers, however, urge that the functions of the uterine system are, in a great degree, independent of the will; and that there may be physical constraint on those organs sufficient to induce the required state, although the will itself is not consenting. We do not know, nor shall we probably ever know, what is necessary to cause conception; but if we reason from analogy, we shall certainly find cases where females have conceived while under the influence of narcotics, of intoxication, and even of aspyxia; and, consequently, without partaking of the enjoyment that is insisted on. I should, therefore, consider that pregnancy was not incompatible with the idea of rape. Several writers on this subject are, however, of a different opinion; and particularly Dr. Bartley, who goes so far as to recommend that pregnancy shall be considered a proof of acquiescence; and that, in order to ascertain this, the punishment of the criminal should be delayed till the requisite time*.

The law is in accordance with the opinion advanced above. Foderé mentions that there is a decree of the parliament of Toulouse, which decides in the affirmative; and that on the opinion of physicians who reported,—"Posse quidem voluntatem cogi, sed non naturam"†. The English law anciently appears to have considered pregnancy as destroying the validity of the accusation. Dalton quotes Stamford, Britton, and Finch, in favour of this opinion; but later writers, and in particular Hawkins and Hale, question its correctness; and deny its being law‡. "It was formerly supposed," says East§, "that if a woman conceived, it was no rape; because that circumstance was considered to prove her consent. But it is now admitted, on all hands, that such an opinion has no sort of foundation, either in reason or law." ‖]

* Bartley; Page 43.

† "That the will, indeed, might be compelled; but not nature".—Foderé; Volume 4; Page 360.

‡ Burns Justice; Article *Rape*.

§ East's "Crown Law"; Volume 1; Page 445.

"Ce qui rend un premier coit infructueux", says Metzger (Page 486), "c'est, à mon avis, la précipitation de l'homme, bien plutôt que la douleur qui suit la défloration. Knobel est également de cet avis".—"That which renders a first connexion unfruitful, is (in my opinion) the precipitation of the man, rather than the pain which attends the defloration. Knobel is of the same opinion".—N. R.

‖ This chapter is taken from the "Elements of Medical Jurisprudence"; by Theodric Romeyn Beck, M.D.; and John B. Beck, M.D. Sixth Edition. Pages 81 to 110. For further particulars we refer to "The Elements of Practical Obstetricy"; published by Butler; Pages 94 to 101.

CHAPTER IV.

THE GRAVID UTERUS.

In consequence of impregnation, the genitals undergo conspicuous changes; and, when altered in this manner, they form what is denominated "the gravid uterus"; of which I now proceed to treat.

SECTION 1.—CHANGES EFFECTED IN THE UTERUS BY IMPREGNATION.

The womb, in the unimpregnated condition, varies much in its size; but, on an average, it does not exceed the bulk of a small pear flattened*. When, however, it is enlarged to the full size of gestation, it forms a very bulky tumour;—occupying, at least, two-thirds of the cavity of the abdomen;—its diameters from mouth to fundus, from side to side, and from before backwards, being (on an average) twelve, nine, and six inches respectively. The form of the gravid uterus varies, somewhat, in different women; but, in the main, it resembles a large egg;—more rounded in some cases, more elongated in others; in some degree, perhaps, depending on the position of the fœtus.

Situation of the Uterus during Pregnancy.—This oviform uterus is placed in the cavity of the abdomen; with the fundus in front, before the ensiform cartilage; and the mouth lying below and behind, in apposition with the middle parts of the sacrum. When the bladder is full of urine, it takes its place between the uterus and the abdominal coverings. Otherwise, the womb is covered by these teguments alone in front; and the intestines, in the end of the pregnancy, lie above and behind the uterus; being, by the interposition of this organ, sometimes concealed almost entirely from the view; even though the abdominal coverings have been laid open by the knife. When the womb falls too much forward, or to either side, these deviations from the healthy position are denominated "obliquities"; and, I believe, they commonly arise from one of three causes;—distortion of the pelvis; projection of the lumbar vertebræ; and laxity of the abdominal muscles. The two last are the most common; and may operate in combination. Bandages, if well constructed, may be very useful here.

When the womb is in action, the tumour which it forms becomes very hard; but, in the middle and end of pregnancy,—before the full action comes on,—the uterus may be so soft and yielding, that the head of the fœtus may be clearly enough distinguished, commonly in the inguinal region; whence we may the more readily distinguish the intumescence of pregnancy, from that which arises from water, air, adeps, or a diseased growth of the viscera. If the womb contain

* See Page 44.

the usual quantity of water, its surface is generally equable, and more or less globose; but, in some cases, perhaps,—when the quantity of the liquor amnii is small, and the womb (thin and lax) lies loosely on the limbs of the fœtus,—a certain degree of inequality is produced; and I know of one case in which an accoucheur, of no small experience,—feeling the parts of the child with extraordinary distinctness,—was led erroneously to infer, that the pregnancy was extra-uterine. All these observations are most easily made, when the abdominal coverings are thin.

Fluctuation not generally Perceptible.—When the womb is enlarged from pregnancy, in general you do not observe any thing like fluctuation. Therefore, if the bladder is duly evacuated, and if there is no dropsy of the peritoneum, when you strike the abdomen, no fluctuation will be perceived. Understand, however, that (under disease) the liquor amnii sometimes collects in very large abundance;—to the amount of three or four gallons, for example; and, in these cases, a fluctuation may be felt distinctly, as if the woman were dropsical. This I the rather mention, because it is not very common; and because, if you were not aware of it, and chanced to meet with one of these fluctuating wombs, you might rashly have recourse to the trocar and canula. It is by your learning, from the patient, that she herself believes that she is pregnant, and that the enlargement of the abdomen has very suddenly occurred, that you are first led to suspect the nature of the case; for, usually, where the enlargement has very suddenly occurred, it does not arise from ascites, but from pregnancy. Your diagnosis is further assisted by the severe abdominal pain, produced by the rapid stretching; and, ultimately, the spasms of the muscular substance of the womb. When you make an examination of the mouth and neck of the uterus, you may feel in the brim of the pelvis the rounded tumour, formed by the lower frustum of the womb; and pushing the investigation still further, you distinguish the os uteri, more or less dilated; with the membranous bag filled with the liquor amnii. By these characters, then, the disease under consideration may be easily recognised;—the membranous bag filled with the liquor amnii; the dilated mouth of the uterus; the uterine tumour felt in the brim of the pelvis; the abdominal pains often very alarming; and the intimation given by the patient herself, that pregnancy is, in all probability, the cause of all her symptoms.

In the middle months of gestation, a woman laboured under a great swelling of the abdomen, which fluctuated distinctly. Dr. Haighton was sent for, together with a very distinguished surgeon; who, conceiving the case to be ascites, proposed calling next day, to perform the operation of tapping. Dr. Haighton suggested that this abdominal swelling might, after all, be a dropsy of the uterus; but no particular examination of this point was instituted on that day. In the course of the night, the membranes which contained all this water, burst of themselves; a flood of fluid was discharged; the abdomen rapidly collapsed; a fœtus issued not larger than the first joint of the finger; the woman escaped from her paracentesis; and did

well. Here, then, is a case in which a surgeon of distinguished talent, in consequence of a hasty diagnosis, was on the point of puncturing the uterus. Do you, therefore, be on your guard! As to the treatment of this disease, if the swelling is not very great, you may foment the abdomen, give opium, and leech; and sometimes perhaps, without further help, the symptoms may give way;—the woman ultimately reaching the full term of nine months. If, on the other hand, the quantity of water is very copious, and the pregnancy is of the earlier months, and the pains are very severe, effectual relief may be obtained by tapping the membranes at the mouth of the uterus;—great care being taken not to injure the cervix. In ordinary cases, I think, I should not make a large opening; for if the opening be a mere puncture, the water may come off by little and little; and the abdomen may sink the more gradually. If the water should come away more rapidly than you expected, then put a bandage round the patient, in the same manner that you would do if you were tapping in a case of ascites; and prepare for syncope. Gaitskell's bandage would answer very well.*

Development of the Uterine Structures in Gestation.—Although all the structures of the uterus are very much developed in gestation, yet, in reality, the pregnant uterus consists essentially of the same parts as the unimpregnated; namely, the muscular substance, and the investing membranes, with their accessories. Internally, the uterus is covered throughout by an extension of the same membrane which lines the vagina; externally, the womb is coated by the peritoneum; which, however, does not cover the lower part of the surface in front, where it lies against the bladder.

Large Size of the Nerves and Absorbents.—In the womb, at the end of pregnancy, we find that the nerves are very large; and the same is the case with the absorbents. In the unimpregnated state, the absorbents are very small, and there is a difficulty in injecting them; but when the woman is in a state of gestation, they are very large. Perhaps, in great measure, it is in consequence of the absorbents being large, numerous, and active, that the uterus shrinks so rapidly in its bulk, after delivery. As soon as parturition takes place, if we examine the uterus, we generally find it to be as large as the fœtal head; but in the course of a few weeks, it becomes reduced to nearly its original size;—such as it was when in the unimpregnated condition. This rapid collapse of the uterus, I conceive, is to be ascribed to the large size and great activity of the absorbents;—assisted by the contraction of the blood-vessels, and the gradual expulsion of much of the blood.

Large Size of the Blood-Vessels.—In the unimpregnated condition of the uterus, the blood-vessels,—derived from two sources (the inferior uterine arteries, and the spermatics),—are few and small; but when the patient becomes pregnant, they acquire a very large size; especially in the end of gestation. This is the reason why, in the latter months of pregnancy, women are liable to such dangerous

* See Pages 488 to 490.

floodings; while, in earlier gestation, the floodings are much less copious; and, of course, are attended with much less danger. The veins, which correspond with the arteries, are also very capacious; and, from their great capacity, they are sometimes called "the *sinuses* of the uterus"; though I may observe, by the way, that this term is applied more properly to real sinuous cavities in the substance of the uterus; which cavities seem to be distinguished from the veins, and remind one of the carneæ columnæ of the heart. To facilitate the return of the blood from the uterus, the veins take a direct course; but the arteries corresponding with them are vermicular; and it is supposed that this vermicular course of the arteries, is designed to diminish the impetuosity of the uterine circulation; and to diminish the risk of those floodings which, nevertheless, so often take place. The arteries are as vermicular in the womb at the end of nine months, as in the unimpregnated uterus; and, therefore, the vermicular course does not appear to have been designed to facilitate the distention of the uterus (by allowing the vessels to draw out and change from the *vermicular* to the *linear* direction); for this change does not take place. Besides, if this serpentine course were meant to facilitate the ready dilatation of the uterus, we should have expected that, like the arteries, the veins also would have been serpentine.

Substance of the Uterus Muscular.—The substance of the uterus, I conceive, is made up of a structure essentially muscular;—an opinion in which many, I believe, acquiesce; though it is denied by Blumenbach, and others. That the womb is really muscular, I am persuaded;—first, because we find that it is so, indisputably, in the mammiferous animals generally. In the rabbit, for example, the muscularity of the womb is far more conspicuous, than that of the intestines. You may see the fibres coarse and large, and may observe their motion;—provided you examine them immediately after the rabbit is killed. It seems, then, that in the mammiferous animals generally, muscular fibres have been given to the uterus, for the purpose of expelling the fœtus; and if muscular fibres be given in the case of brutes, why should they not be given to the *human* uterus also? Why, in the human uterus alone, should there be formed a fibre *sui generis*,—expressly for this purpose; when, as appears from the lower animals, the muscular structure is itself sufficient for the purposes of parturition. This argument, I know, is not decisive; but the presumption is strong; for if the uterus of animals be composed of muscular fibres, why should we not suppose that the human uterus is so also? "Frustra per plura*".

Again: that the human uterus is muscular, appears when it is developed from pregnancy; and this is so clear, that if you take a portion of the uterus when thus developed, and show it to any anatomist or demonstrator,—asking him, at the same time, what it is,—he will reply, without hesitation, that it is *muscular*. This experiment I once made myself. Taking a portion of the impregnated uterus, I showed it to Mr. Green and Mr. Key;—excellent judges on

* "Redundance is unnecessary".—N. R.

this point; and, without making mention of the womb, I asked them to tell me what was the structure; when they immediately declared it to be muscular. If, therefore, we are to judge of the structure of the human uterus by its appearance to the eye, independently of other circumstances, we need not hesitate to decide that it is muscular.

But there is yet a third proof, very decisive in my opinion, of the uterine muscularity; which is, that it contracts itself like a muscle, under the excitement of a stimulus. Like the womb of brute-animals, indeed, it is true that, during the period of gestation, the human uterus lies quiet. Yet this is not always the case; for it may act prematurely;—as in the case of miscarriage. But when, at the end of nine months, the womb begins to wake up (as it were) from its long lethargy, we then find that, like other muscles, it becomes irritable, and contracts itself under the incitement of a stimulus. The ovum first excites its contraction;—then the fœtus;—then the placenta;—then an accumulation of clotted blood; or the fibres may be brought into action when the womb is empty, by the introduction of the hand of the accoucheur. Like the heart, therefore, the uterus is muscular. It is, like the heart, stimulated by distention; nor by distension only; for (like the heart, moreover) it is stimulated by other incitements; for other stimuli, when taken into the stomach, would act upon it;—more especially the ergot, of which I formerly spoke*. If, then, the womb be muscular in all other animals; if, again, the muscularity of the human womb be developed to the eye, when pregnancy occurs; and if, moreover, we find that the womb, like a muscle, contracts under the incitement of a stimulus;—I think we have proof enough to bear us out in the assertion, that the uterus is muscular. This muscularity is of no small importance. By means of it, not only does the womb expel the child and the placenta, but it moreover contracts itself so as to become secure against the risk of inversion, or the larger discharges of blood; for, as I formerly explained †, it is by the contraction of the muscular fibres of the womb, that the mouths of the blood-vessels are closed up; so as to prevent the larger discharges of blood, in ordinary cases. The womb being muscular, is (of course) obnoxious to the same diseases as the other muscles of the body; and may, perhaps, be relieved by the same remedies ‡.

Thickness of the Parietes of the Uterus.—The thickness of the womb varies in different women;—the average being from a quarter to a third of an inch. It is worth your observation, that it is as thick when enlarged from gestation, as when in the unimpregnated state; which is a proof that the thinness of the womb does not arise,

* See Page 460. † See Page 173.

‡ Most German authors deny that the uterus is muscular, except when impregnated. There is nothing in physiology to render this acquisition of muscular fibres impossible; for the arteries acquire a decided muscular coat, if the heart becomes incapable of acting. The fibres of the uterus are radiated at the fundus, annular at the neck, and oblique in the middle. Thus the fibres decussate,—as in the bladder; and the expulsion of the fœtus is analogous to that of urine.—*Dr. Fletcher.*

like that of the human bladder, from mere distension. Certain parts of the uterus you will sometimes find to be unusually thick. Sometimes, on the other hand, it is unusually thin;—not thicker than brown paper, for example. From the unusual thickness, no inconvenience arises: but if it be unusually thin, lacerations may take place; and hence you ought never to carry your hand into the uterus unless there be need for it.

Glandulæ Nabothi.—About the mouth and neck of the uterus, you will find a large number of mucous follicles; which, in pregnancy, are very apt to form a great deal of mucus, which closes up its mouth. It is this apparatus which forms the "glandulæ nabothi"; and I suspect that, in carcinoma, it is this apparatus that is the original source of the malignant ulceration *. The opinion is deserving of attention; because, if it really be so, it is not unreasonable to hope that, in some cases of genuine malignant ulceration, if we can but pare away this diseased structure, we may entirely remove a disease, which would otherwise go on and destroy the patient. An operation of this kind, in principle, has been performed (not without success, I believe) by Oziander, Dupuytren, and Lisfranc; and this operation, more fully considered at a former period †, I strongly recommend to your consideration.

SECTION 2.—CHANGES PRODUCED DURING THE PROGRESS OF PREGNANCY.

Enlargement of the Uterus.—I need scarcely observe that, as pregnancy advances, the bulk of the womb enlarges. At the end of the third month, it is about the size of a full-grown fœtal head; at the end of the fifth, it is of the bulk of the fœtus without the head; towards the close of the seventh month, it is as large as a full-grown fœtus; and, at the close of the ninth month, its greatest bulk is acquired. This great increase of the bulk in the uterus, proceeds more slowly at the earlier, and more rapidly in the later months; as a very short reflection may satisfy you. At the end of four months and a fortnight,—that is, at the end of the first half of the period of gestation,—you find the womb not much bigger than the fœtal head; while, during the remaining period of gestation,—the other four months and a fortnight,—the womb acquires a much greater proportional increase of size. It is evident, therefore, that there is a much more rapid growth in the latter period of gestation, than in the earlier.

Cause of this Enlargement.—The increase of the bulk of the uterus, is principally to be ascribed to two causes;—one, the mere growth of the ovum within the uterus; which ovum dilates it, much in the same manner as the urine does the bladder. The other, not less interesting, is the actual addition of solid substance to the uterus;—there being a growth of all its structures; which become enlarged and developed. It was imagined, by the older practitioners, that the

* See Page 742. † See Pages 785 aud 786.

enlargement of the uterus arose merely from distention (like the enlargement of the urinary bladder, or rectum); but that there really is an addition to the substance of the womb, is proved (first) by our finding it as thick, and sometimes thicker, at the end, than at the beginning of pregnancy; and (secondly) by our observing that, when the womb is thoroughly emptied, it still remains eight or ten times as bulky as it is in the unimpregnated state.

Unequal Enlargement of the Uterus in Pregnancy.—In the progress of pregnancy, it should be observed that the growth of the womb does not equally affect all its parts. During the first five months, the growth,—whether from distention or developed structure,—is confined principally to the *body* of the uterus; while the *neck* below enlarges but little; and remains attached to the body, in the way of a sort of appendage. It is, therefore, principally during the last months, that the growth of the neck proceeds; and this goes on in such a manner, that, at the end of pregnancy, this neck forms a part of the general receptacle for the ovum; and, at this part, the head of the child generally lodges.

Length of the Cervix indicates the Progress of Gestation.—With a view to practice, it is important to remember, that a sort of relation has been traced between the length of the neck of the uterus, and the end of the pregnancy; insomuch that, by ascertaining what is the length of the neck, and how far it is or is not dilated, we may form a notion of the progress gestation has made. During the first five months of pregnancy, the neck (as I have said) remains undilated;—being of ordinary length (an inch-and-a-half; which is its original dimension). But, at the end of the sixth month, it will be found that the neck has lost about one-third of this length, or half-an-inch; at the termination of the seventh month, another third, or another half-inch; while, at the close of the other two months, it loses also the remaining third. Hence, if you make an examination at the commencement of labour, you find the os uteri immediately opening into the cavity of the womb;—the canal of the neck having disappeared altogether.

There are two ways in which, in obstetric practice, those who have the skilful and perfect use of their fingers, may learn the length of the neck of the womb. Sometimes the finger may be slipped, conveniently enough, along the canal;—so that you just touch the membrane; and (of course) take, at the same time, the measure from the mouth to the cavity. On the whole, however, I do not recommend this mode; for fear of disturbing the ovum. For general use, the best way is to place the woman in the ordinary posture of delivery, on her left side; and then to pass up the two first fingers of the left hand, as if you were going to make the common examination;—ultimately planting those fingers between the symphysis pubis and the mouth of the womb. This done, you carry those fingers upward and forward;—so as to touch the body of the uterus; which is, if the vagina be relaxed, frequently to be felt. If this be accomplished, the distance between the body and the mouth of the uterus will give the measure of the neck.

Situation of the Uterus during Gestation.—The situation of the uterus is found to vary, according to its growth and the age of gestation. During the first four months, or the first four months and a fortnight,—when (as before observed*) the womb, even at largest, is scarcely bigger than the head of a full-grown fœtus,—we find it lodging in the cavity of the pelvis, principally in the lower part;—especially if a woman has a large pelvis. When it is thus lodging in the lower half of the pelvis, below the brim, sometimes the intestines are compressed; and those who are disposed to hæmorrhoidal affections, and to irritation of the bladder and bowels, may suffer a good deal of inconvenience, about this time, from tenesmus, and frequent desire to pass the water. But of all the symptoms arising from this descent, the most troublesome is the feeling of bearing-down;—the womb frequently descending a little; and, in some cases, even protruding beyond the external parts; though, happily, extreme descent is rare. These symptoms are apt to occur, more especially, in the first months; for they are produced by the cause I have mentioned;—the descent of the womb, more or less, into the cavity of the pelvis. But during the last months of pregnancy,—when the womb becomes bulky, and gets its resting-place entirely above the brim of the pelvis,—the sensation of bearing-down is relieved. In this situation, however, further inconveniences may arise; for the bladder, when full, is interposed between the surface of the hard uterus, on the one hand, and the abdominal coverings on the other; so that, whenever the patient laughs heartily, or has any sudden abdominal movement, there is a forcible pressure on the bladder; and the urine is made to gush out. In this way, a sort of incontinence is produced. Moreover, a change in the situation of the uterus gives it a bearing on the liver; and, more or less directly, it may press on the biliary ducts, and give rise to jaundice; which is apt to occur about the sixth or seventh month. Sometimes it does not terminate till after the delivery; when the pressure is removed. Sometimes it ceases in the ninth month; when,—the womb approaching to its full size,—the principal pressure is transferred to some other part.

As the womb, when large, takes its place above the brim of the pelvis, the intestines generally lodge above and behind; so that if a woman have been labouring under a reducible hernia,—whether femoral or inguinal,—the descent of the gut may be prevented by the interposed womb; and thus it has happened, that women subject to hernia have, by a repetition of pregnancy, been kept, in a great measure, free from it. Women, however, sometimes labour under irreducible hernias of the femoral kind; and when they become pregnant with this disease, then there is always a risk of strangulation. The uterus, enlarging, presses the intestines backwards and upwards; and, in consequence, it gradually brings the intestine to its bearing on the upper margin of the orifice of the sac; so that all the symptoms of strangulation are produced. Cases of this kind are exceedingly rare. A man may practise a long time, before he meets with a single instance of them; but, when they do occur, they

* See Page 960.

are exceedingly dangerous. The strangulation, here, is not occasioned by any want of room in the orifice of the sac; nor is it to be relieved by any enlargement of that orifice; but it is the retraction of the intestine against the superior edge of the aperture, whether that aperture be large or small, which occasions all the danger. If the practitioner were called to a case where the symptoms were pressing, it would be difficult to know how to deal with it. I really do not know what would be the best thing to be done. Perhaps the discharge of the liquor amnii would lower the uterus, and diminish the retraction; and if the practitioner were called to the case early, I should conceive that he would greatly benefit the patient, by discharging the liquor amnii; for the effect of this operation would be an immediate relief of the tension; followed, ultimately, by the expulsion of the fœtus, and the collapse of the uterus; with a reasonable hope that the disease would be permanently and radically cured. Patients with hernia, ought to know the incipient symptoms of strangulation; and should send promptly for help.

Period when the Uterus Rises above the Brim.—It seems, then, that in the *earlier* months of pregnancy the womb is *below* the brim of the pelvis, and that in the *latter* months it lies entirely *above*. It is clear, therefore, that there must be a certain period at which an ascent takes place; and this seems to be somewhere about the fourth month; for it is at this time that the womb, acquiring a great increase of bulk, becomes too large to sink readily below the brim. In some very rare cases, this ascent of the womb does not take place in the fourth month, as it ought to do; but it continues to grow rapidly in the pelvis; and the consequences of this are,—obstruction of the rectum, obstruction of the bladder, and a great deal of pain felt in the uterus itself, and in the hips, thighs, back, and all the parts usually the seat of uterine suffering. This case may be wholly misunderstood. Perhaps you mistake it for a retroversion of the uterus; though it is easily made out by examination; for, on making this investigation, you discover a large tumour filling the pelvis; with the os uteri so low down, that it may be perceived at the first touch. It may not be difficult to reduce the uterus, when the bladder has been thoroughly evacuated previously. The urine generally accumulates largely in these cases; and while the bladder remains overdistended, the return of the womb is rendered both difficult and dangerous; for if the uterus were forced above the brim, disruption of the bladder might occur. Beware, therefore, of these rash attempts at reduction. The safer practice seems to be that of taking a very small and flattened catheter, and cautiously insinuating it into the bladder; after which the water may be drawn away easily enough, and the womb may be replaced above the brim of the pelvis. To prevent a reiterated descent, the woman may be confined, for a few days, to the horizontal posture;—till the uterus becomes too large to come down. In general, however, the uterus does not, in this way, remain in the pelvis in the fourth month; but rises imperceptibly above the brim; probably at night, when the woman is in bed.

The ascent may take place in a manner so gradual, that the woman may not have felt any change. About the fourth month, however, there is perceived a peculiar sensation, which is denominated "the *quickening*"; and which is accompanied with sickness of the stomach, a certain perturbation of mind, and a feeling of motion in the pelvis below. This is usually ascribed to the first movement of the child observed by the mother; but (reasonably enough, I think) it is suggested by Burns, that it may be produced by the sudden rising of the uterus from the true to the false pelvis*.

Position of the Fundus at Different Periods.—As pregnancy advances, and as the womb rises in the abdominal cavity, of course the fundus of it gets higher and higher; and there is a certain relation between the height of the fundus uteri and the age of gestation, with which it may not be amiss that you should acquaint yourselves. We find that, during the first three months, the womb lies very much within the brim and cavity of the pelvis, where the fundus may be felt; and it is not till the end of the fourth month, that the fundus is found to have risen fairly above the brim of the pelvis. At the end of the fifth month, the fundus is a little higher; at the termination of the sixth month, it lies a little below the umbilicus; at the end of the seventh month, a little above; at the end of the eighth month, it takes its place half-way between the umbilicus and the scrobiculus cordis; and at the close of gestation it lies in the scrobiculus cordis itself;—unless, indeed, there should have taken place that contraction, which sometimes occurs some two or three days before the expulsion of the fœtus†.

Illustrative Preparations.—Some of these points are illustrated by preparations in the Obstetric Museum. In the first place, with respect to bulk, we may there observe a preparation, showing the uterus of the size of four months; another of the bulk of five months; a third of seven months; and a fourth of nine. Observing these preparations, we have an opportunity of seeing the neck of the uterus; which (as before stated ‡) appears in the fifth month to be connected with the body as a sort of appendage. In another preparation,—consisting of an eight-month uterus,—the neck is somewhat dilated. It is more so in a preparation approaching to nine months; and at the full period of gestation,—as may be seen in another preparation there,—the dilatation is thoroughly completed; and the canal is destroyed altogether;—so that, when the head sinks down, the parts below it rest upon the mouth of the womb.

* "Quickening" takes place about the fourth month. The reason why the motions of the fœtus are perceived just then, is that the uterus rises into the abdomen; where it is surrounded by parts supplied with the nerves of *animal* life; whereas, previously, it was in contact with parts supplied chiefly with the nerves of *organic* life.—*Dr. Fletcher.*

† The changes produced in the womb by pregnancy are, that its walls become *thicker*, but not *denser*; its shape becomes rounder; its neck and the broad ligaments disappear; and the ovaries are found near its body.—*Dr. Fletcher.*

‡ See Page 961.

CHAPTER V.

STRUCTURE OF THE HUMAN OVUM.

The human ovum, as we find on examination, is composed of two principal portions;—the appendages, and the fœtus itself. In the essentials of its structure, the fœtus (on which I shall first make a few observations) very exactly resembles the adult; and yet there are some peculiarities in its structure and functions, which are worth a little observation.

SECTION 1.—PECULIARITIES OF THE FŒTUS.

Peculiarities of the Fœtal Cranium.—In the fœtal cranium, and that of young children, the cranial bones are more numerous than those of the adult; and those bones are not united by harmony*, nor by serrated sutures; but by means of intervening cartilage. These false sutures (as they are called), from their softness, allow of that change in the form of the head, which, in cases of coarctation, prepares it for transmission through the pelvis.

Membrana Pupillaris.—In the fœtus, when it is under the age of seven months, we find in the eye a peculiar membrane;—the "membrana pupillaris". It is thin and vascular; arises in a circle from the margin of the pupil, and divides the aqueous fluid into two portions;—the *posterior*, and that which lies *before* the iris. The use of this membrane has not been properly ascertained. It has been suggested by Blumenbach, I think, that it may be designed, as the eye grows, to keep the iris on the stretch; but, in my opinion, this is by no means a satisfactory explanation.

Large Size of the Nervous System.—In the child at birth, and for a length of time afterwards, we find that the nervous system bears a larger proportion to the rest of the body, than in the adult;—that is, if you weigh the body, and afterwards the brain and spinal marrow, —in the manner stated elsewhere,—you will find that the spinal marrow and the brain weigh more, in proportion to the rest of the body, than the same parts in the adult.

Peculiar Structure of the Lungs.—In the fœtus, the lungs are compact;—the cells being wholly undilated, and not containing a single particle of air; though the whole structure expands itself under the act of inspiration, as soon as the child enters the world. There is a popular notion, that if the child has been born dead, the lungs will not float in water; and that they will be buoyed up by this fluid, if the child have been born alive. It certainly is very possible for the lungs to float in water, although the child may not have been born alive; and, more especially, although it may not have been born with that vigorous vitality, which would have enabled it to survive, unless

* From *αρω, to fit together.* This form of suture is exemplified in the bones of the face.

violence had been used to destroy it;—first, because if a child has begun to putrefy, gas may, in this way, become formed in the lungs. Thus, on examining a body within twenty-four hours after death, I found in the lungs, and other parts, air which had been evolved by early putrefaction; and why might not the same accident happen to children? So, if a child were still-born, and efforts were made by the mother to inflate the lungs by the mouth,—provided much force were used in the inflation,—I think that some of the air might find its way into the lungs, and render them capable of floating. Or,—which is a more important consideration than the other two,—if a child is, in great measure, "still" when it comes into the world, yet it may sigh once or twice, and then die irrecoverably;—examples of which I have myself seen. Now, if the child should sigh but once, this, I suspect, would cause the lungs to float;—without, however, affording any satisfactory proof, or even presumption, that violence was necessary to destroy it. But though the floating of the lungs is no proof that a child was born alive, and more especially in a state of lively vitality, the sinking of the lungs, on the other hand, furnishes a very strong presumption that the child has been born dead; or, at all events, that it has never breathed. It is true, the lungs may become hepatized in consequence of disease, even in the adult; and, when solidified in this manner, they may sink, just in the same way as if the person had never breathed; but, then, this disease is by no means common even in the adult; though I have seen it. Still less is it a disease common to the fœtus;—in which, perhaps, it has never been observed; and, further, still less likely is it to occur in a case of suspected child-murder. I will venture to assert that, if we could get together data,—so as to form a calculation,—we should find that the chances are myriads to one against such a concurrence. Now, in the uncertainty of all human affairs, chances of myriads to one, may be looked upon as approximating to certainty;—nearly enough, at any rate, for practical purposes; and, therefore, I conceive that the sinking of the lungs in water, is to be considered as a proof only short of certainty, that the child has never breathed. How far we may reasonably infer, from this, that the child was dead at birth, I leave for others to determine.

Peculiarities of the Fœtal Heart.—The heart of the fœtus is remarkable for having both the ventricles of equal thickness. It is also remarkable on account of an opening which leads from the right auricle to the left; and which is denominated the "foramen ovale". In the blood-vessels, too, there are peculiarities; some of which I may notice. First, I may observe, that there is, in the fœtal state, a short artery leading from the pulmonary artery into the aorta;—the "canalis arteriosus", as it is called; a canal which becomes closed not many months after birth. Secondly, there is a short vein, the "canalis venosus", also peculiar to the fœtus;—leading from the "vena portæ" of the liver, to the "vena cava ascendens"; and, like the former, becoming in great measure, closed no long time after birth. Thirdly, there are two umbilical arteries, and

the umbilical vein;—also peculiar to the fœtal state; and, like the former vessels, becoming obliterated after the child has entered the world. Each of the internal iliacs gives off an artery, which rises to the navel; and, issuing there, passes along the umbilical cord*, to reach the placenta, and be distributed throughout its substance. There are veins which correspond with these arteries; and which ultimately coalesce, so as to form one trunk. This passes along the funis to the navel; enters the abdomen; and mounts to the "portæ" of the liver; through which it ramifies, in conjunction with the "vena portarum", and the hepatic artery;—affecting principally the left side. It is this canal (the umbilical vein) which, becoming closed after birth, constitutes what is denominated by anatomists "the ligamentum rotundum of the liver".

Characters of the Fœtal Blood.—It has been asserted of the fœtal blood, that it does not coagulate; but this is a mistake. If the placentar portion of the umbilical cord be laid open, after the child has been delivered to the nurse, blood may be collected from it to the amount of one or two ounces; and if this be set aside in a cup, in the course of a few hours it will separate into the serum and crassamentum. I am not prepared to determine, whether the circumstances of coagulation are the same with the fœtal blood, as with that of the adult. Perhaps they are not. Nor am I sure that the fœtal blood coagulates so firmly as the adult; for, in some instances, I have found that, when touched with the finger, the coagulum has fallen to pieces. Nevertheless, in its essential nature, the coagulation of the fœtal blood seems to differ in nothing from the same process in the blood of the adult. It is asserted by Bichât and others, I think, that the fœtal blood, when exposed to the air, does not become brighter and more scarlet, like the blood of the adult. No opinion, however, is more easily disproved by experiment; and I am sure, if you will examine the fœtal blood for yourselves,—after it has been exposed to the air for a few minutes, as before proposed,—you will find it assumes the scarlet arterial tint; and that, too, in a very conspicuous manner. This change becomes the more visible, if you remove the crassamentum from the cup, and divide it vertically with a knife; for, on making a section in this way, you lay bare at once the upper and the inferior layers of which the clot is composed; when the dark red of the one, and the bright scarlet of the other, are brought (by their joint exposure) into very conspicuous contrast. So if, after observing the upper part of the crassamentum, you invert it,—so that you may inspect the under surface,—the difference of the two colours involuntarily and forcibly strikes the attention.

Alimentary Canal of the Fœtus.—The stomach of the fœtus is not unfrequently empty, or nearly so; and when it does contain any thing,—if I may judge from some two or three observations,—this matter consists of a mucous secretion, mixed with the gastric juice.

* The shrivelling of the umbilical cord, after birth, is a *vital* process;—like the fall of a leaf, or dry gangrene. A *dead* child does *not* cast its cord; which putrefies.—*Dr. Fletcher.*

I have not hitherto been satisfied that it contains liquor amnii; though Darwin, and others, have suggested that this fluid may form its food*. The bowels are remarkable for their great length;—being proportionably longer than in the adult; and this is the reason why, in young children, when undressed for inspection, the abdomen is always found to be of large proportion. This large proportion of the chylopoietic apparatus, contributes to that speedy growth, for which the infant system is so remarkable.

Large Size of the Fœtal Liver.—In the fœtus, the liver,—which is, indeed, a part of the chylopoietic apparatus,—is of very large bulk; and this proportionate bulk of the liver exists after birth. Indeed, it may not be till the end of three or four years, or even later, that the liver becomes reduced to its adult proportion. This should be borne in mind, when you are inspecting the body after death; otherwise you may err, by supposing, on seeing the great bulk of the liver, that it is enlarged by disease;—an error which has, I believe, not unfrequently been committed.

Capsulæ Renales and Kidneys.—The capsulæ renales are very large in the fœtal state. They contain a good deal of secretion; but their use is unknown. The kidneys are conspicuous;—on account of their being separated, pretty distinctly, into a number of smaller parts. If you were to take a kidney, and divide it into an anterior and hinder portion, by carrying the knife from the convex to the concave margin, you would expose, in this manner, eight or ten pyramidal portions, not very firmly adherent. It is remarkable that, in certain animals which haunt the water, the kidney is frequently constituted by separate pieces; which are loosely compacted with each other. Nor is it to be forgotten that, while it remains in the uterus, the human fœtus is aquatic.

The Clitoris.—In females, the clitoris is larger in the earlier than in the latter months; and this large proportion of the organ I the rather notice, because, in an unguarded moment, it may lead you to mistake a *female* abortion for a *male*.

Time at which the Testes Descend.—It is only towards the end of pregnancy, that the testes descend to the scrotum. Like those of birds, they lodge, till then, within the abdominal cavity. The descent of the testicles, it is said, takes place somewhere about the seventh month; and this fact may assist us in determining the age of the fœtus. Sometimes both the testicles fail to descend; sometimes only one leaves the abdomen; and, in some cases, they descend partially; and may lie in the abdominal ring, and prevent its closure. By an eminent agriculturist in the West of England, Mr. Wreford, I am informed that, where the testes fail (in this manner) to descend in the ram, the animal is not capable of procreating; although it retains the power of sexual intercourse;—perhaps more so than the perfect animal. If one of these rams be employed, the whole flock remains unimpregnated; although sexual unions are frequent.

Impotence following Non-Descent of the Testes.—Men who labour

* See Note to Page 970.

under this failure of the descent of the testicles, sometimes suppose they are impotent; and this impression, if strong, may have the effect of really creating a disability. I believe, however, that this impotency is almost entirely *mental*;—not arising from *physical* causes; and this opinion seems to gather strength from these frequent sexual unions of the ram. In the ram, it is true, the seminal fluid wants the generative power; but the defect rests there; and it may be fairly doubted, till we have proof to the contrary, whether even this defect necessarily attaches itself to the human genitals. I may here add that, when the testes do not descend, they are not usually thoroughly developed; the organ remaining, perhaps, of one-third the size which it would have acquired if descent had occurred. Hunter has remarked this. A patient dying with strangulated hernia, I was requested to be present when he was opened. One testicle, of large size, had come down into the scrotum; while the other remained at the abdominal ring; which lies a little way within, and was certainly not above one-third of the size of the former. It was this testicle that had occasioned the strangulated hernia; for it kept open the ring; and a small piece of intestine having forced itself into the aperture, strangulation occurred, and death:—so that, old as the patient was,—and he was more than thirty,—the hernia was what is called "congenital". This man, during life, repeatedly refused to be examined;—asserting that he had no swelling at the groin; though, in reality, the intestine protruded there; and thus, by a foolish aversion to the necessary investigation,—arising out of a consciousness of this small defect of structure,—the poor fellow actually lost his life. Really some persons seem to think, with certain ladies of old, that all human merit is concentrated in the groin:—

> "Unciolam Proculeius habet, sed Gillo deuncem;
> Partes quisque ad mensuram inguinis hæres."*

The Thyroid Gland—In the fœtus, the thyroid gland is very large;—being well supplied with blood, and larger in proportion than in the adult. The same observation applies to the thymus gland; which is proportionally much larger than in the adult. It lies behind the sternum, is well charged with blood; and contains a whitish secretion, the use of which has not been well ascertained. The arms and hands of the fœtus are pretty thoroughly developed at birth;—in order, I suppose, that it may lay hold of the breast. The inferior limbs are very small (proportionally); and that, I presume, because children are designed to be carried in the arms. The skin of the fœtus is frequently covered over with a sort of fat; I have

* "Proculeius has an ounce, but Gillo, eleven ounces;—each being heir in proportion to the extent of his groin".—*Juvenal's "Satires"; Satire* 1; *Lines* 40 *and* 41. The meaning is, that Proculeius and Gillo were heirs to the estate of the old woman mentioned in Line 39; but that Proculeius received only a small part of the estate (signified by a twelfth part of the pound); while Gillo had all the rest (signified by eleven ounces out of the twelve); because he was able to gratify her lust in a similar proportion.—N. R.

never myself made any accurate observations upon this substance; but if the fœtus were supported by the absorption of the liquor amnii, we should not expect to find this fat coating the surface; and this fact may, therefore, be urged as standing in opposition to that opinion.

Many of the Viscera not Necessary for Fœtal Life.—It is a curious truth,—well ascertained,—that of the many structures which compose the fœtus, by far the greater number are of no use to fœtal life. Indeed, they are designed to operate after the fœtus has come forth into the world, and has entered on a new state of existence. That the heart itself is not peremptorily necessary to the welfare of the fœtus, seems to be certain. We sometimes meet with twins, where the one is well-formed and the other monstrous. The monstrous structure consists, perhaps, of the lower part merely;—the abdomen being represented by a large sac, containing a few folds of intestine, and the pelvic viscera. No heart is found, in such cases; and yet, while it remains in utero, this monstrous structure flourishes as well as the perfectly formed child. It is equally well known that the lungs are of no use;—perhaps rather an incumbrance than otherwise; for the pulmonary function, as well as that of the stomach, while the child lies in utero, is performed merely by the placenta. Neither, again, does the child require the chylopoietic apparatus. Without the liver,—without the stomach,—without the bowels, it may be fat, and grow.

How is the Fœtus Nourished?—It seems that the child is nourished by means of the nutritious material which is absorbed at the placenta;* —the fœtal vessels acting like the root of a plant. I once made a curious physiological experiment;—not without a view to some important practical reference; and it succeeded to my wish. For three whole weeks, without the help of any other nourishment, I supported a dog merely by the injection of blood into the jugular vein. Every day, or every other day, a few ounces were introduced in this way; and though, from the want of nicety in my operations, the system became disordered, it was evident enough that the animal was well supported by it. Now it seems to be in this manner that the fœtus is nourished. Without the help of the chylopoietic viscera, there is an absorption; not perhaps of integral red blood; but of the colourless, yet nutrient portions; and this sanguineous fluid becomes as food, for the support of the child.

Secretion during Utero-Gestation.—It is a mistake to suppose that, in a well-formed child, there is no secretion going on; for, in some, the kidney is in action; and a child may pass urine immediately on coming into the world. There is, too, a secretion of bile; and I have seen mucus in the stomach; but though there are secretions in the fœtal state, they seem to be far less general and abundant, than those which occur after birth. It sometimes happens that a child is born with the urethra imperforate. If the urethra remained in this con-

* The fœtus is nourished by absorption. It used to be thought, by Hippocrates, and others, that it lived by swallowing the liquor amnii; but it is sometimes born without a mouth.—*Dr. Fletcher.*

dition for a few weeks or days after birth, the bladder would burst; but during the fœtal state, this imperforation may remain for any length of time, without occasioning material inconvenience. So, too, after birth, there is a large secretion of bile; but during the fœtal state, the secretion must be very small; for no bile passes the anus; and if the bile were secreted very copiously, the bowels would become completely over-distended with it. During the fœtal state, however, those glandular apparatuses, the action of which is necessary to the well-being of the child, are observed to operate vigorously enough; —those, for example, which form the muscles, the tendons, the ligaments, the nerves, and so on. Indeed, these substances seem to be formed more rapidly before birth, than afterwards; but those secretions which are not required during the fœtal state, are formed very sparingly; and the urine, the bile, and the chylopoietic secretions, belong to this class.

Sensibility in the Fœtus.—During the fœtal state, we can do very well without a brain, without a spinal marrow, without a sensorium, and therefore without mind. It is not true, however, that the fœtus in utero is destitute of sensibility, as some have imagined; and as the accoucheur would very willingly believe, when he is about to use the perforator. I have myself, in turning, felt the mouth of the fœtus; and have inserted my finger;—in order to know whether or not the little infant would suck. In two instances, I found that it has sucked as vigorously before birth as afterwards;—thus showing that it felt hunger; that, moreover, it perceived the finger; that it had sense enough to perform the operation of sucking; and, therefore, that its mind was in action. It is remarkable, however, that when the perforator is used, the child is seldom felt by the woman to move. Having given myself to the more difficult part of obstetric practice, I have too frequently had occasion to use this instrument; and, when on these occasions, I have asked the mother whether she felt the child move; I have usually received an answer in the negative. Whether it be that, even in the adult, the sensibility of the brain is but small, so that, from this cause, the fœtus does not feel so much pain as, à priori, we should have expected; or whether some other cause be in operation,—I am not prepared to decide. The fact, however, is well ascertained; and it seems that little struggling is produced. Although the sensorium usually exists, yet it is not absolutely necessary for the welfare of the fœtal state; because a child formed without a brain, is an occurrence by no means unfrequent*; and in these cases we find

* Bearing in mind this point, and also that a fœtus may be born and even live with this deficiency, I was myself, about two years back, present at a delivery, not certainly of a perfect, yet of a fine male child, at the full period. In this fœtus, in addition to a very excellent specimen of "spina bifida", and other slighter particularities, the child ultimately proved to be without a cerebellum. For the first week after its birth, it appeared to thrive; and performed the several offices of respiration, deglutition, &c., without difficulty. There was paralysis of the inferior extremities (but not of the bladder);—arising, most probably, from the spina bifida in the lumbar region. After the first week, the child gradually declined; and, surviving one month and a day, it finally fell a victim rather to the disease in the

that the fœtuses flourish, become very large, and seem to do as well as any other. I was present at a case of this kind; where, in consequence of the great bulk of the head, notwithstanding the want of a brain, there was great difficulty in getting it away; and this shows how much the fœtus and its head may grow, even without the operation of the sensorium.

Monstrous Formations.—Now and then, monsters are formed, consisting solely of the lower half of the body;—there being no brain and no spinal marrow, or only a very small portion of the cauda equina; and yet those monsters grow.

Average Weight of the Fœtus.—There is a good deal of difference in the weight of the fœtus;—the average, I believe, being about seven pounds. Some, especially if born prematurely, weigh much less; some much more. You will, now and then, meet with a fœtus of ten, fifteen, or seventeen pounds;—to omit those which are larger. I have a specimen of one of these gigantic fœtuses. When there are twins, the average weight seems, from observation, to be about eleven pounds;—the one being generally heavier than the other. If there is a plurality of children,—say to the number of three, four, or five,—the average weight has not been very accurately ascertained; because those cases are rare; but the average weight of the whole is supposed to be about the same as that of twins;—say of ten or eleven pounds. Dr. Hull met with a case, in which there were five children at a birth;—the total weight of the five being about eleven-pounds-and-a-quarter*.

Position of the Different Parts of the Child.—It seems to be, altogether, a position of *repose*. The chin is pushed down upon the chest; the thighs are bent forward upon the abdomen; the arms are deposited in the space between the head and knees; and, the back being slightly incurvated, the child is thrown altogether into a form which very much resembles that of an egg;—well adapted to the shape of the chamber in which it lodges. After birth, our most natural position is the erect; with the head above. Before birth, this position is usually reversed; and the head, as in tumbling, takes its place below;—the fœtus lying, in the great majority of cases, with the head precisely over the os uteri. It is not always, however, that this is the case. Sometimes the nates, sometimes the face, sometimes the back presents; but the presentation of the vertex is the most common. I am not satisfied with the explanation usually assigned, to account for the presentation of the vertex;—namely, that it arises from the weight of the head; which, from mere gravity, assumes the

loins, than to the want of the cerebellum. A preparation of this subject may be seen in the Museum of St. Thomas's Hospital.—*Dr. Castle.*

* The peculiarities of the fœtus are the following:—1. The brain is larger. 2. The cerebellum is relatively smaller (forming one-*twelfth* instead of one-*eighth* of the whole brain). 3. The optic nerves are hollow. 4. The membrana pupillaris exists. 5. The crystalline lens is rounder. 6. The conglobate glands are larger. 7. The liver is larger. 8. The lungs are smaller. 9. The diaphragm is more convex. 10. The kidneys are lobulated. 11. The intestinal canal is longer. 12. The skeleton consists of a greater number of pieces.—*Dr. Fletcher.*

lowest place;—provided, the fœtus being asleep, no muscular resistance oppose. If this be true, why is it that the head generally presents in quadrupeds; where mere gravity cannot be supposed to be the cause? Why is it, too, that it generally presents in those cases where there is a want of brains;—there being little more than the face of the child, and the head being by no means the heaviest part? In the case which I lately saw, and to which I have just adverted*, the child came away under the presentation of the head; notwithstanding there were no brains. Where, too, there are twins, you frequently find that one of those twins (commonly that which first issues) presents by the vertex; while the other lies under a preternatural presentation.

Illustrations.—The preparations employed to illustrate the observations which I have been making, are various:—1. A specimen of the human ovum, consisting of the membranous bag, with the placenta in connexion with it;—the fœtus being clearly visible within. Though so much larger, this ovum is, in shape, similar to that of the common fowl. 2. Another preparation exhibits a fœtus with a monstrous head; and also the large proportion which the intestines and liver form. 3. The next preparation shows the testicles, which have got down upon the abdominal ring;—the descent being, as yet, incomplete. 4. The fourth preparation is of a fœtus about five months old, and again exhibiting the exceeding proportion of the liver; the younger the fœtus, the larger the proportional bulk of this organ. 5. The fœtus in utero, I have said, can subsist very well without the brain. I have a preparation exhibiting this defect; and it may be seen that the child has been very well nourished. 6. The fœtus in utero can also subsist without the thorax; of which I have a preparation; consisting merely of the lower limbs, and a cyst, forming a very imperfect abdominal cavity.

SECTION 2.—STRUCTURE OF THE PLACENTA.

By the placenta, which I next proceed to describe, you are to understand the vascular structure whereby the fœtus and the mother,—the ovum and the uterus,—are put into communication with each other. There are three principal forms which the placenta assumes, in the ovum of the mammiferous genera. Sometimes it consists of a mere membrane, with a large number of blood-vessels; such as it is asserted to be in the sow, and such as it certainly is in the mare;—as I myself have seen. In other cases, we find it is made up of numerous small pieces,—from fifty to sixty, or more, in number; and which are distributed over the different parts of the ovum;—every where meeting and uniting with the uterine surface. This is the form of it in the ruminating animals. In other cases, again,—as in the *human* ovum, and that of many other animals,—we find the placenta consisting of a single fleshy mass only. These three forms may be distinguished, respectively, as the *membranous*, the *ruminating*, and that which, in structure, resembles the *human* placenta.

* At the head of Page 972.

Ruminating Placenta.—The "ruminating" placenta is not without its interest; as it may assist your study of the human; and I am induced, therefore, to make it the subject of a few remarks. This placenta is made up of different parts, varying in number, but usually numerous. Each of these fleshy masses is composed of two portions; —one growing from the surface of the uterus; vascular, cellular, and containing a secretion of milky appearance;—the other growing from the surface of the membranous bag enclosing the fœtus; and consisting of a tassel of vessels, which shoot into the fleshy substance of the uterus; much in the same manner as the roots of a tree into the ground. This tassel is formed of the capillaries of the umbilical arteries and veins, of which I was before speaking*. It deserves remark, that if you inject the uterus of one of these ruminating animals,—the cow, or the sheep, for instance,—you inject the vascular part, which is growing from it; but you do not throw one particle of the injection into the tassel which is growing from the surface of the membrane. If, on the other hand, you inject the umbilical cord instead of the uterus, you inject the tassel, but not a particle of the injection will quit these vessels; so as, by leaving them, to diffuse itself over the vascular excrescence. Hence, if by a sort of eradication, you bring away the whole tassel, you find the excrescence from the uterus remains perfectly white. It follows from this,—and it is the great point on which I wish to fix your attention,—that there is no communication between the tassel and the excrescence, by means of vessels capable of transmitting red blood; otherwise your injection would pass through the communication. You inject the tassel; but the injection does not leave these vessels, to enter the excrescence apart from the tassel. You inject the excrescence; but, in so doing, you do not fill the tassel.

Illustrative Preparations.—1. The uterus of a sheep, with some of the excrescences seated on its surface. These may be injected from the uterus; they are cellular, and contain secretion. 2. The membranous bag in which the lamb is contained; and the vascular tassels, or little knots, growing from it. 3. A third preparation, in which the uterus has been injected; but, in the tassels, none of the vessels have been filled; they remain quite white. 4. A preparation in which the knot of vessels has been injected; and not a particle of the injection has entered the excrescence. The large size of the parts renders all this very apparent.

Those remarks on the *ruminating* placenta being premised, the make of the *human* placenta, and of those which resemble it, may be very easily understood. There are two forms which these placentas assume. Sometimes they are *circular*, forming a sort of *cake* (such is the human placenta); and sometimes they form a broad band round the uterus, like a belt; whence they are sometimes denominated "zoniform" †.

The Zoniform Placenta.—Of the zoniform placenta, you have an

* See Page 967.

† From *zona*, "a girdle"; and *forma*, "resemblance."

example in the ovum of the cat and bitch. Of the circular placenta, you have a specimen in those of the Guinea-pig, the hare, and the bat;—not to mention the human placenta. Of these placentas, both varieties (in their minuter structure) are essentially the same as those of ruminating animals;—being made up of cells and vessels. In the first place, we have an infinite number of cells, with which the veins and arteries of the uterus communicate; so that, during life, there is (through this structure) a copious flow of the maternal blood. I wish you to observe here, that these cells probably correspond, more or less, in nature and office, with those excrescences, before-mentioned *, which are seated on the womb of ruminating animals; and, therefore,—like these excrescences,—they are supplied with blood from the uterus. Again: the placenta also consists of another part;—the vessels, as they are called; and they are nothing more than the capillary ramifications of the umbilical arteries and veins. This is proved by injecting the umbilical arteries and veins, and then picking away the cells with a probe, or any other convenient instrument; when the vessels appear filled with the injection; so that you may observe here a correspondence between the vascular part of the human placenta, and those tassels before described *;—also consisting of the umbilical capillaries, and forming the vascular portion of the ruminating placenta.

The Placenta is Double.—It seems, then, that the human placenta consists of two parts;—a large congeries of *cells*, which are in communication with the *mother*; and a large congeries of *vessels*, which are in communication with the *child*. But you may ask here,—"Is there no communication between these cells and vessels?" That there is a communication, though by orifices exceedingly minute, there can, I think, be little doubt; for how else could the child be nourished? Or how could the infectious diseases of the mother be communicated? But this communication is not by means of orifices or tubes, capable of transmitting red blood; and therefore the mother's blood does not pass into the vessels of the fœtus, nor does the blood of the fœtus pass into the cells of the mother. Accordingly, though we find the blood of the two to be in many points analogous, yet there is evidence enough to prove, satisfactorily, that they are not identical. That there is not a communication capable of transmitting the integral red blood, is proved, I think, by the following considerations:—First, the placenta adheres to the uterus. You may inject the womb with the greatest care and dexterity;—so as to fill at once the cells of the placenta and the vessels of the uterus; and yet not a particle of the injection finds its way into the vascular part of the placenta,—the capillary ramifications of the umbilical arteries and veins. The result here is the same as when we experiment on the ruminating animals, and inject the womb and its excrescences *. On the other hand, if you take a placenta, and inject the

* See Page 974.

umbilical artery,—provided the injection be performed with proper care,—it is not found that the fluid makes its way into any one of the cells; therefore, although a communication between the cells and the vessels exists, it is by means of tubes and orifices so minute, that the red blood of the mother cannot pass to the fœtus, nor that of the fœtus to the mother. Only the subtler part of the blood is transmitted. The fœtal and maternal blood in the placenta, approach each other nearly and abundantly; but they are not found to mix.

Structure of the Placenta.—The placenta is made up of blood-vessels, of cells, of cellular web, and of membrane. Lymphatic vessels have not been clearly demonstrated. They have been sought for with a great deal of care; as it has been supposed that the nourishment of the fœtus may be conveyed by them; but they have not been found. No nerves have been clearly seen in the cord, or in the placenta; and it is very extraordinary that the placenta should jointly perform the offices of the stomach and the lungs, yet without the help of nervous structure. The anatomist has never discovered nerves by the scalpel; nor has the physiologist been able to evince their presence, by proving the sensibility of the part. We continually observe that, on cutting through the umbilical cord, neither the mother nor child appears to feel it. I remember once seeing a child, which had a supernumary thumb attached to the hand by a delicate filament; and which was taken off by the accoucheur with a pair of scissors. This filament was not thicker than a thread; and yet the child cried stoutly when it was divided. This child, however, did not cry when the umbilical cord, of much larger size, was cut through; so that it is pretty certain that nerves do not enter into the composition of the cord.

The placenta usually adheres to the upper part or middle of the uterus; either in front, laterally, or behind. Now and then it lies over the uterine neck and mouth. This position, on cursory observation, may appear of small importance, but it is of great obstetric interest; for where it is so situated, the patient becomes liable to very dangerous floodings; the nature and treatment of which, we formerly considered at large *.

Plurality of Placentæ.—While speaking of the placentæ, I ought to observe that their number usually accords with the number of fœtuses. If you have several fœtuses, you have several placentas; if a single fœtus only, then the placenta is single. Thus, with twins, there are usually two placentæ; with triplets, three; and there are four or five placentæ, when (as rarely happens) the woman produces four or five children at a birth. Sometimes, however, one placenta is common to two fœtuses; and, in one of my preparations, two umbilical cords arise from the same centre.

* See Pages 257 to 264.

SECTION 3.—THE UMBILICAL CORD.

Average Length of the Cord.—The fœtus is put into connexion with the placenta, by means of what is called the "umbilical cord"; which is generally short in the ovum of brute-animals, and longer (proportionally) in the human ovum; though its length is liable to much variety. The average measure of this cord, may be about two feet. Dr. Haighton met with a funis, which was not more than six inches long. Mr. Lloyd, a gentleman formerly associated with this class*, found the cord, in one instance, surrounding the neck of the fœtus as many as six times; whence you may infer, that its length was by no means inconsiderable. Mr. Briggs, in another case, found the cord coiled around the neck seven times; and I think a case similar to this, is put on record by the celebrated French practitioner Mauriceau. I know not that any serious inconvenience results from the extraordinary brevity of the funis; except, perhaps, that if you lay hold of the child, and drag it too far from the mother immediately after birth, you incur the risk of prematurely detaching the placenta by a sudden pull; and may, in this way, give rise to hæmorrhage;—not to add that, if the adhesion of the placenta be firm,—so as to prevent detachment,—the sudden effort might, perhaps, occasionally invert the uterus. Hence the propriety of the rule which I before prescribed†; namely, that as soon as the child enters the world, you ought to keep its abdomen as close as possible to the genitals of the mother; till you find, by a little examination, whether the cord is or is not of the ordinary length.

Risk Incurred by Extreme Length.—If the umbilical cord be much longer than ordinary, there is always a risk, lest, in the form of a loop, it should lie forth in the vagina before birth;—an accident which is prevented by its being coiled round the neck or limbs of the child. If the cord lie forth in this manner, the danger to the fœtus (as already explained ‡) becomes very considerable; for,—the vessels becoming compressed when the head descends among the bones of the pelvis, and the circulation being in this manner arrested, at a time when respiration cannot proceed,—the child dies in the uterus, suffocated. To prevent this, it was formerly recommended § that a piece of sponge should be procured; and that this, together with the cord, should be pressed into the uterus; provided this can be accomplished without violence, or risk of laceration. To prevent the descent of the cord a second time, the sponge should be left in the uterus;—to be afterwards expelled by the pains, in conjunction with the placenta.

Blood-Vessels of the Cord.—The blood-vessels of which the umbilical cord is in part composed, are, in the human ovum, three;—one large umbilical vein (when fully distended, nearly as big as the

* The Obstetric Class at Guy's Hospital.

† See Page 108. ‡ See Page 395. § See Page 396.

little finger); and two smaller arteries;—the umbilicals; of which I formerly had occasion to speak*. Those vessels, in general, do not take a direct, but a more or less serpentine course; and, in some instances, they are very much contorted. In the cord of the mare, as I am informed, the veins, like the arteries, are two in number. In the funis of the calf, besides the blood-vessels, there is another canal called the "urachus"†; which leads from the bladder along the cord into a peculiar membranous receptacle, the "allantois"‡; of which I shall hereafter speak§; and which seems to contain much of the urine of the fœtal animal. In the funis of the puppy, we find a single artery and vein arising from the mesentery, inosculating with the vessels there, passing along the umbilical cord, and ultimately breaking up into a large number of capacious capillaries; which ramify, with great minuteness, over a very delicate membrane, called the "tunica erythroides"‖.

Absence of Nerves.—No nerves have been detected in the umbilical cord; although they have been sought for with great diligence; and I can state, from my own observations, that this part seems to be wholly destitute of sensibility,—with respect both to the mother and to the fœtus. No large lymphatic trunks have been found there. There is reason to believe that lymphatics are altogether wanting in the placenta; and, therefore, we should not expect to find them in the funis.

Its Structure Simple.—It seems, then, that the umbilical cord is, in its composition, exceedingly simple;—made up, apparently, of the vessels; a cellular web (filled with a sort of gelatinous material, and binding these vessels together); and a membranous sheath, or prolongation of the chorion (hereafter to be spoken of¶); which sheath gives a covering to the cord from one extremity to the other. You may observe the thinness, the smoothness, and the firmness of this membane, when you are bringing away the placenta; for when you lay hold of the funis, this membrane is lying in your hand.

Knots on the Cord.—We sometimes meet with knots upon the umbilical cord; and, if I may confide in reports received, sometimes two or three knots may be found upon the cord at once. Mr. Rogers, an American, and a student at these Hospitals**, informed me that, at New York, a case had occurred, where three knots were on the funis; and yet, notwithstanding those knots, injections could be thrown from one end of the cord to the other, without difficulty. I may refer you to Dr. Hunter, for a very plausible explanation of the formation of these knots, when single; for he has suggested, that the umbilical cord, at birth, may perhaps form a coil round the margin of the os uteri within; and that the fœtus, in passing the orifice of the uterus, may, at the same time, pass through the loop;

* See Page 967. † From *ουρον, urine*; and *εχω', to contain.*

‡ From *αλλας, a hog's pudding*; and *ειδος, likeness*; because, in some animals, it is of a similar shape. § See Page 984.

‖ From *ερυθρος, red*; and *ειδος, likeness.*

¶ See Page 981. ** Guy's and St. Thomas's.

carrying the umbilical extremity of the cord along with it;—so as to form the knot at the very moment when the body passes into the world. This explanation enables us to understand, well enough, how a single knot may be formed; but then how is it that two or three knots are produced? Is it that a knot may be found on the cord in the earlier months; though the fœtus has never left the cavity of the uterus? Really the solution of this knot may remind one of that of Gordius *; or of the knot, scarcely less notorious, knit by the hand of Obadiah †; and fated to bring to light that comprehensive code of imprecations, the contents of which his liberal master so generously showered down upon every part of his person.

Its Origin and Insertion.—The origin of the cord is the navel. Its termination is the placenta; where its insertion is commonly central, though it sometimes unites with the placenta at the margin, or intermediately. This I the rather wish you to notice, because, when the insertion of the cord is marginal, you might be led to imagine that one-half of the placenta had been torn away; and that the other half still remained in the uterine cavity. An eccentric insertion of the cord at the abdominal extremity is more rare; and yet, now and then, even this variety is observed;—the cord springing from the one or other side of the abdomen. The point is curious; but, in a practical view, it seems to be of small obstetric import.

SECTION 4.—THE MEMBRANES.

In the same way as the chick is enclosed in the shell, the human fœtus is shut up in a bag, or cyst;—this cyst containing the water in which the child floats; for, in our origin, we are all aquatic ‡. In general, the number of the cysts corresponds with the number of fœtuses; though this is not invariable; for when there are two fœtuses, you may have a single cyst only;—this cyst being common to both. In the opinion of some observers, indeed, this community of receptacle is by no means unfrequent. There is an advantage to the fœtus, however, in having a receptacle (or apartment) of its own; because it then becomes more secure against accidents. In twin-gestation, in the earlier months, it sometimes happens that the membrane, being tender, gives way. Now, if the fœtuses are contained in separate bags, and there is a yielding of the membrane of one bag only, the other fœtus (included in another cyst),—sustaining no injury,—may still be carried on to the full period of nine months. A pupil of my own, who grew up to be one of the finest young gentlemen of the class §, had, during the course of his uterine

* Gordius, a Phrygian husbandman, who was made king by the oracle of Apollo; in memory of which event, he hung his tresses in the Temple of Jupiter. One rope of them he tied so cunningly, that it was foretold, that whosoever loosed it should be king of all Asia. Alexander the Great, without staying to untie it, cut it with his sword. Hence "nodus gordianus" ("a gordian knot") came to be an appellation for any difficult matter.—*Ainsworth.*

† See "Tristram Shandy".

‡ See Page 968.

§ Of Midwifery at Guy's Hospital.

life, a very narrow escape of this kind. He once told me that, while in utero, he had a twin-companion. The cyst which at that time formed his own nest, remained uninjured, and he seems to have sustained no inconvenience; but, from some cause or other, that of his companion gave way; so that, in this helpless condition, the poor little fellow was crushed like a butterfly;—perishing as tragically as the victims of Siloam *; or, if you prefer the more familiar comparison, like those who were lost in the ruins of the late Brunswick Theatre †!

In the earlier months of pregnancy, the involucra are composed of (at least) four membranes:—1. The "decidua uteri". 2. The "decidua reflexa". 3. The "chorion". 4. The "amnion". But when the ovum is thoroughly developed, in the latter months of gestation, the membranes are three only:—1. The "decidua uteri". 2. The "chorion". 3. The "amnion". The "decidua reflexa" does not then appear. Of these membranes, the outermost is the "decidua uteri";—whence its name; for it is in contact with the womb, and receives vessels from it. The membrane which lies internally, is the amnion;—an organ which secretes the fluid already mentioned ‡;—the first element of the fœtus; and between these two membranes the chorion is interposed. In the latter months of pregnancy, the "decidua uteri" is somewhat thick; but it is so more especially in the earlier and middle months. It is disposed, moreover, to exfoliate;—separating into leaves or lamellæ. The placenta of the human ovum is contained between two leaves of the tunica decidua; both of the placentar surfaces being covered by the leaves of the decidua. This being the case, it follows, as a matter of course, that the chorion and amnion must be spread out upon the inner surface of the placenta; for they both lie within the decidua.

Illustrations.—1. A preparation of a small portion of the placenta, with the three membranes in connexion;—the decidua above, the amnion below, and the chorion ranging intermediately. In this preparation there is a portion of the placenta, and of the adherent uterus, suspended by the decidua. The chorion and amnion lie, as before asserted, upon the inner surface of the decidua, from which they are partially detached; and the decidua itself is distinctly separated into two membranous laminæ, between which the substance of the placenta lodges. 2. A preparation of the umbilical cord, entering the abdomen of the fœtus laterally. 3. A preparation showing much contortion of the vessels of the umbilical cord;—not of uncommon occurrence. 4. A preparation of one of those knots of the umbilical cord; on which I before took occasion to comment §. 5. A rare specimen of the cord with two vessels only, instead of three (the usual number). The vein and artery are both single. The anato-

* "Eighteen, upon whom the tower in Siloam fell, and slew them".—*The Gospel according to St. Luke*; *Chapter* 13; *Verse* 4.

† A Theatre in Wellclose Square, London; the roof of which gave way, in March, 1828; and killed eleven persons by its fall.

‡ At Page 956; See, also, Page 993. § See Pages 978 and 979.

mist has practised no deception here. The artery is of extraordinary capacity.

Decidua.—It was observed already*, that the outer membrane of the ovum is the "tunica decidua";—called, also, "caduca lacerabilis"†, and the "spongy chorion". It adheres externally to the uterus; and internally to the chorion. It is remarkable for its high degree of vascularity; and is further deserving of notice, as it derives all its blood-vessels,—so far as has been ascertained by injections,—from the womb. This membrane is, it seems, generated by the uterus itself; and is not produced from the same rudiments as the fœtus, the chorion, and the amnion. In extra-uterine pregnancy, when the rest of the ovum is formed (externally to the uterus) in the ovary or fallopian tube, sometimes, though by no means universally, the "tunica decidua" becomes organized, more or less perfectly, in the uterine cavity; where, in these cases, the rudiments have never been admitted. Hence we may understand, clearly enough, why it is that the deciduous vessels are derived, not from the fœtus, but from the uterus;—they being supplied from that structure by which it is generally generated‡. If we observe the decidua in the latter months of pregnancy, we find that it is somewhat thick and tender, and of reticulated appearance;—presenting upon its surface a sort of net-work, visible enough; more especially if the membrane is immersed in water. In the middle months of pregnancy, the thickness is still more remarkable; and during the first two or three months, the membrane is so thick, that it loses entirely the membranous appearance; and resembles a mass of flesh. I have already observed*, that it is between the leaves of the decidua that the placenta is interposed; and it is apparently the blending of these two structures, which gives rise to that fleshy and massive appearance, to which I have just adverted.

Use of the Decidua.—The principal uses of the tunica decidua, are (apparently) two:—1. It forms a connexion between the other parts of the ovum and the uterus. 2. It furnishes a bed in which the structure of the placenta may be elaborated;—in a way to be hereafter explained §.

Chorion.—Interposed between the tunica decidua and the amnion, the true chorion is situated. This membrane has very few and small vessels,—particularly in the *human* ovum; and these are derived, not from the uterus, but from the fœtus; for the tunica decidua is a part or membrane of the *mother*, but the chorion is a part or membrane of the *fœtus*;—as much so, indeed, as its arms, its legs, or its head; and, perhaps, of more importance to its welfare in the fœtal state. Hence the same rudiments which form the

* See Page 980.

† From *cado*, "to fall"; and *lacero*, "to tear".

‡ According to Meckel, the decidua is formed by a process analogous to inflammation; and he gives the same reason for the growth of the uterus, and the separation of the ovum from the ovary. In the case of twins, there is but one decidua for both; but the other membranes are separate.—*Dr. Fletcher.*

§ See Page 985.

fœtus, form also the chorion; and hence the fœtal origin of the vessels of this membrane becomes sufficiently intelligible. In its sensible properties, the chorion is smooth, thin, and semi-transparent, except during the earlier weeks of gestation; when it is covered over, more or less completely, with a fine shag; which gives it sometimes the appearance of plush (if I may be allowed the comparison). This shag is found to be nothing more than capillaries of the umbilical veins and arteries; so that, in truth, it constitutes the vascular part of the placenta. This fact is proved by injections; for the injection of the umbilical cord fills this superficial fringe. It is further proved and illustrated by the chorion of the sheep; on which we find those tassels of vessels formerly described *; and which seem to be nothing more than the vascular shag collected into small knots, instead of being regularly dispersed over the whole surface of the membrane.

Functions of the Chorion.—I know not whether we are perfectly acquainted with the functions of the chorion; but the most probable of them seems to be that of generating the capillaries just mentioned; and therefore assisting, most importantly, in the formation of the vascular part of the placenta.

Amnion.—The ovum, I have observed already †, is composed of three membranes;—the amnion (or third membrane) lying internally; and being spread out over the surface of the chorion and of the placenta. This membrane is remarkable, throughout pregnancy, for its thinness and density; and for a transparency like that of glass. That it secretes the liquor amnii, there seems to be little doubt; and it is for this purpose, probably, that it is mainly intended; though, in conjunction with the other two membranes,—the chorion, more especially,—it assists in giving to the ovum that strength, which is so essential to the security of the child. The human amnion, so far as I know, has never been visibly injected; though the attempt has been many times made;—the failure arising, probably, from the extreme minuteness of the vessels. But in the lower animals,—the cat and dog, for example,—these membranes may be injected with facility;—the injection being thrown in by the umbilical cord. The amnion, like the chorion, is an integral part of the fœtus;—being formed from the same rudiments; and we find accordingly, from our injections in brutes, that it is from the fœtus that the blood-vessels of the amnion are derived. By injecting the vessels of the uterus, therefore, you cannot inject the amnion, even in brute-animals. In order to fill its vascular system, you must throw the injection into the cord. The amnion is very firm; and may contribute a good deal to the strength of the ovum.

Illustrations.—Preparations of all these membranes,—the decidua, the chorion, and the amnion,—are now in my possession. 1. One is the uterus, with the three membranes annexed;—the decidua, the chorion, and the amnion. The amnion and chorion contain no injec-

* See Page 974. † See Page 980.

tion; but the decidua and uterus are full;—both being supplied with vessels from the same source. 2. The flocky appearance of the decidua, in the earlier months, is demonstrated in the next preparation; and its disposition to separate into layers, and the delicate reticulations before-mentioned *, may be noted without difficulty. 3. In the next preparation, which is one of the human ovum, the tunica decidua has been removed; so that the membrane on which the eye falls is the chorion;—smooth, thin, and in a great measure transparent,—as before described †. 4. The chorion of the sheep, with the vessels separated into knots or tassels ‡. The latter are injected; and the injection was thrown into them by the umbilical cord. 5. The remaining preparations show the fringe covering the chorion during the earlier weeks;—in some of them universally, in others topically. The resemblance to the vascular tassels on the sheep's chorion ‡ is very obvious.

Decidua Reflexa.—In the earlier months of pregnancy, besides the decidua, chorion, and amnion, there is yet a fourth membrane; to which I adverted at the outset §;—I mean, the "tunica decidua reflexa". If, taking an ovum about two months old, you wash it, and lay it in water, you may then see distinctly a membrane,—thick, flocky, and lacerable;—the "decidua uteri"; and if you dissect this away, you next exhibit the "tunica decidua reflexa". Removing the reflexa, you find the chorion; and beneath that the amnion. It is remarkable, that if the ovum be examined about the third or fourth month, we find that the reflexa has either wholly, or in a great measure, vanished. The reason of this appears to be, that about this time the reflexa itself ceases to grow, though the growth of the ovum continues; and thus this membrane becomes more and more stretched, or attenuated; till, at length, it vanishes completely; or small vestiges of it alone remain.

It is said that the gelatinous material may go on accumulating within the cavity of the uterus, till the rudiments which have entered from the fallopian tube, become completely imbedded in it; so as to lie below the surface. These rudiments, however,—possessing the vital principle, and deriving nourishment from the surrounding parts,—grow; and, becoming bigger, they spread out that portion of the gelatinous material which was lying over their surface, so that another membrane begins to form in this manner;—the decidua uteri being doubled back upon itself; and this reflexion becomes more and more apparent, as the growth of the ovum proceeds. The use of the reflexa is unknown. It has been supposed to assist in fixing the ovum, when small, in the uterus; and hence (it is said) the cessation of its growth, and its ultimate disappearance, when the ovum has attained bulk sufficient to prevent its slipping from the uterus.

Tunica Erythroides—In the ovum of the puppy, we meet with a membrane called the "tunica erythroides";—very delicate and vas-

* See Page 981.
† See Page 982.
‡ See Page 974.
§ See Page 980.

cular, communicating with the mesentery by the artery and vein, already described*. What is the use of this membrane, however, I am unable to explain. In the ovum of the calf we meet with a large membranous bag,—the "allantois", as it is called,—holding many pints of water (two or three gallons, when distended); and communicating with the bladder by means of the urachus, before mentioned*.

Vesicula Umbilicalis.—In the human ovum, we sometimes find a little bag, about as big as a pea; and which always lies near the margin of the placenta. This bag contains within it a little coagulated mass; the use of which is unknown. This small cyst is denominated the "vesicula umbilicalis". What may be the use of this vesicle, has not been ascertained. It seems to be more analogous to the tunica erythroides of the puppy, than to the allantois of the calf, to which it has been likened; and the rather, because a filament, divisible into two more delicate, may be traced down from the vesicle to the fœtal mesentery;—the filaments, apparently, representing the omphalo†-mesenteric arteries and vein. From Professor Mayer, of Bohn, I first learned that, with proper care, this membrane may be detected, not only in the earlier, but in the latter months. It seems not to be much larger in the end of pregnancy, than in the commencement.

[The uterus, on impregnation, acquires a new membrane,—the decidua; which is secreted by its inner surface; and covers the whole of the latter. It is formed (according to Meckel) by a deposition of coagulable lymph; in consequence of a species of inflammation, which takes place at the time of copulation. It is not till about three weeks after impregnation, that the ovum reaches the uterus. Finding the entrance of the fallopian tube closed by the decidua, it insinuates itself between the latter and the inner surface of the uterus, till it arrives (generally) at the fundus; where the placenta becomes attached; and, as the fœtus grows, it pushes the decidua before it, and thus forms the decidua reflexa. The chorion and amnion run along the cord, and invest it. They are continuous membranes;—being reflected at the umbilicus; so that, on cutting the cord, you divide the amnion first. At birth, four membranes are ruptured:—1. Decidua. 2. Decidua Reflexa. 3. Chorion. 4. Amnion. The allantois, *outside* the body of the calf, afterwards becomes the bladder, *inside* the body; in the same way as, in the egg of a fowl, the membrane of the yolk is dragged into the body of the chick, to become the intestinal canal. The allantois, in the lower animals, extends into the horns of the uterus.‡]

SECTION 5.—FORMATION OF THE PLACENTA.

Having said thus much respecting the membranes of the ovum, I may now proceed to make a few remarks on the way in which the placenta is supposed to be produced;—a subject on which I

* See Page 978.

† From *ομφαλος, the navel.*

‡ Dr. Fletcher's unpublished Examinations.

forbore to enlarge, when treating expressly of this organ*; as, in that stage of our information, the formation of the placenta could not have been readily understood;—a preliminary knowledge of the membranes being required. The placenta appears to be constituted of two principal parts;—a large assemblage of *vessels*, and a large assemblage of *cells*. The manner in which those two parts of the placenta are supposed to be produced, will be best understood if you consult a plate delineating the parts in question. Under the stimulus of impregnation, the uterus is supposed to secrete a quantity of gelatinous material, by which the inner membrane of the uterus becomes completely invested; and this afterwards becomes the tunica decidua. As generation proceeds, the inner membrane of the uterus seems to throw off, into the gelatinous decidua, a considerable number of vessels. Indeed, this admits of proof; for if you take an ovum with the uterus adherent, on laying it open, and detaching the membrane, you may see the vessels which shoot from the one surface to the other. Again: It is further imagined, that these small vessels, shooting into the ovum, elaborate there the cellular part of the placenta; and this opinion, if true (and its truth is highly probable), may explain to us why it is that the cells are in free communication with the uterus during gestation, and why the blood of the mother flows through those cells so abundantly; for it is from her substance that they are formed; and the cellular portion of the placenta is not a part of the fœtus, but of its parent. In the same manner as the inner membrane of the womb throws its vessels into the decidua, a large number of vessels are also thrown off into the same membrane by the chorion; and by this membrane (apparently) it is, that the vascular part of the placenta is formed. All this appears to be going forward in the gelatinous material secreted by the uterus; in the very substance of which material, these cells and vessels become formed; and this, in the most satisfactory manner, enables us to explain why it is that the placenta is lodged between those layers, or lamellæ, of the decidua, before described†; for it is of this gelatinous material,—which receives the cells and vessels into its substance,—that the decidua ultimately consists.

Thus, then, it appears that the human placenta, like that of the ruminating animal, consists of two organs combined:—1. The *cellular*; formed by the menstruating membrane, like the *uterine excrescences* of the ruminating animal‡; and being a portion of the mother. 2. The *vascular*; formed by the chorion, like the *tassels* of the ruminating animal‡; and being a portion of the fœtus;—indeed, nothing more than the ramifications of the umbilical arteries and veins. Both of these structures become formed in the substance (of gelatinous consistency) secreted by the uterus; and of which, afterwards, the decidua consists.

Structure of the Placenta.—[If an incision be made through the parietes of the gravid uterus, where the placenta does not adhere, the membrana decidua will be observed lining the internal surface;

* See Page 973. † See Pages 980 and 981. ‡ See Page 974.

and numerous minute blood-vessels and fibres, will be seen passing from the inner membrane of the uterus to the decidua. At the circumference of the placenta, the membrana decidua separates from the chorion and amnion, in order to pass between the uterus and placenta; and thus forms a complete membranous septum, which is interposed between these organs. The chorion and amnion cover the fœtal surface of the placenta; and between these two membranes and the decidua, lie the ramifications of the umbilical vein and arteries;—subdivided to an almost indefinite extent; and connected together by white slender filaments, running in various directions. The placenta thus consists solely of a congeries of the umbilical vessels; covered, on the fœtal surface, by the chorion and amnion, and on the uterine surface by the deciduous membrane; and enclosed between these membranes. It adheres to the fundus, or some other part of the uterus, by innumerable flocculent fibres and vessels.

Structure of the Decidua.—On carefully detaching the placenta from the uterus, the deciduous membrane is found to adhere so closely to the umbilical vessels which it covers, that it is impossible to remove it without tearing these vessels. With the fibres uniting the placental decidua to the uterus, are mingled numerous small blood-vessels, proceeding from the inner membrane of the uterus to the decidua; and these vessels, though more numerous at the connexion of the placenta with the uterus, exist universally throughout the whole extent of the membrane. There is no vestige of the passage of any great blood-vessel (either artery or vein) through the intervening decidua, from the uterus to the placenta; nor has the appearance of the orifice of a vessel been discovered,—even with the help of a magnifier,—on the uterine surface of the placenta. This surface of the placenta, deprived of the deciduous membrane, presents a mass of floating vessels;—its texture being extremely soft and easily torn; and no cells are discernible in its structure, on the minutest examination.

Internal Surface of the Uterus.—At that part of the surface of the uterus to which the placenta has been adherent, there are observable a great number of openings, leading obliquely through the inner membrane of the uterus, and large enough to admit the point of the little finger. Their edges are perfectly smooth; and present not the slightest appearance of having been lacerated by the removal of the placenta. In some places, they have a semilunar or elliptical form; and in others, they resemble a double valvular aperture. Over these openings in the inner membrane of the uterus, the placenta, covered by the deciduous membrane, is directly applied; and closes them in such a manner, that the maternal blood, as it flows in the uterine sinuses, cannot possibly escape either into the cavity of the uterus or into the substance of the placenta. When air is forcibly thrown either into the spermatic arteries or veins, the whole inner membrane of the uterus is raised by it; but none of the air passes across the deciduous membrane into the placenta; nor does it escape from the semilunar openings in the inner membrane of the uterus, until the attachment of the deciduous membrane to the

uterus is destroyed. There are no openings in the deciduous membrane, corresponding with these valvular apertures (now described), in the internal membrane of the uterus.

Appearance of the Uterine Surface of the Placenta.—If we examine a placenta, which has recently been separated from the uterus in natural labour, without any artificial force having been employed, its surface will be found uniformly smooth, and covered with the deciduous membrane; which could not be the case did any large vessels connect it with the uterus. The placenta, in a great majority of cases, is detached from the uterus after labour, with the least imaginable force; which would be impossible, if a union by large blood-vessels, possessing the ordinary strength of arteries and veins, actually existed. Besides, a vascular connexion of such a kind would be likely to give rise, in every case, to a dangerous hæmorrhage subsequent to parturition;—a circumstance not in accordance with daily experience.

Appearances after Injecting the Spermatic and Hypogastric Arteries.—Noortwych, Rœderer, Haller, Dr. W. and Mr. J. Hunter, and Dr. Donald Monro, do not appear to have examined the gravid uterus and its contents in the natural state of the parts; but after fluids had been forcibly injected into the hypogastric and spermatic arteries. The laceration of the deciduous membrane covering the orifices of the uterine sinuses, followed this artificial process; as well as the formation of deposits of injection in the vascular structure of the placenta;—giving rise to the deceptive appearance of cells. That this took place in the examinations made by Rœderer* and Monro†, does not admit of dispute; and the following facts render it more than probable that the Hunters were also misled by the effects of artificial distention of the placenta, from the extravasation of the fluids forced into the uterine vessels.

Examination of Hunter's Preparations.—In the Museum of the Royal College of Surgeons in London, there is a preparation of the uterus with the placenta adhering to the inner surface; which is supposed to have been put up by Mr. Hunter himself, nearly fifty years ago. The vessels, both of the uterus and placenta, have been filled with injection; and the parietes of the uterus, placenta, and membranes, have all been divided (by a vertical section) into two nearly equal portions. By permission of the Board of Curators, I‡ have been enabled to examine one of these portions, and to have a drawing of it made. In the interstices of the muscular fibres, I observed the veins of the uterus; which ran, in great numbers, towards the part where the placenta adhered. They were of an oval form; and their long axes were in the long axis of the uterus. The muscular fibres ran longitudinally from the fundus to the os uteri. The deciduous membrane was everywhere covered with minute, tortuous, blood-vessels; proceeding from the inner surface of the uterus, and filled

* "Icones Uteri Humani, Observationibus Illustratæ". J. G. Rœderer; 1759.

† "Essays and Observations, Physical and Literary, read before a Society in Edinburgh"; 1754; Volume 1.

‡ Dr. Robert Lee.

with injection. There was no appearance of vessels, of any magnitude, passing between the inner surface of the uterus and the placenta; but there were observed, in this situation, flattened portions of injection; having, in many parts, the form of thin layers; which portions had obviously escaped from the orifices of the uterine veins. Elsewhere the injection had lacerated the deciduous membrane, and formed deposits in the vascular part of the placenta. This important preparation,—which was examined (at the College of Surgeons) by Mr. Clift, Mr. Owen, Mr. Alexander Shaw, and myself; and which, for half-a-century before, had been considered to prove the existence of cells in the placenta, and a communication by great arteries and veins between these and the uterus,—was found, when taken down and carefully inspected, to demonstrate that no such connexion exists.

Mr. Owen's Investigations.—Mr. Owen, soon after this investigation, made further researches on the relations of the uterus and placenta; the results of which were communicated to me‡ in the following letter, which has also been published in the "Philosophical Transactions":—"During the time you were examining the Hunterian preparation of the uterus and placenta, in the Museum of the Royal College of Surgeons, your observations on the obscurity produced by the extravasated injection, led me to think of some less objectionable mode of demonstrating the vascular communication between the uterus and placenta, if it existed; or of proving, more satisfactorily than the appearances you pointed out in that preparation seemed to do, that there was no such communication.

"You have since afforded me the means, through the kindness of Mr. Alexander Shaw, of examining (in the manner I wished) the anatomical relations between the placenta and the uterus. This has been done by dissecting the parts under water, before disturbing them (either by forcibly throwing foreign matter into the vessels, or by separating the placenta from the uterus), in order to observe the appearances presented by the opposed surfaces;—a proceeding which, if done in the air, is liable to the objection of the possibility of having torn the vessels which were passing across; and the coats of which are acknowledged, by those who maintain the existence of such vessels, to be extremely delicate.

"The mode, therefore, which was adopted to avoid these objections, was to fix under water (in an apparatus used for dissecting mollusca, &c.) a section of the uterus and placenta; and, commencing the dissection from the outside, to remove (successively and with care) the layers of fibres, and trace the veins as they pass deeper and deeper in the substance of the uterus, in their course to the deciduous membrane; in which situation, as the thinnest pellicle of membrane is rendered distinct by being supported in the ambient fluid, I naturally hoped (in this way) to see the coats of the veins continued into the deciduous membrane and placenta; and to be able to preserve the appearance in a preparation, if it actually existed in nature. But, in every instance, the vein, having reached the inner surface of the uterus, terminated in an open mouth on that aspect;—the peripheral

portion of the coat of the vein, or that next the uterus, ending in a well-defined and smooth semicircular margin; and the central part adhering to, and being apparently continuous with, the decidua.

"In the course of this dissection, I observed that where the veins of different planes communicated with each other, the central portion of the parietes of the superficial vein invariably projected, in a semilunar form, into the deeper-seated one; and where (as was frequently the case, and especially at the point of termination on the inner surface) two or even three veins communicated with a deeper-seated one at the same point, these semilunar edges decussated each other; so as to allow only a very small part of the deep-seated vein to be seen. I need not observe to you, how admirably this structure is adapted to ensure the effect of arresting the current of blood through these passages; upon the contraction of the fibres with which they are everywhere surrounded.

"On another portion of the same uterus and placenta (which were removed from a woman who died at about the fifth month of utero-gestation), I commenced the examination, under water, by turning the placenta and deciduous membrane from the inner surface of the uterus. In this way, the small tortuous arteries that enter the deciduous membrane, were readily distinguishable, though not filled with injected matter; and, as it was an object to avoid unnecessary force in the process of separation, they were cut through, though they are easily torn from the decidua. But with respect to the veins, they invariably presented the same appearances as were noticed in the first dissection;—terminating in open semicircular orifices, closed by the apposition of the deciduous membrane and placenta. This membrane, however, is certainly thinner opposite these orifices than elsewhere; and, in some places, appeared to be wanting; or, adhering to the vein, was torn up with it. But, in these cases, the minute vessels of the placenta only appeared; and never any indication of a vascular trunk, or cell, commensurate with the size of the vein, the terminal aperture of which had been lifted up from the part.

"The preparation which accompanies this letter, shows the termination of a vein on the inner surface of the uterus; and an artery of the decidua cut through; together with the corresponding appearances on the surface of the placenta. It also exhibits the valvular mode in which the veins communicate together, in the substance of the uterus."

Hunter's Preparations at Glasgow.—In the autumn of 1832, the preparations of the gravid uterus in the Hunterian Museum at Glasgow, were examined by Dr. Nimmo, at my desire*; and in none of these preparations did it appear certain, that any great blood-vessels passed from the uterus into cells in the placenta; but in many, the deposits of injection causing the appearance of cells, were observed evidently to be the result of extravasation. No. 178 "is a small section of the uterus, with the veins injected green, and broken off where they were entering the placenta." The surface of the injected matter is smooth; the edges of the openings are defined,

* Dr. Robert Lee's.

and quite unlike ruptured vessels. Their form is, in general, elliptical;—seeming as if they were holes cut in the side of a convolution.—No. 125. "A portion of the uterus and placenta; the latter injected from the uterine vessels." There is an opening, which seems to be natural, corresponding to one of those in the uterus; but the majority of those whereby the injection has passed into the placenta, seem to be mere lacerations.—No. 101. "A section of the uterus, with the veins injected black; and the injected matter protruding, by irregular plugs, into the cavity of the uterus." The holes are semilunar and elliptical, with defined edges; and nothing resembling the continuation of vascular tubes is to be seen.—"R. R. 121", is described, in the printed catalogue, as follows:—"A small portion of placenta and uterus, where the cells of the placenta have been injected from the veins of the uterus. The veins are seen very large, entering the substance of the placenta." Dr. Nimmo makes the following observations on this specimen:—"This preparation seems to be most in point. I would describe it differently. The cellular substance of the placenta, has certainly been filled from the uterine vessels. These, however, instead of passing directly into the placenta, are distinctly seen applying their open mouths to the membrane of the placenta; where the injection, in some instances, stops. The membrane is thinner here than where no vessels are applied; consisting (so to describe it) of one layer, while a second layer covers all other parts. Where the injection has passed into the substance of the placenta, it has evidently been forced to the side between the layers; and has found some weak point, whereby it has entered into, and been diffused throughout, the cellular texture of the placenta."

In order that no doubt might exist respecting the accuracy of the preceding description, I* requested Mr. Broughton (still later in the autumn) carefully to re-examine the same preparations; and, after having done so, he authorized me to state to the Royal Society, that Dr. Nimmo's account was perfectly correct. Dr. Burns has, however, subsequently published an account of these preparations†; with the view of showing, that the description which had been transmitted to me was inaccurate; and that there does exist a communication between the uterus and the cells in the placenta by large blood-vessels, as Dr. Hunter supposed. Though Dr. B. was fully aware that the preparation of John Hunter (in the Museum of the Royal College of Surgeons in London) was found, when examined, to prove the very reverse of what it had previously been supposed to do; yet he did not consider it requisite, before publishing his conflicting statement, to subject the preparations of William Hunter (in the Museum at Glasgow) to the same test; which he might readily have done, had he been desirous of discovering the truth. But even Dr. B.'s account does not warrant the conclusions he has drawn;—nay, it strongly confirms the views I have stated. "No. 21", he says, "is a very important preparation.

* Dr. Robert Lee.

† "Medical Gazette", No. 242; Volume 10; Pages 503 and 504; July 21, 1832.

The uterus, at the sixth month, is injected and cut open; but the placenta is everywhere left adhering. *No vessels, therefore, can be seen passing from the uterus into it.* But that the red injection has entered freely and filled the cells, is proved by the colour being finely visible on the fœtal surface of the placenta".—" No. 124 is described as a small portion of the placenta and uterus; where the cells of the placenta have been filled from the vessels of the uterus. The fœtal portion is not injected. The placenta is detached from the uterus, and hangs down. The cells are filled with red, and among them we see cut portions of green. *No injected vessel, indeed, is seen passing into the uterine surface of the placenta*; but there are several *bristles* put into the unfilled orifices on that surface". In both these preparations, Dr. Burns admits that no vessels are seen passing from the uterus to the placenta; and he does not attempt to explain why the orifices indicated by the bristles, were not filled with injection. " No. 125 is another section of the same uterus. There is an orifice, of considerable size, on the inner surface of the uterus; and another, corresponding to it, on the uterine surface of the placenta; with *a bristle* passing into the one from the other". It is not said that any vessel was seen passing in this preparation; there was only a bristle inserted; and in all the other preparations it is manifest, from the description, that the appearance of cells was produced by the injection, and that they were not natural cavities. Soon after the publication of Dr. Burns's statement, I* solicited permission, through him, to have these preparations removed from the spirits and examined; to which he replied, that it was " absolutely impossible".

Fallacies Resulting from Relying on Injections.—The experiments of the Hunters, of Dubois, Chaussier, Beclard, Williams, and many others, prove that if size, mercury, oil-of-turpentine, &c., be injected into the spermatic or hypogastric arteries of the gravid uterus, they will pass not only into the substance of the placenta, but sometimes into the blood-vessels and organs of the fœtus itself. To those observers who have adopted the views of the Hunters and later anatomists, and who neglect or refuse to examine the connexions of the uterus and placenta, before they have been disturbed by the forcible injection of extraneous matters into the uterine blood-vessels, such experiments will probably be considered to demonstrate the existence of a cellular structure in the placenta; and of a free communication, by great arteries and veins, between these cells and the uterus. That no such communication, however, exists in nature, and that the appearances produced by injection are completely fallacious, may readily be demonstrated by an examination of the parts (in the natural state) under water. The numerous small tortuous blood-vessels which proceed from the uterus to the placenta, I* consider to be the nutrient vessels of the placenta. They never terminate in cells; and the uterine sinuses do not penetrate the decidua; but open into the cavity of the uterus, by smooth and large valvular-like orifices in its lining membranes.

* Dr. Robert Lee.

I have examined other four gravid uteri, besides the six already referred to*, in the course of the last eight months; and the appearances observed in them, fully confirmed the correctness of the preceding statements. Charles Millard, Esq., Demonstrator of Anatomy in the school of Webb street, has favoured me with the following account of the dissection of a gravid uterus; which was also examined by Sir Astley Cooper, in the month of September last.

Mr. Millard's Dissections.—"As concurrent testimony on any, even the clearest subjects, is sometimes of use, I beg to forward to you the following account of the dissection of a healthy uterus, at about the seventh month of pregnancy; which I had an opportunity of examining, through the kindness of Dr. Holroyd, of Harley-street; who obtained the specimen from the body of a woman who died of cholera. The parts were examined without any previous injection or other preparation;—in order that everything might be seen in its natural state. On making an incision through the anterior wall of the uterus, the attention was immediately arrested by the large size of the uterine veins; especially of those in the neighbourhood of the placenta. The right side of the anterior wall of the uterus, was then carefully turned back; and with such ease, as to convince me that no large vessels were torn through. The tunica decidua was now distinctly seen, passing behind the placenta; and it was also observed to pass over the orifice of the fallopian tube. The other side of the uterus, was then carefully examined under water; principally with a view to determine the direction and termination of the uterine veins, and the connexion that exists between the uterus and placenta. This examination completely coincides with your† description. The uterine veins passed in an oblique direction, as regards the placenta, and not immediately towards it; and in no instance could they be traced into its structure; for whether they were followed from the external to the internal surface of the uterus, or in the opposite direction, they were found to present a number of large valvular openings; some of an elliptical and some of a semicircular form; situated in the sides of the veins; and having no corresponding openings on the outer surface of the placenta, but closed by the deciduous membrane. All these openings had distinct, well-defined edges; formed, apparently, by a duplicate of the lining membrane of the uterus; and quite unlike ruptured vessels. Indeed, as I have before stated, none of these veins could be followed into the placenta, even by the most careful examination. But both arteries and veins, not larger than a bristle, were readily traced from the surface of the uterus, to the tunica decidua covering the uterine surface of the placenta; where they ramified very minutely. Some of these were distended by inflating the large uterine veins; but no air could be made to pass from these vessels into the substance of the placenta; although the inner membrane was distinctly raised by it. The uterus was farther connected to the placenta by a quantity of pulpy cellular membrane; which easily broke down under the finger."

Conclusions.—The facts which have now been stated, warrant (I

* In Dr. Robert Lee's "Researches".

† Dr. Robert Lee's.

think) the conclusion, that the human placenta does not consist of two parts, maternal and fœtal; that no cells exist in its substance; and that there is no communication between the uterus and placenta by large arteries and veins. The whole of the blood sent to the uterus by the spermatic and hypogastric arteries,—except the small portion supplied to its parietes and to the membrana decidua by the inner membrane of the uterus,—flows into the uterine veins or sinuses; and, after circulating through them, is returned into the general circulation of the mother, by the spermatic and hypogastric veins; without entering the substance of the placenta. The deciduous membrane being interposed between the umbilical vessels and the uterus, whatever changes take place in the fœtal blood, must result from the indirect exposure of this fluid, as it circulates through the placenta, to the maternal blood flowing in the great uterine sinuses.*]

SECTION 6.—THE LIQUOR AMNII.

The membranes are filled with a fluid varying much in its quantity; consisting, sometimes, of a few ounces; and sometimes of several gallons; but, on an average, measuring from half-a-pint to a pint; and this, which forms our first element, is called the "liquor amnii". When the liquor amnii is unusually sparing in its quantity, I know not that any inconvenience arises from that circumstance; but when there is too much of it, then you have that dropsy of the ovum, of which I formerly took occasion to treat†; and which is most effectually relieved by puncturing the membranes.

Use of the Liquor Amnii.—The office which the liquor amnii discharges, appears to be very important. In the first place, it affords the fœtus a yielding medium, in which it moves about with ease; for, if the liquor amnii had been wanting, we should then have been fettered in our earliest formation, by the fibres of the uterus. Again, facts prove that this liquid, somehow or other, defends us from the destructive pressure of the uterus; which, but for the action of the water, would crush us; for, in case of twins, the fœtus,—which lodges in an unbroken bag,—remains unhurt; though its companion, if the membranes burst, may be crushed by the pressure of the uterus; which, owing to the protection of the water, inflicts no injury on the other child ‡. Thirdly, in the progress of delivery, the water, in conjunction with the involucra, forms a sort of wedge; which, playing in the os uteri, lays it open; and, of course, expedites the delivery. You will observe, accordingly, that when there are pains, the bag is forced into the mouth of the womb;—pressing gently upon the margins, and acting expansively, like a dilator; whence the necessity of a rule formerly laid down §;—I mean, that we should leave the disruption of the membranes to nature; or, at all events, that we should take care that the mouth of the womb be fully opened,

* Dr. Robert Lee's "Researches on the most Important Diseases of Women". Pages 190 to 202.

† See Page 956. ‡ See Pages 979 and 980. § See Pages 101 and 102.

before we have recourse to any artificial means for laying open the bag.

I have said that the principal use of the liquor amnii, is the protection of the fœtus from the effect of the uterus; and this is best proved from the consequence of a premature discharge of the water. I have three fœtuses that have been crushed in this manner, like thousands before them; and it deserves especial remark, that, in one of these cases, the crushed fœtus was a twin; and that the other child, its fellow,—enclosed in a separate bag, but subjected to the pressure of the same uterus,—escaped in consequence of being protected by the water of the ovum. Conceive to yourselves an egg lodged in the centre of a bladder filled with water. While secured in this manner, external pressure would not injure it; but should the bladder burst, and the water flow out, the egg (being no longer protected) might be crushed by the same pressure which it before sustained without injury; and thus it is, perhaps, with the fœtus in the midst of the liquor amnii.

Does it Nourish the Fœtus?—It has been asserted, that the liquor amnii nourishes the fœtus; but to this opinion I cannot accede; and for the following reasons:—First, where children are born in a perfectly healthy state, the liquor amnii is sometimes found to be fetid. Secondly, the fœtus sometimes consists merely of the lower parts of the body (the legs, pelvis, and parts immediately contiguous);—all the rest of its structure being wanting; and yet these fœtuses are nourished. Now it is clear that such monsters cannot swallow and digest the liquor amnii; for they have no apparatus for digesting, nor any organ for swallowing. Again: it happens, now and then, that the liquor amnii is discharged a fortnight or three weeks before the birth of the child; and I believe cases have occurred, where the umbilical cord has hung a little way through the os uteri;—showing, clearly, that the bag was open, and empty of the liquor; and yet the fœtus has been plump, and well nourished at birth; which could not have been, had the nourishment of the child depended on the liquor amnii*. So that, not to push this point any further, on all these grounds,—as children may remain in utero for a fortnight or three weeks after the discharge of the liquor amnii, and be nourished very well; as healthy children may be born where the liquor amnii is fetid; and as you may have monsters without mouths or digestive organs, perfectly well nourished notwithstanding,—I think it cannot be said, that the liquor amnii nourishes the fœtus. Add to this that, if you evaporate a table-spoonful of the liquor amnii, you may find, indeed, that it contains a little solid matter, allied in its nature to serum; but the quantity is very small. Remember, too, that (from the place where it accumulates) the liquor amnii must be formed either by the amnion, the cord, or the fœtus (strictly so called);—its skin, its kidnies, or some other part. Now, whichever of these organs may produce the fluid, they are all parts of the fœtus; and it seems absurd to suppose that the fœtus can be nourished and grow, by means of a fluid which it secretes from its own vessels.

* See Page 970; and Note to Page 975.

CHAPTER VI.

PHYSIOLOGY OF THE HUMAN OVUM.

SECTION 1.—CIRCULATION OF THE BLOOD IN THE OVUM.

The circulation of the blood in the ovum is, in its nature, complicated. With a view to its more lucid consideration, it may be divided into two kinds;—the maternal, and the fœtal.

Maternal Circulation.—The maternal circulation is exceedingly simple. The blood enters the cells of the placenta by means of the uterine arteries; and leaves them by means of the uterine veins*;—so that, while the ovum remains in the uterus, a copious tide of the maternal blood flows through those cells; and this, when the ovum is detached prematurely, supplies the blood of those copious floodings, which we have already largely considered†.

Fœtal Circulation.—The circulation of the fœtus is a good deal more complicated; but, with a little attention on our parts, it may be understood easily enough. It may be divided into three parts. 1. The greater circulation. 2. The lesser circulation. 3. The circulation peculiar to the fœtal state. In the circulation peculiar to the fœtus, the blood,—issuing from the internal iliacs by means of the umbilical arteries,—is conveyed to the placenta, and diffused over its substance, which it fills like a sponge;—floating at length into the umbilical vein, by which it is transmitted to the "vena portæ"‡ of the liver. This is the *first* stage of the circulation. The blood in the "vena portæ" may, in imagination, be divided into three portions; and of those three portions, two pass (by means of the "canalis venosus", formerly mentioned§) from the "vena portæ" of the liver, to the "vena cava inferior", and thence to the right auricle of the heart; while the remaining (or third) portion passes through the liver in the ordinary way; so as to reach the "venæ cavæ hepaticæ", the "vena cava inferior", and the right auricle of the heart. This is the *second* stage of the circulation; whereby, as we find, all the blood enters ultimately into the right auricle;—two portions passing into this cavity by the "canalis venosus", and one through the liver in the ordinary way. When the right auricle contracts, of the three portions of blood mentioned, one passes directly into the left auricle, through the foramen ovale; and thence to the left ventricle, and the ascending and descending aorta; following the ordinary route. But the same contraction which throws one portion from the right auricle to the left, through the "foramen ovale", impels also the two other portions from the right auricle to

* The reader is referred to Dr. Robert Lee's remarks on the connexion between the uterus and the placenta, in the Fifth Section of the preceding Chapter; Pages 985 to 993, for an analysis of this opinion. † See Pages 169 to 267.

‡ From *porta* "a gate";—being that part of the liver where its vessels enter.

§ See Page 967.

the right ventricle, in the usual way;—to be afterwards thrown out of the ventricle into the pulmonary artery; which, as every anatomist knows, is inserted into it. In the trunk of the pulmonary artery, the two portions of the blood separate;—the larger passing directly into the "aorta descendens", by a short and capacious tube, which leads directly from the one vessel to the other (the "canalis venosus", before described*); and the blood in the pulmonary arteries flowing through the lungs into the left auricle, the left ventricle, the ascending aorta, and the "aorta descendens", in the same manner as in the adult. This it is which constitutes the *third* (and most complex) stage of the circulation. All the three portions of the blood, therefore, ultimately reach the "aorta descendens"; though by different channels, and not simultaneously; and then,—which completes the *fourth* stage of the circulation,—this blood passes along the aorta to the common and the internal iliacs;—the point from which it first issued. Thus, then, to recapitulate:—In the circulation peculiar to the fœtus, the blood, in the *first* stage, passes from the internal iliacs to the "vena portæ", through the umbilical vessels;—being diffused over the vascular part of the placenta. In the *second* stage of this circulation, the blood passes from the "vena portæ", into the right auricle;—in part through "the canalis venosus", and in part through the liver, by the same passage as in the adult. In the *third* stage of its circulation, the blood enters the descending aorta by three different routes;—the lungs, the "canalis arteriosus", and the "foramen ovale"; and, in the *fourth* or last stage, this blood flows to the internal iliacs (from which the circuit commenced), by the descending aorta, and the common iliacs.

Peculiarities of the Fœtal Circulation.—From what has been stated, it is obvious that, in the fœtus, it is not (as in the adult) the whole, but a part,—and, indeed, only a small part,—of the blood, that is transmitted through the lungs. Hence the main difference between the fœtal and the adult circulation. From what has been stated, too, it is evident that, in the fœtus, the blood which flows along the aorta, is derived from both sides of the heart, and is propelled equally by both ventricles (the left and the right); which, accordingly, in the fœtal heart are of equal thickness; and hence an important difference between the greater circulation of the adult and that of the fœtus. I shall merely add, further, that although the placenta is filled, like a sponge, with two kinds of blood (the maternal and the fœtal), yet these two sorts of blood, though most nearly and extensively approximated, are never in actual contact with each other. The maternal blood lodges in the cells of the placentar structure; the fœtal in the vessels;—the two fluids, like the air and the blood in the lungs, being separated by a membranous texture, not exceeding, perhaps, a thousandth part of an inch in thickness. During our aquatic, or fœtal life, the blood cannot be ventilated in the lungs; and this explains to us why it is, that only a small part is transmitted through these organs;—in order to nourish their substance, and to keep the vessels pervious.

* See Pages 967 and 996.

Illustrative Preparations.—1. A preparation of the heart of the fœtus, in which one of the auricles (the left), has been cut away, in order to show you the foramen, which is wide open. 2. In this preparation of the lungs and heart, the pulmonary artery and descending aorta, together with the "canalis arteriosus" by which the two communicated, are shown. 3. It sometimes happens that, in the adult, the "foramen ovale" remains open through life; an example of which I have. This preparation was taken from a large heart; and the "foramen ovale" is so large, that you might put your forefinger into it. This, however, is a rare occurrence.

The Changes which occur at Birth.—In the fœtus, the circulation is of *one* kind; in the adult vascular system, of *another*; and we shall now proceed to consider this change, after birth is accomplished. Rightly to understand this matter, you must remember that it is a law of the vascular system,—confirmed by various observations on its different parts,—that when a canal or aperture is no longer of service in the circulation, it shall gradually contract itself, so as to become more or less completely closed. Thus, in the adult, if you tie a large artery, so much of the artery above and below the ligature as is no longer serviceable in the circulation, gradually contracts itself; and becomes converted into a sort of ligament. The same holds true of the veins. When the fœtus comes into the world, it is usual to tie the umbilical cord; and, in consequence of this ligature, the umbilical vessels, together with the "canalis venosus", become no longer of service in the circulation; and therefore they become closed;—in conformity with the law just announced. Hence we find, in the adult, that the umbilical vein has become converted into a mere ligamentous vestige;—well known to anatomists under the name of "the ligamentum rotundum of the liver". Again: when the child comes into the world, it begins to respire; and,—its lungs playing,—the blood passes through them with very great facility. The consequence of this is, that,—a large quantity of blood passing through the lungs, and a much smaller quantity flowing through the "foramen ovale" and "canalis arteriosus",—these canals first contract, and then close. The explanation is, at least, plausible; though, perhaps, not altogether satisfactory. From what has been already stated, you may perceive, on a little reflection, that the peculiar circulation of the fœtus depends entirely in the existence of these most important channels. While they are open, the circulation remains fœtal; when they are closed, it becomes that of the adult. The change proceeds upon simple hydraulic principles. The umbilical arteries, the umbilical veins, the "canalis venosus", the "canalis arteriosus", and the "foramen ovale";—these are tubes and apertures essential to the fœtal circulation. Those causes, therefore, which occasion the closure of the canals peculiar to the fœtal vascular system, are also the causes which, after birth, occasion the conversion of the fœtal circulation into that of the adult. These causes are the division of the funis, and the play of the lungs, acting in co-operation

with that ruling principle of the vascular system before mentioned*; namely, that canals no longer serviceable in transmitting of the blood, will contract and close themselves up, in a manner more or less complete.

SECTION 2.—FUNCTIONS OF THE PLACENTA.

Having explained the structure of the placenta, and the circulation of blood through it, I may now proceed to a subject, which would not previously have been readily comprehended;—I mean the functions which this important organ, the placenta, discharges. There is no organ of the body that, during our stay in the uterus, is of more importance to our welfare, than the placenta; and its functions, therefore, are well worth our study.

It Supplies Nourishment to the Fœtus.—By the placenta (I conceive) it is, that the fœtus receives its supplies of nourishment; for I have already endeavoured to prove, that it cannot be nourished by the liquor amnii†. The cells of the placenta, as before stated‡, are full of the maternal blood, and the vessels are filled with the blood of the fœtus; and there seems to be a communication between the cells and the vessels, by means of very minute pores;—passages impervious to the integral red blood, but transmitting the subtler parts; and by means of those pores,—supposed to exist, though not to be demonstrated to the eye,—the subtler parts of the maternal blood,—the serum and coagulable lymph,—are absorbed into the vessels of the fœtus.

In the ruminating animal, as formerly described§, the placenta consists of an excrescence, and the vessels which ramify through it;—in the same manner as the root in the soil. These excrescences ("the cotyledons", as they are called), secrete a fluid, which, in its sensible properties, resembles milk‖; and which, after the death of the animal, may be pressed out from their structure in large quantities; nor can there, I think, be a reasonable doubt, that it is by the absorption and ramification of this lactiform fluid, that the young animal is nourished;—just as the plant is fed by the fluids which it absorbs from the soil. This secretion of the cotyledon, so far as I know, has never been accurately analyzed by the animal chemist. If any of you design to devote your attention to animal chemistry, as it is called, I would invite your attention to this fluid;—so interesting in the generation of the ruminating animal. It is very desirable that we should know whether it is of the nature of milk¶, or of chyle;

* At Page 997. † See Pages 970 and 994.

‡ See Pages 995 and 996. § See Page 974.

‖ Milk is secreted in consequence of the sympathy of the mammæ with the genitals, when irritated by parturition. The Tartars increase the quantity of milk furnished by their mares, by irritating the vagina.—*Dr. Fletcher.*

¶ Milk consists of water, mucus, albumen, casein, butyrin, sugar, and salts. It does not coagulate spontaneously; for it requires an acid to coagulate the casein. The butyrin separates at the top. The "lactometer" is an instrument for ascertaining the proportions of curd and cream in milk. The composition of milk

or whether it constitutes some third humour, which has a composition of its own.

The chick in ovo forms blood for itself, from the yolk and white of the egg; which it absorbs, digests, and sanguifies. On examination, you may see the membranaceous tube, which leads from the bag containing the yolk, into the intestine. It is by this passage,—at least, in great measure,—that the aliment is transmitted.

To come down, then, upon the point before us: much in the same manner as the chick and the calf absorb and sanguify the fluids on which they feed, the human fœtus may be supposed to draw its nourishment from the blood which lies in the placentar cells;—to be afterwards converted into blood, by the action of its vascular system.

The Placenta-Pulmonary Function.—Besides nourishing the fœtus, however, and operating as a sort of stomach or root, the placenta performs another office, immediately essential to life;—the placenta-pulmonary, as it may be called; for it is equally discharged by the placenta, the lungs, and the gills. We are taught that the office of the lungs is to throw off carbon from the body; and this admits of demonstration; for if the air from the lungs be passed through lime-water, a precipitate, consisting of carbonate-of-lime, is formed;—the carbon being derived from the blood, and passing off from the lungs in the form of carbonic-acid-gas. Now, it may be imagined, that the office of the placenta is that of separating carbon from the fœtal blood, in the same manner as the lungs do after the birth; but though I am not prepared to deny that the placenta may separate carbon in very minute quantities, I am well satisfied that carbon is not separated from it in abundance;—not separated in the proportionate quantities in which it is afterwards discharged at the lungs. The blood which enters the lungs, is of a black livid tint; that which leaves the lungs, is of a brilliant vermilion; and the difference arises, in great measure, from a difference in the quantity of carbon;—the blood leaving the lungs being freed from much of the carbon, while that which enters the lungs contains large quantities of it. But it is not so with blood that is leaving and entering the placenta. I have been at some pains to get the blood, at the same time, from the umbilical vein and arteries; and, in the experiments hitherto made, I have not been able to discover any manifest difference in the colour of the two. If a difference existed at all, it consisted in a mere shade; and was not to be compared with that observable in the colour of the venous and arterial blood of the adult. From all this, we may (I think) venture to infer, that the blood which leaves and enters the placenta, must contain carbon in quantities nearly equal.

Again: we are taught (but this is more dubious than the former opinion) that the lungs are the organs which receive the matter of heat into the body, and which support the animal temperature; and

varies at every period after parturition. One way of judging of its quality, is to put a drop on the thumb-nail. If it remains there, instead of running off, it is considered to be sufficiently thick. If, on being put to the eye, it gives pain, it is thought to be acrid.—*Dr. Fletcher.*

we know that, generally, the heat of the internal part is from ninety-eight to one hundred degrees. There is, however, no reason to believe, that the placenta performs the office usually assigned to the lungs; because it is to be recollected, that the child is immersed in the liquor amnii; which is probably of the same warmth as itself (ninety-eight or one-hundred degrees, like the urine); and that, not losing its heat, it does not require a supply of caloric from the placenta. Add to which the opinion of Crawford, that the lungs are enabled to absorb heat, by previously emitting carbon. Now, it has been observed already*, that the placenta separates no carbon, or (if any) an exceedingly sparing quantity; and therefore, if the separation of carbon be necessary for the absorption of the heat, this is an office which the placenta cannot perform.

It does not Perform the Ordinary Pulmonary Functions.—It seems, then, that the placenta does not discharge the two grand offices usually assigned to the lungs. It does not separate carbon largely; and it does not absorb caloric, for the support of the animal temperature; and yet it is certain that this organ does perform an office immediately essential to life, and which is performed by the lungs themselves. Of this you have a very simple proof:—If a child comes into the world under the crural presentation (legs first), there is a pressure on the umbilical cord, at a time when respiration cannot proceed (in consequence of the head and shoulders being lodged in the uterus); and, in the course of a few seconds, the child is in a state of distress; in the course of a few minutes, it is in danger; and, in the course of a few minutes more, it is dead. All this takes place because the action of the placenta is interrupted when the lungs cannot play; for, if the child comes into the world head first, and breathes, you may tie the cord, and cut away the placenta,—as, indeed is the custom,—without any inconvenience ensuing. Hence we may draw this plain inference;—that the lungs and the placenta perform one common office, immediately essential to life. When it is performed by the placenta, it is not required of the lungs; and when accomplished by the lungs, it is not required of the placenta.

And now comes on the question,—"What is the placenta-pulmonary office?" This question it is not in my power to answer. But I cannot forbear expressing my conviction, that there is some most important physiological discovery latent here. Whatever this office is, it is obvious that it is immediately connected with the principle of life; and it is very remarkable that, though we believe ourselves to be acquainted with the main office of the lungs, we certainly are not. The main office is, I think, clearly this;—the placenta-pulmonary function. This function consists in neither of the offices which are usually assigned to the lungs;—I mean the absorption of caloric, and the separation of carbon; but seems, pretty evidently, to consist in some third office; with which, however, we are at present unacquainted. How I envy, by anticipation, the man who is hereafter to succeed in its discovery!

* At Page 999.

SECTION 3.—SUMMARY REMARKS ON THE GRAVID UTERUS.

Having said thus much respecting the anatomy and physiology of the gravid uterus, I shall now proceed to make a few general remarks; —not, of course, entering at large into so diffuse a subject; but merely recapitulating those points that are most interesting; and some of which are not without their obstetric importance.

In order that my remarks may be the better understood, it may be proper that I should commence by observing. that the uterus, in the unimpregnated woman, though varying in its bulk, is (on an average) about as large as a small pear flattened *; and that it lies at the brim of the pelvis, with its fundus forward and its mouth backward; so that the former lies above and behind the symphysis pubis, and the latter on the sacrum. Upon either side of this uterus, in the sides of the pelvis, are situated the ovaries, somewhat resembling the testicles in their form; and hence frequently denominated, by the older anatomists, the "testes muliebres"†. These ovaries consist of a covering of peritoneum, and of a covering belonging exclusively to themselves (which may be called "the tunica propria"); enclosing within it a cellular web, full of very minute vessels. In this cellular web are embedded a number of vesicles (from ten to fifteen, or twenty). They are of unequal size;—some of them being as large as mustard-seeds only, and some as large as a full-grown pea; and they are more or less conspicuous in the ovaries of different women. Even in those cases where there is no reason to believe that the woman has been sterile, you must examine with care in order to see the vesicles distinctly; while, in other cases, these vesicles are so striking, that they are the parts which catch the eye as soon as the ovaries are laid open. These vessels, which are denominated "the graafian"‡, are the eggs of the human species §. Again: stretching from the womb to the sides of the pelvis, we have the broad ligaments; which are formed by the peritoneum covering the uterus (partially in front, and completely behind); and which, being thus disposed upon the womb, forms two layers; one in front, and the other posteriorly;—stretching from the sides of the uterus, to the sides of the pelvis ‖. In the superior parts of these broad ligaments, are situated

* See Pages 44, 955, and 1020. "The shape of the uterus, *ex*ternally, is an *obtuse* triangle; and, *in*ternally, an *acute* triangle. It is capable of containing an almond. Women have the simplest form of uterus. In the other mammalia, it has horns; and is generally a transparent membrane, like an intestine".—*Dr. Fletcher.*

† "The testicles of females."

‡ From the anatomist De Graaf, who described them.

§ The ovaries consist of a series of cells, containing ova; which are the proper secretion of the ovary, as the semen is of the testicle. No doubt there is an emission of an ovum, on the part of the female, at every fruitful connexion. The larger and more mature ova, are situated toward the surface of the ova. In the higher animals, the ova are secreted constantly; but in others, only periodically; —in the "rutting season", like the semen.—*Dr. Fletcher.*

‖ The uterus has four ligaments;—two broad, and two round. The two former consist each of two folds of peritoneum; in the anterior of which are the fallopian

what are called "the fallopian tubes" *; which are, in fact, the oviducts † of women. They are somewhat vermicular in their course; for they do not run in a direct line. They are very small where they enter into the uterus;—insomuch that a large bristle could scarcely be passed through the orifice. They are larger where they open near the ovary; for there a large probe might be inserted; and immediately within the orifice,—which is surrounded by a muscular fringe, or ruffle; and which is called "the morsus diaboli" ‡,—it is dilated into a sort of receptacle; in which the first rudiments of the fœtus may perhaps lodge.

Stretching from the womb to the external organs, is the canal called "the vagina";—lying on the rectum posteriorly, and the bladder and urethra in front. This canal varies much in its capacity;—being large in women who have borne many children, and small in virgins; but being of a form and capacity evidently conformable to the make of the male organ.

Illustrative Preparations.—1. The uterus, and a portion of the vagina annexed to it; showing the broad ligaments stretching to the sides of the glass; and the fallopian tubes, or oviducts; above which is the muscular ruffle, or fringe, that lays hold of the mammillary process. 2. A preparation of the ovary. Its interior is exposed; and the eggs, which are nestling there, are conspicuously observable. 3. An ovary with the mammillary process projecting; and laid open;—its contents having escaped; so that a small cavity has been formed in the ovary. This cavity is filled up with a yellowish material, brighter in some cases than in others;—the whole constituting what is celebrated among anatomists under the appellation of "the corpus luteum" §. 4. The vesicle in this preparation, after having discharged its contents, is again partially filled with the yellow material. 5. In the preparation which follows, the closure of the cavity has been almost completed.

Ovarian Changes following Impregnation. — When impregnation takes place,—for I now proceed to give you a short account of it,—one or more of the eggs, or graafian vesicles, become the subject of the conceptive actions. Supplies of nourishment are poured into them from the surrounding parts; the eggs enlarge in their size, and project beyond the surface of the ovary (so as to form the mammillary

tubes, and round ligaments, and in the posterior the ovaries. The structure of these round ligaments is said, by Sir Charles Bell (as it was by Versalius), to be muscular; and that it differs from mere fibrous matter, in being of a reddish or pink colour. If the round ligaments be *fibrous*, they may keep the uterus erect, and guide it in its ascent and descent; if *muscular*, they may pull down the uterus at parturition. —*Dr. Fletcher.*

* From *Fallopius*, the anatomist who described them.

† From *ovum*, "an egg"; and *ductus*, "a canal."

‡ "The devil's bite".

§ After the expulsion of the ovum from the ovary, the peritoneum covering the latter forms a cicatrix; and a liquid is effused into the vacant space, and makes a corpus luteum. Sir Everard Home, however, says he found the latter in a girl whose hymen was perfect.—*Dr. Fletcher.*

process); and all around the vesicles which are thus enlarging, the ovary become more vascular than it was before. About this time the mammillary process, projecting like a nipple, is seized by the muscular fringes of the fallopian tubes;—somewhat in the same manner as the nipple is seized by the infant when at suck*. The mammillary process lying (in this manner) in the orifice of the fallopian tube, it at length breaks open by ulceration, and discharges its contents in this canal; after which the rudiments, by little and little,—under a sort of peristaltic action,—are conveyed from the tube to the uterus, to be deposited there as in a nest;—for the uterus of the mammalia has some analogies with the nest of a bird;—resembling it in some pointed particulars. This transfer of the rudiments from the ovary to the uterus, constitutes what, in the proper acceptation of the term, may be denominated its "conception"; or what, in birds, we should call "the laying of the egg". Dr. Haighton found, that if, in the rabbit, he divided the fallopian tube more than eight-and-forty hours after its communication with the male, he did not, in so doing, interrupt the process of generation; but if he divided the tube within ten, twenty, or thirty hours, or even later than this, then the process of generation was interrupted;—the rudiments never afterwards making their appearance in the womb. He therefore inferred that, in the rabbit, the process of conception, or the laying of the egg, is accomplished in eight-and-forty hours; but not sooner.

The Period Required for Human Conception.—It has often been asked,—"What is the term that is required for the completion of human conception?" This is a question to which it is not easy to give a precise and satisfactory answer. I thoroughly agree with those who believe that it is of very early completion;—say within a fortnight, or perhaps sooner. A fœtus of five or six weeks is thoroughly formed; and as big as a large blue fly. How young, therefore, must its rudiments be, when they pass (in an unformed state) through the uterine orifice of the fallopian tube; which is scarcely large enough to admit a bristle?

Plurality of the Corpora Lutea.—Where there are two fœtuses, two vesicles are in general excited, and two corpora lutea become formed. In a woman from which one of my preparations was taken, there were twins; and a corpus luteum may be observed in each ovary. This is not invariably the case; for, as a single egg may sometimes contain two chicks, so a single vesicle may, in some cases, contain two fœtuses.

The woman from whom the ovaries in another of my preparations were taken, conceived of three children; and there are two vesicles in one ovary, and one in the other. The high vascularity of the surrounding ovary may also be observed.

Do the Rudiments descend in the Form of an Egg?—Much dispute has been raised respecting a question of some little speculative interest;—I mean, as to the form in which the rudiments come down

* Harvey shewed that the fimbriæ of the fallopian tube embrace the ovary; but De Graaf shewed it best.—*Dr. Fletcher.*

into the womb. Some contend, with Haighton, that they descend in a loose amorphous state; and others, as Cruikshank, that they leave the ovary, and pass the tube, under the form of a small egg. Dr. Haighton examined a great many rabbits which had been recently impregnated;—making his observations at different intervals after conception; but he never found in any one instance, until the process of epigenesis* was begun in the uterus, that the rudiments exhibited any definite form; so that, after instituting many observations of this sort,—and he was a very accurate observer,—he became of opinion, that it was not the vesicle of De Graaf that was detached, in the form of an egg, to pass into the uterus; but that the vesicle, opening, discharged its contents into the tube;—as an egg might do, if the shell were freely broken. Cruikshank imagined, however, that the rudiments passed along into the womb in the form of an ovum, of a rounded or oval shape; but in order to prove this, he laid open the tube, and applied distilled vinegar. Now Haighton used to observe, tartly and forcibly enough, that Nature did not apply distilled vinegar in her operations. The observation was as just as it was keen; for even supposing the rudiments came down into the womb without any defined shape, of course the application of the vinegar might be expected to coagulate the serum, and to cause it to assume something of a defined shape immediately. On the whole, therefore, I assent to the opinion of my valued relative; and believe (with him) that, in conception, the ovum comes down into the uterus, not enclosed in a membranous cyst, but in a loose and disengaged condition. This opinion is supported by the inference to be drawn from the smallness of the uterine orifice of the tubes;—an orifice which is evidently much too minute in its capacity, to allow the vesicle to pass in its oviform condition.

In birds, the oviducts superadd to the yolks, derived from the ovaries, certain parts, which render them more perfect for generation;—for instance, the whites and shell. I have sometimes thought that it is not impossible, that the fallopian tubes may add something too. This is the more probable, first, because we find the inside of the fallopian tubes vascular in a high degree; and, secondly, because their inner membrane is folded longitudinally;—as if Nature intended to spread them out for the purposes of secretion. However, granting its existence, we have clear proof, that this superaddition is not essential to generation; for extra-uterine fœtuses may form in the ovary; and, in these cases, the rudiments never get into the fallopian tube at all; and can, therefore, derive nothing from it. When one of the fallopian tubes is laid open; it is seen to be vascular in a high degree, and its folds are lying longitudinally. It is this structure that induces me to think, that the tube is a secreting organ; as well as an organ of transmission.

Uterine Changes following Impregnation.—If we examine the uterus of a rabbit, immediately after the process of conception is completed,—that is, at the end of eight-and-forty hours,—we can scarcely

* From *επιγινομαι, to generate upon.*—See Pages 1006 and 1011.

discover there any traces of the rudiments; but if we wait a few hours longer, and examine again, we shall then (according to Haighton) detect portions of the rudimental matter, lying on the surface of the womb; and generally corresponding, in number, with that of the number of the graafian vesicles which have given way in the ovaries. Pausing for a few hours longer, and then (in another rabbit) making further examination, we now perceive that these little portions of matter have begun to model themselves into something of an oviform shape. Each oviform molecule consists of two parts;—the one a membrane, or little vesicle; the other, the material which this vesicle (or little membrane) contains.

Generation advancing, it is found,—even from observations in the *human* ovum,—that the contents of this delicate cyst separate themselves into at least two parts more. The one consists of a lymphy water; which afterwards proves to be the liquor amnii; and which, at this time, is very small in quantity;—not exceeding a few drops. The other is composed of an opaque corpuscule, not bigger than a mustard-seed; and which, by means of a very slender filament,—afterwards constituting the umbilical cord,—is put into connexion with the cyst which contains it. Thus, it appears, that very early in gestation,—within the first three or four weeks after intercourse (perhaps within the first two),—all the essential parts of the ovum are generated;—the embryo, the membranes, the liquor amnii, and the umbilical cord.

Generation proceeding, the diminutive corpuscule of which I was speaking, enlarges considerably in its dimensions; and assumes a shape not dissimilar to that of a cheese-maggot;—for it is remarkable that, in the first stage of our existence, we bear no little resemblance to this contemptible grub. Leaving this image, however, to advance towards a likeness all-illustrious,—in the course of a few days (or, rather, of a few hours) afterwards, we begin to form the eyes. These organs, if I may judge from preparations, make their appearance laterally, at the upper part of the most depending portion of the embryo (on either side), in the form of light-brown specks; and I suppose that, about the same time that the eyes are produced, the other internal parts,—such as the brain, the viscera of the thorax, and the abdomen,—are elaborated too;—neither legs nor arms being, at this time, perceivable.

Formation still proceeding, the entire corpuscule of the embryo becomes separated into two parts;—the head, and the trunk; which are afterwards retained in connexion with each other, by means of a short and rather slender structure, which afterwards composes the neck;—that fair column, the seat of dignity and grace, on which the human head is erected! About this time it is,—when the neck is forming,—that the legs and arms begin to make their appearance;—in the form of buds, which bulge out from the trunk. In the further progress of generation, these budding arms and legs become elongated; and, no long time afterwards, the fingers and toes sprout forth;—the embryo, soon after these small members are completed,

becoming thoroughly elaborated and accomplished, in all its other parts. While this formation of the embryo is proceeding, the involucra (of so much importance to our welfare while in the uterus) are becoming organized also; and by the time that the embryo is completely elaborated, the involucra will be found to exist in all their perfection. We have the placenta, the membranes, the liquor amnii, and the umbilical cord;—parts which, as to their essential structure, are very early constructed;—first needed during fœtal life; and, therefore, first formed.

Duration of the Formative Process.—With respect to the duration of the formative process, it is well worth your notice, that although it is not clearly ascertained, there seems to be no doubt that it is (in all cases) short. The human fœtus, of such complicated organization, seems to be elaborated in the course of five or six weeks, at furthest; and the greater part of its structure is, most probably, perfected in a much shorter period. There is nothing in the whole formative process which astonishes me more, than the amazing rapidity and amazing facility with which it is accomplished. It is wonderful, indeed, to suppose that the human structure should be formed at all in procreation; but that all these delicate textures,—that all this elaborate and finished structure of which our bodies are composed, should be formed,—if, indeed, they are really formed in generation, —in the compass of some five or six weeks, is almost beyond wonder. Now, that the fœtus is thus early perfected,—in the first weeks of generation, I mean,—must, I think, appear satisfactorily enough from what has been said. I know, from my own observations,—made with tolerable accurate data,—that a fœtus of three months, independently of its lower limbs, is as long as my forefinger; and therefore it is not unreasonable to conclude, that a fœtus which is not so big as the least joint of my little finger, cannot exceed the age of five or six weeks. It was asserted by Hippocrates, that the formation of boys is accomplished in thirty days, and that of girls in forty;—an opinion of which I have met with some traces in the popular sayings of the North of England; but I forbear, by their repetition, to intrude into the mysteries of the Bona Dea! The opinions of Hippocrates are, many of them, grounded on that experimental observation which forms the proper foundation of human knowledge; and, without giving to this notion more than a very "academic faith", I think it is grounded upon certain observations, of which the records are now lost.

SECTION 4.—EPIGENESIS AND EVOLUTION.

It has often been disputed by physiologists, whether in generation there is real formation; or whether the structures are merely developed in the process;—the various organs being already in existence before conception is effected; though concealed from observation by their smallness, their transparency, and their involution in each other.

Theory of Evolution.—Many physiologists have maintained that, in generation, there is a real organization;—one part being formed successively upon another, by a process of "epigenesis", as it is called; but Swammerdam, Haller, and Spallanzani, seem to have maintained, that all living beings were formed in little at the creation; and that they were merely enlarged and developed in generation;—being possessed of organization before conception takes place. The swarms of locusts (possible as well as actual), therefore, were according to these speculators, enclosed in the ovary of the first parent; and the shoals of fishes, the flights of birds, and the innumerable multitudes (possible and actual) of which our race is composed;—all, according to this opinion, are coeval, and old as the creation; though passing through the door of life in different ages. Make all allowance for the infinite divisibility of matter; give due weight to the recollection, that the power of the Creator is boundless; remember the minuteness, scarcely conceivable, of the corpuscule of the animalculæ;—still, the more we reflect on this doctrine ("evolution", as it is called), the more incredible it appears. On a point like this, in the present state of our knowledge with respect to facts, it is, perhaps, impossible that we should obtain an absolute conviction; yet I acknowledge I feel, in my own mind, a persuasion almost amounting to conviction, that, in generation, there is a formation of parts which had previously no existence; and that in this process we have not,—as Swammerdam, Haller, and others have observed, —merely a development and enlargement of organs which existed before, but which (from causes already mentioned) were concealed from our sight. It seems to me probable, that no parts of our structures existed some hundred years ago; nor does it, I own, appear to me impossible, that within that compass of time, all the parts of our body have been really and completely organized.

Living Parts possess an Organizing Power.—There is nothing more certain, than that living parts do possess an organizing power. Whence that power arises, I do not pretend to explain; but its existence, like that of the lunar influence on the ocean, is not the less certain because, in our ignorance, we cannot tell in what it consists. Those who amuse themselves with the gay and airy mythology of antiquity, must all have read the tale of the Lernæan hydra*. In physiology this story is, in some measure, realized; for the stag renews its horns, and the lobster its claws; the lizard can reproduce its eye, and the snail its head,—and this repeatedly; for if the second head be removed by a dexterous hand, a third will sometimes sprout up in its place. Nor must we forget a fact, on which, however, I do not lay equal stress;—I mean, that in the generation of all insects, the maggot is converted into the fly. In all these cases, it is very evident that the

* The hydra was a monstrous serpent, or dragon, inhabiting the banks of the Lernæan lake. It had a hundred heads; and whenever one of them was struck off, two others sprouted out in its room. Its destruction formed the second labour of Hercules; who prevented the growth of the supplemental heads, by searing the decapitated necks.—N. R.

living body, from whatever cause, really does possess a power of organizing parts, which had no existence before. I know that, with respect to the butterfly and the caterpillar, it has been urged by the very laborious and able Swammerdam, that the parts of the butterfly are contained under the skin of the caterpillar, at least about that time when it is about to become converted into a chrysalis. But setting aside, for the present, the proof of formative power taken from the transformation of insects, its existence is, I think, evident enough in the other cases which have been stated:—that of the snail, especially; for, I presume, no generous antagonist will venture to maintain, without proof, that a snail has a repository of heads, to supply the place of those which may be removed by the physiologist.

Forming Power exerted in Generation.—The existence, then, of a forming power, seems, from these facts, to be sufficiently obvious; nor is proof wanting to show, that this power is exerted in generation. For,—not to weary you with the enumeration of facts less decisive,—the dog (as I have been assured) may prove prolific with the sow; the fox with the dog; and the horse with the ass. The last fact is acknowledged and familiar; and the mule which results from these connexions, is an animal of mixed structure. Now, unless we suppose (and how wildly!) that this hybrid-organization was in existence in the genitals, male or female, before the generative actions were excited, we must (I think) presume,—as Haller, indeed, has admitted,—that in generation such a degree of forming power is exerted, that the structure, originally simple, is made to assume a double and mixed character. Kolreuter, impregnating the female of one species of tobacco with the male of another species, obtained male and female hybrids; and then, further, by means of the same male, he impregnated a female hybrid;—so as to obtain other hybrids, of both sexes, approximating still more nearly to the male structure; and, at length, by repeating his operations upon these principles, he produced hybrids so exactly resembling in structure the species of the male, that the botanist himself could scarcely discover the difference. There seems to be but little doubt, that the whole process might be reversed;—so as gradually to bring down the plants of the male species, to an exact conformity with the make of the female.

Here, then, is an exertion of the forming power, high and extensive; diffusing its influence over every part of the new structure. What more need be proved? If we allow that, in living bodies, a plastic power is exerted, which may form the horns, the claws, the eyes,—nay, even larger parts, such as the head itself,—and this repeatedly; and if we allow that, in generation, this formation is really exerted on every part of the structure;—why need we look further to understand how it is that new organizations are produced? "Frustra per plura."* Here you have a power, whatever its nature, adequate for the purposes of formation; for that which will produce the horns, the claws, the eyes, and the head, may form also, no doubt, the other parts of the living system; and, in mule-generation,

* "It is needless to search farther".

you have a proof which approaches demonstration, that after the union of the two parts of the genitals, this power is brought into high and extensive operation.

As in the contemplation of the Divinity, however, so here, the more we reflect, the more our wonder increases! Of all men, the minute anatomist,—well acquainted with those delicate, elaborate, and accomplished structures, of which the body is composed,—must feel the greatest difficulty in persuading himself, that they are all really formed within the body of the female parent, in the compass of a few weeks. Let it be recollected, however, that the mystery may lie entirely in our ignorance; and not in the nature of the process itself. Remember, that the action of the moon on the ocean,—so incomprehensible to those who are uninstructed,—may, to those who possess even a moderate share of the necessary explanatory knowledge, be made, in many points, intelligible enough. Were you to tell a savage that you could navigate the air; that you could explode the solid granite; that you could shut up the lightning in a bottle; that you could, in twenty-four hours, multiply copies of a writing to the number of ten or twenty thousand,—all alike in their characters, their errors, and their excellencies;—if he were a man of plain sense, his first resource would be to disbelieve you; or, if convinced of your veracity, he would then (most probably) attribute to you a superhuman power; for such miracles and prodigies must, in his ignorance, appear to exceed the measure of mortal power,—Θεος τις;*—"The gods are come down to us in the likeness of men"†. If you will give ear to the savage ignorance of semi-barbarians, Roger Bacon was a conjurer; Columbus was a divinity; and poor Dr. Faustus had sold himself to the devil! But let the savage suspend his faith a little;—let him learn (as he may, in the course of a few hours) the general principles and agents with which you operate; and he finds, after all, that you are much such a being as himself. The operation was wonderful and mysterious, simply because the agents were not known. And thus, after all, it may be,—nay, it probably is,—in generation. Simple in the means, magnificent in the results;—such is the character of those which we may call the greater operations of the Author of Nature; and I can easily persuade myself, that this stupendous operation,—this grand, this glorious achievement of the living body,—by which creation enjoys (as it were) a sempiternal youth, and rises with renewed vigour from Death the destroyer,—may, after all, be simple and of easy accomplishment; and that our wonder reposes, not on the nature of the process, but rather on our ignorance of some few and simple means, by which the great result is accomplished!

That generation really may not be, as is frequently represented, an operation essentially unintelligible, is, I think, rendered less improbable by various considerations. In the first place, generation is an act which may be performed by structures the most simple;—by

* "What god is it"?

† Οἱ *θεοὶ, ομοιωθέντες ἀνθρώποις, κατέβησαν πρὸς ἡμᾶς.*—"*The Acts of the Apostles*"; *Chapter* 14; *Verse* 11.

the polypus and the sea-anemone *, no less than by the most complex structures of the creation. This is a consideration which is surely worth our reflection; though I certainly should not think of laying on it my principal stress. Again: let us reflect on the immeasureable abundance in which many living germs are generated. The human species, it is true, is produced (as it were) painfully, and in small number; but it is not so with many very curious and complicated organizations. A sturgeon may, at a single spawning, pour forth above a million-and-a-half of eggs. Does this seem to indicate that generation is a work of effort? I am informed, that the sporules of the filix † may amount to many myriads on each frond. Does this, again, seem to indicate that formation is a painful effort? When germs, animal and vegetable, are produced in such multitudinous and innumerable abundance, that, were they to be perfected, air, earth, sea could not contain them, is it reasonable to conclude that, in this system of things, formation is complex and painful? When the world is choked with books, we may be pretty certain that it is easy to form their characters; and, seeing this innumerable multitude of germs, we may (I think) safely rest assured, that had their formation been one of effort, their number would have been diminished; and that,—by parental instincts, and other means,—greater security would have been obtained for the perfecting those few germs, which the living body had, with much labour, produced.

There is yet a third argument, which, I think, strengthens my thesis (the simplicity and ease of generation); and that argument is taken from the great *rapidity* with which the living structures are formed. The human structure itself,—perhaps, beyond all others, the most elaborate in all its essentials,—is perfected in the brief space of a few weeks. There are many birds,—and I may give the common fowl, as an instance,—the principal structures of which become organized in the compass of a few days. As to the eggs laid by insects,—as, for instance, the common large blue fly,—I have myself known them to become living in the course of a few hours afterwards; so that,—without rising higher into the regions of airy and giddy speculation,—when I reflect on the simplicity of some of those structures by which generation is accomplished; when I consider in what abundance Nature, in some genera of living structures, produces the buds and the seeds; when, lastly, I recollect how rapidly, in the most complicated and perfect animals, the structures that compose them are formed and developed,—I cannot help persuading myself that, in generation, the process is not really difficult; but that, like the marvels of typography, of electricity, of aërial navigation, and explosive powders, it depends upon some simple principles, which the human mind may, perhaps, hereafter comprehend. We have imitated many other of the natural operations; may we then hope to imitate

* The plant called "anemone", and which is the type of the animal mentioned by Dr. Blundell, derives its name from *ανεμος, the wind*; because it is said not to open its flowers till the wind blows upon it.—N. R.

† Fern. It is so named from *filum*, a thread; because divided into slender portions.

this, even in the humblest manner?—But I forbear; lest it should be thought that I expect to realize the extravagant fiction of the novelist; and to bring Frankenstein* from the stage, to act his part in the scenes of real life!

[Hippocrates thought that the male and female semen (the latter secreted in the uterus) were mixed in the womb; and that, by this mixture, a new compound was formed. This was called "epigenesis"†. He thought that the testicles acted only as weights; and that the uterus had two cavities, for different sexes. Aristotle thought that the male gave life and organization;—the semen being like the hand of the statuary;—putting into shape the materials furnished by the female. Harvey thought the fœtus came from the ovum; and was only vivified by the male. His maxim was "omnia ab ovo" ("all things from an egg"). Lewenhoeck overturned this doctrine; and maintained that every thing came from the male semen; in which the animalculæ fought, till they were all killed but one. Buffon revived the doctrine of "epigenesis"; and said that organic molecules were imparted by both parents; and that the sex was determined by the preponderance of molecules furnished by the one or the other. The doctrine of "evolution†" is, that the first parent of every species, had, in her ovaria, the germs of all the future individuals of that species. This doctrine was supported by Haller and others. About two-hundred-and-sixty-four hypotheses of generation have been broached.‡]

This curious process of formation I have usually endeavoured to illustrate, by means of some very valuable preparations which I possess. 1. The first is a specimen of the human ovum, consisting of a delicate membranous cyst. On holding the preparation so that the light may pass through its centre, a little spot may be perceived in the middle of it, not so big as a mustard-seed; a small dim speck of entity;—for such is man, when he makes his first appearance in the system of living beings! 2. The next preparation exhibits the lord of the world in form like a grub;—divested of all those imposing insignia, which mark the majesty of his station on the surface of this planet! Who would have thought, that under such a form could be concealed, originally, those master-minds, which afterwards exert so powerful an influence over the destinies of their fellow-creatures?—"Pulvis et umbra sumus"§! In our first form we are worms! To the grave and the womb we must look, to see the littleness of man! 3. Man next appears before us, of larger dimensions and more perfect structure;—his form still unsightly, and reminding one of the kidney-bean. Those who are accustomed to examine preparations of this kind, may distinctly see the eyes manifesting themselves, under the form of circular spots of a brownish tint; nor is it, I think, unreasonable to suppose that, when the eyes make their appearance, the viscera

* Alluding to Mrs. Shelley's powerful work under that title;—in which a monstrous caricature of a human being is represented as being formed and animated out of the spoils of the charnel-house.—N. R.

† See Page 1007. ‡ Dr. Fletcher's unpublished Examinations.

§ "We are dust and a shadow"!

of the great cavities have been formed too;—the brain, the lungs, the heart, and the contents of the abdomen. 4. Another preparation is that of an embryo, not much larger than the preceding. Its formation, however, is a little further advanced; and the first appearances of the arms and legs may be seen; while the hands and the feet are beginning to form in the contiguous embryo; which stands by, like a friend and companion! 5. The fingers and toes begin to show themselves in the next embryo. 6. The one which follows is elaborately, and in perfection, formed in all its parts (head, limbs, and trunk);—so that, small as it is, we feel the operation of the social feeling; acknowledge it for our fellow-creature; and admit that it may reasonably, in a certain degree, be put under the protection of the laws.—Hail, son of man!—Supporter of our species! There may be found among us souls so petty, as scarcely to deserve a lodgment even in a corpuscule* small as thine!

CHAPTER VII.

ABNORMAL ANATOMY OF THE FŒTUS.

In the process of formation, it sometimes happens, that great blunders are committed; and these errors and morbid deviations, give rise to what are denominated "monsters". By monsters, as formerly observed to you†, we understand nothing more than fœtuses which deviate conspicuously from the ordinary make; and the more immediate cause of this monstrosity, appears to be the morbid operation of the forming powers, whatever their nature may be.

SECTION 1.—CLASSIFICATION OF MONSTERS.

Buffon has divided these monsters into four different classes:—1. Those in which the parts are deficient. 2. Those in which they are redundant. 3. Those in which the parts are misshapen. 4. Those in which, although they are naturally formed in other points, certain parts are misplaced. To these four classes, may be added, if you please, a fifth;—comprising those monsters which are of a mixed character;—cases, for example, in which some parts are redundant, and others wanting, in the same individual.

Monsters in which Parts are Deficient.—In previous remarks on the peculiarities of the fœtus, I have shown that children may grow with a deficiency of parts‡. But of all deficient monsters, the most important is that in which there is a want of the bones of the cranium, except the base; and where, together with the deficiency of bone, there is also a deficiency of the cerebrum and cerrebellum, either wholly or in a great measure. It is this monster which is called "brainless"§. In the circle of my own obstetric acquaintances, it

* From *corpusculum*, "a little body".

† See Page 415. ‡ See Pages 970 and 972.

§ A case of this kind occurred in my father's practice; and was accounted for by the patient in the following manner:—She stated that during her pregnancy,

has repeatedly occurred. It is not, therefore, very uncommon; and it becomes the more desirable that you should pay a little attention to it. It may not be amiss to remark here, when speaking of this monster, that not unfrequently it is born alive; and that it lives for a few hours after birth. When living, it admits of some curious observations; and should you ever meet with a case of this kind, in the course of practice, pray insert your finger into the mouth, so as to try whether it will suck *;—in order that we may know whether the sensorial powers, which relate to these actions, are above or below;—whether they are in the spinal marrow, the medulla oblongata, or the brain.

In some instances, you will find that the whole thorax, together with the head and shoulders, are wanting; and that the child consists merely of the parts below;—the abdomen forming a cyst. But monsters of this kind are by no means so frequent as the former.

Again: the fœtus may be deficient in the lower parts;—the legs being wanting; so as to give it an appearance as if an amputation had been performed. In reality, however, this is the product of disease. Should a fœtus like this, deficient in the lower extremities, be lying across the pelvis,—presenting by the arm, hip, or back,—no small difficulty would arise in an attempt to turn it; and, probably, we should be obliged to resign the operation altogether.

Lastly: in place of the deficient part, I have a preparation where, instead of the lower extremities, there is a conical cyst of skin, containing cellular substances, and a piece of bone;—this piece of bone being, apparently, the vestige of those bones which belong to the lower extremities. I have one, likewise, in which both the lower limbs coalesce; so as to form but one compound member. The foot is placed in the retroverted position;—the heel lying forward, and the toes behind†.

Monsters with Redundancy.—As nature, in her fancies, has deprived some children of their due proportion of parts, so has she, on the other hand, with the same apparent sport, given additional or duplicate members to others. Cases of this kind have been repeatedly recorded; and some good specimens may be seen in my obstetric museum.

Preparations.—1. A fœtus with two faces looking in different directions.

prompted by curiosity, she watched my father, while he was engaged in examining the head of her son, who had died of hydrocephalus; and that she saw the operation at the moment when the calvarium and brain were removed. I give the case without comment.—A. Lee.

* See Page 971.

† My father (Dr. Alexander Lee) had a case in which the following appearances presented themselves:—Head very small;—right parietal bone scarcely distinct;—meatus auditorius externus deficient;—the right eye a mere speck;—palpebræ retracted with difficulty;—mouth inclined to the left. Extremities:—a mere stump, about the size of a man's finger;—no articulations;—leg rather longer than the arm. Sexual organs:—penis absent;—a loose pouch for the scrotum;—with a fissure in the perinæum resembling a vagina. It lived about thirty-six hours, but never sucked. The mother assigned as a cause, that she had been frightened by a miserable object to whom the child bore a striking resemblance.—A. Lee.

2. A fœtus with two bodies, with one head common to both, and a deficiency also as to brains. 3. A very valuable obstetric curiosity;—consisting of two fœtuses, of full size, and very finely formed. These fœtuses, however, though so beautifully modelled, are united at the thorax and abdomen. In fœtuses like these, the abdominal cavity is, I suspect, generally common to both; so that if you were to endeavour to separate them by the knife, the abdomen would be laid open. Fond as I am of abdominal surgery, of this I do not approve. This specimen of monstrosity becomes particularly valuable, because it came away from a woman who had borne a large family previously; and occasioned merely a small laceration of the perinæum. The children descended under the foot-presentation; and the head of the one was deposited on the neck of the other, during the transit through the pelvis. The one fœtus is placed a little below the level of the other; and the head seems still inclined to repose upon the neck of its companion.

Misshapen Monsters, &c.—On monsters which are misshapen, and of other kinds, I shall make no remarks; because, with a view to practice, they are not of much importance. The two classes principally interesting, are those which I have stated;—consisting of the *deficient* and the *redundant*; and of their management I shall now proceed to treat.

SECTION 2.—CAUSES OF MONSTROSITY.

It has been often asked, and is still a question undecided, whether the imagination of the mother may have any influence in giving rise to those morbid formative operations, on which the generation of monstrosity seems to depend;—a question which is not to be decided by reason, independently of observation. A simple reflection may show this; for, as we know but little respecting the powers which operate, we must necessarily know as little respecting the powers by which this operation may be influenced. In matters of this obscure and uncertain kind, to ridicule without giving ourselves the trouble to examine, seems to me to be at once both petulant and unphilosophical. Facts, and not à priori reasonings, form the basis of modern philosophy! That incubation* should give rise to the formation of the chick within the egg-shell;—that the conjunction of the sexes should give the first impulse to the formation of the infant in the uterus,—must, independently of observation, have appeared both absurd and incredible. In the compass of generation, nothing need surprise us! It is the fairy-land of physiology; and, in the hands of divines, its wonders may serve as a good preparative to discipline the mind for the more ready belief of those miracles, which it is their office to inculcate! When first I set out on my physiological career, I certainly set out with a strong impression, that the fancy of the mother could not operate in the formation of her fœtus; nor am I prepared to concede, at the present moment, that this impression was erroneous. Nevertheless I must, in candour, admit that various

* From *incumbo*, "to lie upon".

facts have been brought before me, which do prove beyond doubt thus much;—that there is sometimes a very striking coincidence between impressions made on the mind of the mother, and appearances which manifest themselves on the body of the fœtus;—these coincidences being sufficiently frequent to create a sort of suspicion, that they may be of the nature of cause and effect*. If I press my finger upon the box which now lies before it, it moves; but how do I know that this motion may not arise from some other simultaneous occurrence distinct from the pressure of my finger? In truth, should this coincidence of pressure and motion in this case be observed but once, were it not for analogical and uncertain experience, I should have just cause to doubt; but when I make this pressure repeatedly, in varying circumstances, and find invariably that motion ensues (unless some third cause, obvious in its operation, be interposed to prevent it), I may reasonably infer, that the coincidence of these two occurrences is of the nature of causation; and in all cases of rarer occurrence, I conceive, the more frequent these coincidences, the stronger does the proof of causation become.

Influence of Imagination on the Mother.—It would lead to a long disquisition, if I were to bring before you all the different facts which have been related to me; and which seem to show that the fancy of the mother may have an effect in the formation of the fœtus. Some of the more striking facts, however, I may perhaps be permitted to adduce by way of illustration. I once presided at a labour, where the child, after birth, was discovered to labour under a deficiency of the cartilage of the ribs; and this upon the right side of the sternum, near its middle. In consequence of this deficiency of the cartilage, there is in this child (now living†) a sort of dimple, or impression; which is very peculiar; and of which the mother gave me the following account. In the early days of her pregnancy, she took one of her children to Mr. Travers‡,—an eminent surgeon, well known to you all;—it having been supposed that there was some fracture of the collar-bone, or of the contiguous ribs. Mr. Travers, examining the child with a good deal of care, chanced to make a pressure on the ribs in front, near the sternum;—the thumb bearing over this part; while his fingers were placed behind on the scapula, and the rest of the hand lay above the shoulder;—the child being young and small. In doing this, he occasioned (with the thumb) a considerable dimple or indentation; which, as the mother (of great nervous irritability) told me, affected her very much; and produced in her that contraction of the skin, which is very significantly denominated "goose-skin". This little occurrence, however, did not ultimately make any very strong impression on her mind, though she thought of it occasionally during gestation; but when I saw the infant afterwards, she told

* It is not unreasonable to think, that the passions of the mother may influence the fœtus. Sir Everard Home found nerves in the placenta. The mother is to the fœtus what the soil is to the plant. The emotions of the mind may change this soil, by altering the secretions; and if these secretions be altered, the nourishment of the child is altered.—*Dr. Fletcher.*

† In 1828. ‡ Surgeon to St. Thomas's Hospital.

me the story which I have very accurately related to you. A lady, whose name it would be improper to mention, at a period (as I was informed) not earlier than the first two or three months of her pregnancy, was very much alarmed by a beggar, who had lost the hand and lower part of the arm; and who, to excite her commiseration, exhibited to view the mutilated member. A strong impression was made upon her mind by this shocking sight; and, some time afterwards, in a ball-room, on seeing a gallant officer who had left one of his arms in the field of battle, this impression was renewed; —not without a slight emotion of horror, and constriction of the skin. Some few months afterwards, the child was born with a coincident want of the arm. I had the statement from her own son, who is one of our profession. These cases are not solitary. The same tale has been often told, and the same concurrence has often been observed; and, to say the least of it, the coincidence deserves attention. There was a child (of which I have got a drawing) lately born at Plymouth, with excrescences pushing from the mouth, and which certainly resembled a large *bunch of grapes*;—such as might appear in the mouth of a child, if it were endeavouring to devour, unbroken, the whole of a small bunch;—there not being room sufficient to admit the whole, at once, behind the teeth. Before she was aware of this faulty formation, the mother was closely questioned by the accoucheur; and she certainly did state, distinctly enough, that in the early period of her pregnancy,—not, however, till near the fourth month,—in passing along a street, she chanced to see a boy who had got a bunch of grapes; which he was eating very greedily, as boys will do; and that she had a very great desire to partake. Growing from the region of the sternum, too, there was an excrescence which might remind one of the wattle of the turkey-cock;—an animal by which she had been frightened a little earlier in her pregnancy. The coincidence certainly merits notice. I am indebted to Mr. Baldy and Mr. Franklin Bellamy for this fact; of which a fuller account will be found in the "Medical and Physical Journal", for July, 1827.

I am indebted to Mr. Maurice Workman, of Reading, for a preparation with which the following tale is connected:—An ancient lady, in his neighbourhood, who was (I think) childless, among other pets of her family, had a parrot, a cat, and "a love of a lap-dog"; all co-rivals for the first place in affection (it is pleasant to love something!); and who agreed with each other no better than the fair goddesses of Ida, when they contended for the apple of beauty; and unveiled, in the presence of the Trojan shepherd, charms before unseen by mortal eyes*! On some occasion or other, it seems, the cat was in an apartment; and, the parrot and the dog being placed to the right and left of the door-way, puss (then *enciente*) in retreating from

* At the marriage-feast of Peleus and Thespis, the Goddess of Discord introduced a beautiful apple, with the following inscription:—"Let it be given to the fairest!" Juno, Minerva, and Venus, put in their claims to the prize; and referred the decision of the question to Paris, the most beautiful man then existing. He decided in favour of Venus; who rewarded him with another man's wife.—See Notes to Page 792.—N. R.

the chamber, neared the cage (perhaps to avoid her four-footed rival); when she was alarmed by the ferocious scream of the parrot, and scampered off in a great fright. Dates afterwards proved, that she was in the first days of her gestation; and she subsequently produced a good many kittens; all of them were well formed, with the exception of one; which, certainly, has a head very much resembling in form that of the bird by which she was scared. Mr. Maurice Workman is my voucher for these facts; which in all that is essential, are, on my part, fairly stated. The healthy formation of the other fœtuses, deserves especial notice; but, say what we will, the coincidence is well worth recording.

Particular facts of this kind I forbear to multiply; though the task is easy. As these coincidences are occasional only, and perhaps rare, of course they do not demonstrate causation; but if, on a candid accumulation of facts, it appear that the coincidences between the impressions on the mind of the mother and the body of the fœtus are well marked, and not unfrequent, then (to say the least of them) they establish a very curious fact in animal generation; and their general bearing is to show that the two occurrences are in relation to each other, as cause and effect. I would that the affirmative of this could be proved. We should then be in possession of one of the principles of formation. But then it may be asked,—"How can these things be?"—"And how", it might once have been said, "can the moon act on the waters?" If, like many of our forefathers, we had no notion of the bulk of our satellite; if, like them too, we were ignorant of the principle of gravitation; if we had no idea that matter was capable of attracting matter, even at remote and planetary distances;—such an action, in such a state of ignorance, must appear incredible; yet, when once the necessary knowledge is communicated, the mutual attraction of the two masses of matter becomes, to a certain extent, intelligible enough. Observe the progress of this wonderful discovery; for it illustrates the progress of all solid philosophy. The fixed relation between the moon and the floods, was first sagaciously observed, and verified;—allowance being made for the irregularities which arise from accidental circumstances. The probable connexion of the two, in the way of cause and effect, was afterwards inferred from the fixity of this relation. At length, the large mass of the lunar body was suggested, and demonstrated; and the mutual attraction of matter was evinced, by experiments and calculations addressed to the senses or reason; and thus the doctrine, which at first must have been deemed a wild hypothesis, was not only proved but comprehended. While all this was doing, some,—being variously occupied during the first stage of the inquiry,—paid no attention to the observations on which the discovery was to be grounded; and others, as the discovery proceeded, clamoured (no doubt) against the absurdity and impiety of the proposition. "What? A small body, like the moon, to act upon the huge mass of waters in the ocean? Lunatic! What? the great goddess of the Ephesians *;

* "Great is Diana of the Ephesians!"—"*The Acts of the Apostles*"; *Chapter* 19; *Verses* 28 *and* 34.

—the celestial archeress, whose gracious presence has been manifested to our heroes;—whose miracles and oracles have astonished her votaries *, and who even now steals down to the mysterious retreat of Latmos † !—What? Do you dare to assert that this sublime being may, after all, be nothing more than a huge globe of matter,—the scene of tempest and volcano? Atheist!" Such, I can easily believe, might be the spirit which animated the opponents of these doctrines. Yet, in the midst of all these commotions,—while puppies were barking, and men were clamouring,—the moon shone; the ocean rolled; the seasons changed; the earth teemed; the mob of all ranks vanished from the scene; and, by its mere intrinsic durability, without effort, the truth prevailed at last! Our prepossessions are not the criterion of truth. Improbability and incompatibility may result, not from impossibility, but from our ignorance of the requisite explanatory knowledge. All this is clear in speculation; but somehow or other, it is forgotten in practice! Doubt! Observe! Infer! Still doubt; and bring the truth to the test of the most rigorous examination! Truth never yet shunned the light! How can she? It is her element!

But to return from this digression: pray give to the profession, with rigid accuracy and well-attested, facts relating to this important subject! Always, where it can be known, state the age of the gestation, the absence or presence of the feeling of horror, and cutaneous constriction; and endeavour, so far as possible, to verify all by your own personal observation, and inquiry of the woman herself. Monstrosity may occur, in formation, within the egg-shell. I have a specimen of it. How can mental impression be supposed to operate here?

Illustrations.—1. A specimen of the twin-monster. 2. A monstrous chick, which is rather interesting; because it is formed under the egg-shell. 3. The third is a monster of very rare occurrence. We meet, in life, with many who are pig-headed, though with few that are formed with the head like that of a pig; yet here is a specimen of this.

From these preparations, it would seem that monstrosity is of early formation; as indeed we should expect it to be; that is, before epigenesis (or, in other words, the formative process) is completed. This consideration renders the reported effects of mental impressions less credible. It is, indeed, difficult to conceive of their operation, after the formation has once been perfected; and yet, I think, in most recorded cases of this kind, the impressions have been made on the mind later,—after formation must be supposed to have been effected.

* In heaven, Diana was the moon (as her brother, Apollo, was the sun); on earth, the goddess of hunting; and in hell, under the name of Hecate, the goddess of magic, and enchantments.—N. R.

† Alluding to the passion of Diana for Endymion, a shepherd on Mount Latmos.—N. R.

CHAPTER VIII.

GENERAL OBSERVATIONS ON THE STATE OF THE FEMALE SYSTEM DURING PREGNANCY.

[After weighing the matter very carefully in my mind, it appeared to me * that it would conduce to a clearer and more satisfactory appreciation of the value of certain details on which we must hereafter enlarge, if, before entering on the consideration of individual signs of pregnancy, we were to premise some general observations on the effects produced in the female system by that condition;—whether resulting from the necessary alterations in the component structures and size of the uterus, and the consequent change of relations between it and other organs; or from certain physiological phenomena, connected with the train of actions originating in conception, and thence necessarily continued for the evolution and development of the new organization; and then to glance briefly at some of the practical considerations more obviously connected with these phenomena, in their relation to external objects; and to notice the precautionary measures, by which we should seek to protect the pregnant female from any injury she might sustain from their influence.

Increased Action of the Uterine System.—It is well known that, immediately after conception, the uterine system becomes endowed with a remarkable increase of vital action, affecting its various constituents; so that it is thrown into a condition which, if not properly inflammatory, we may certainly consider (with Baillie) "a state analogous to inflammation." There takes place, at once, a great increase in the vascular supply directed towards the organ and its appendages; the vessels are gorged and distended with blood; and many of them, previously impervious to its passage, now begin to circulate that fluid freely. The tissue of the organ becomes infiltrated with serum; so that its bulk is increased, its texture softened, and its fibres separated; while lymph is poured out upon its internal surface, in order to line that cavity with the decidua; which partakes largely of the characters of the false membranes †, the results of inflammatory action in other situations. Subsequently, large quantities of serum are rapidly secreted, in order to form the liquor amnii; and, lastly, the nerves of the uterus,—increasing both in number and size (as W. Hunter ‡ suspected, and Tiedemann § has proved), impart to it a more exalted degree of sensibility; which, from the close connexion of these nerves with the great abdominal

* Dr. Montgomery.

† Burdach says:—"La membrane caduque est l'analogue des fausses membranes, et la preuve de l'excitation de la matrice." ("The deciduous membrane is analogous to false membranes; and proves the excitement of the womb."—N. R.)

‡ "Anatomy of the Gravid Uterus;" Page 21.

§ Tiedemann's "Tabulæ et Nervorum Uteri Descriptio"; Page 10.

plexuses, is quickly diffused throughout the system at large; so that the latter is soon found to participate in the excitement emanating from the uterus *. There is felt a sensation of feverish uneasiness, chills alternating with flushes of heat, sickness at the stomach, disturbed sleep, languor, and sometimes drowsiness. Menstruation is suppressed; and the breasts soon begin to evince an active sympathy;—becoming swollen and sensitive. The pulse is generally quickened;—especially at first. The blood exhibits modified characters of inflammation; and venesection is found the most effectual means of relief, in many of the most urgent affections of pregnancy; "even in constitutions," says Denman, "which at other times do not well bear that evacuation." All these symptoms, it may be observed, appear the natural, and no doubt salutary consequences, of the plastic activity prevailing, at the time, in the great organ of reproduction.

Changes in the Uterine System.—In consequence of this increase of vital action imparted to it, the uterus acquires a principle of growth, which steadily proceeds; until, instead of being an insignificant organ buried deeply amongst the contents of the pelvis, it attains to dimensions of such magnitude, and undergoes changes in its component structures so remarkable, that, whether considered absolutely or relatively, they present to our observation a series of phenomena, at once the most extraordinary and beautiful of any that claim our admiration, in the arrangements of the animal economy. Surely the enthusiasm of Swammerdam is not to be censured as excessive, when he describes it as the "miraculum naturæ" †. The virgin uterus is about two-and-a-half inches long, and one-and-three-quarters broad, and about an inch from back to front; with a cavity which would not more than receive into it the kernel of an almond. According to the calculations of Levret, its superficies may be taken at sixteen inches. At the end of the ninth month of gestation, its length is from twelve to fourteen inches, its breadth from nine to ten, and its diameter, from back to front, between eight and nine inches. Its superficies is now estimated at about three-hundred-and-thirty-nine inches; and its cavity,—which, before impregnation, was equivalent to about eleven-fourteenths, or "quam proxime" ‡ three-fourths of a cubic inch,—will now contain four-hundred-and-eight cubic inches;—so that its capacity is increased a little more than five-hundred-and-nineteen times, and its solid substance from four-and-a-third inches to fifty-one cubic inches; or nearly in the ratio of twelve to one.§ At the same time, a similar increase of size is observed in its several constituents. For instance: blood-vessels which, before conception, would not have admitted the point of a probe, will now readily receive the end of the finger; and yet let but a few weeks elapse after parturition, and the

* "Lobstein compare l'uterus d'une femme grosse à un organe attaqué d'une inflammation lente et chronique."—*Desormeaux.* ("Lobstein compares the uterus of a pregnant woman to an organ attacked by slight and chronic inflammation".—N. R.)

† "Miracle of Nature".

‡ "As nearly as possible".

§ See Pages 44, 497, 955, and 1001.

organ again resumes its original contracted and diminutive state. But, as we might anticipate, such expansion of an organ so situated, must involve many changes affecting other parts also; and as it acquires this increase of volume, it gradually deserts the pelvis, and rises out of its cavity into that of the abdomen;—disturbing, not only the relations hitherto existing between it and other abdominal viscera, but also the ordinary relations of these viscera with each other.

Effects on the Bladder.—The first organ generally affected in this way, is the bladder; which, in the early periods of pregnancy, is liable to increased irritability;—owing to its receiving its supply of nerves from a common trunk with those of the uterus. Hence frequent micturition is often a very early consequence of a gravid uterus; and one which occasionally continues very troublesome throughout the greater part of gestation. Sometimes retention of urine is caused by the mechanical pressure of the uterus, before it has quitted the cavity of the pelvis; though sometimes the same symptom occurs, without our being able to detect this or any other obvious cause for its production. Towards the close of pregnancy, the female is often unable to retain her water, except for a short time; and suffers much inconvenience by its coming away involuntarily while she walks; or if she coughs, laughs, or sneezes. This is caused by the weight of the uterus resting on the fundus of the bladder; which it presses heavily against the inner and upper edge of the symphysis pubis, over which it is now in some degree turned;—in consequence of the uterus, in its ascent, drawing it up as well as the vagina; with the anterior wall of which the bladder is so intimately connected. From the stretching of the round ligaments of the uterus, as well as from the increased sensibility of the nerves which they contain, considerable uneasiness is felt in the direction of these cords, and about their termination at the sides of the pubes*.

Effects on the Nervous System.—This uneasiness extends also along the nerves of the thigh; producing numbness, cramps, and even considerable pain along the limb; which latter symptoms are often observed amongst the earliest indications of uterine irritation;—whether arising from functional derangement, organic disease, or the healthy excitement of pregnancy. It is not unusual, in such circumstances, to find the power of one or both of the lower limbs considerably impaired. In some few rare instances, they have become partially or completely paralytic, and even hemiplegia has been observed; but to what degree the mere enlargement of the uterus is the agent in the production of such a state, seems very doubtful. The blood drawn, in such circumstances, has been observed to present highly inflammatory characters: but whatever measures may be adopted, the affection is never perfectly removed until after delivery; from which it would appear to depend on cerebral disturbance, originating

* The round ligaments arise at the fundus of the uterus; proceed through the anterior fold of the broad ligament to the internal abdominal ring; pass through the inguinal canal; and are lost in the external organs of generation.—*Dr. Fletcher.*

probably in uterine irritation, and referrible to the state of pregnancy as its specific cause.

Effects on the Vascular System.—When the uterus has acquired considerable size, it begins to interfere with the circulation, especially that through the veins; and, by its pressure upon the trunks which return the blood from the lower extremities and parts within the pelvis, gives rise to anasarcous swellings of the feet and legs; and sometimes to more formidable effusions within the cavity of the peritoneum. Varicose veins and hæmorrhoidal tumours, are probably to be ascribed to the same cause; though perhaps the latter would be with more propriety referred to congestion of the hæmorrhoidal veins, from the torpid and constipated state of the bowels. Having, so far, assigned a mechanical agency in the production of these anasarcous swellings, which so frequently occur in pregnancy, it must be observed that, although they may thus be, to a certain extent, satisfactorily accounted for in the lower extremities, there is frequently evidence of some more general cause operating in the system;—probably the increased activity of the exhalants; which is, indeed, a condition of these vessels necessary for the performance of a very important process essential to the well-being of the fœtus; namely, the secretion of the liquor amnii. Without reference to some such general action, we could not satisfactorily explain the production of that œdema of the upper extremities and face, which sometimes accompanies pregnancy;—as in a lady seen by the writer*, a few weeks since, in the ninth month of pregnancy. About the middle of the eighth month, swelling of her feet and legs began, and continued until it reached half-way up the thighs. Then her hands became similarly affected. She could hardly close them; and was obliged to put off her rings. At length her face became affected; and to such a degree, that when she got out of bed in the morning, her eyes would be scarcely visible. I may just observe, here, that when this latter form of œdema takes place, it ought to claim our most serious attention; as it is connected with a state of the vascular system which, if active depleting measures are not previously adopted, will probably give rise to convulsions at the time of labour; of which the case of the lady above alluded to was a well marked instance.

Obliquity of the Uterus.—When the uterus has acquired its full growth, it occupies a very large space in the abdominal cavity;—pressing both the liver and stomach upwards against the diaphragm; by which the capacity of the chest is diminished, the action of the lungs impeded, and a greater or less degree of dyspnœa induced; while, at the same time, the passage of the bile into the duodenum is interfered with, and slight jaundice makes its appearance; or considerable disorder of the stomach, with very imperfect digestion, renders the patient very uncomfortable. Owing to the oblique attachment of the pelvis to the spinal column, and the projecting sacro-vertebral junction coming in contact with the posterior surface of the uterus (as it increases in size, and begins to ascend out of the pelvic

* Dr. Montgomery.

cavity), that organ cannot rise perpendicularly; but its fundus is inclined forward, with its anterior surface lying against the peritoneal lining of the abdominal parietes;—a relation of parts which continues, unchanged, throughout the whole period of pregnancy; and which should be well borne in mind in case of any operation being performed (as for dropsy, or umbilical hernia) during gestation; lest some such miserable result should ensue, as is said to have happened (some years ago) in this country; when a trocar was thrust through the gravid uterus, and into the child's head. Another instance of this fatal error is mentioned by Desormeaux*, as having taken place at Paris.

Disadvantages resulting from the Obliquity of the Uterus.—From this anterior projection or obliquity of the uterus, some inconveniences and many important advantages arise to the female. Amongst the former, are the pressure on the bladder (already noticed†), and the stretching outwards of the abdominal muscles and integuments; which frequently become very sore and painful, and even suffer structural injury; in consequence of which., cracks which retain a white or pearly hue take place, and remain permanent. In some rarer instances, the distension is sufficient to cause separation between the muscles; of which I‡ saw an example, where the recti had separated from each other to the breadth of my hand; and it may be observed, here, that when this has happened and the woman again becomes pregnant, the uterus is liable to fall forward to a very unusual degree; and as, at the same time it distorts the cervix, there may be induced a condition of the parts so unnatural, as to give rise to a belief in the existence of extra-uterine gestation.§

The umbilical ring, not unfrequently, suffers dilatation; and there is a disposition to hernia at that part, or even complete protrusion may occur;—as I ‡ lately saw happen. Occasionally, the injury done to the muscles and aponeuroses remains permanent; and allows of a degree of protrusion of the abdominal viscera at all times. There is another affection which I believe to be also produced in the same way; though constantly mistaken for, and treated as, local inflammation;—I speak of a pain felt, at either side, about the margin of the ribs; and arising from the dragging of the muscles at their insertions in that situation; especially of the "obliqui", at their superior attachment. I have seen this pain, when affecting the right side, actively treated as inflammation of the liver; but, of course, without benefit; and afterwards completely relieved by rest, friction with an anodyne liniment, and the support of a proper bandage. Lastly: from this obliquity of the uterus, the direction of the centre of gravity is changed; and instead of falling between the feet, it falls in front of them;—in consequence of which, the person has an inclination to fall forwards; and, in order to prevent this, is under the necessity of throwing back the head and shoulders, and assuming that pompous

* "Dictionnaire de Médecine"; Volume 10; Page 447.
† See Page 1021. ‡ Dr. Montgomery. § See Page 480.

air, which is so often unjustly attributed to a wish to make a display of her condition. In persons of very short stature, when the pelvis is contracted; in those who have borne many children, and have the abdominal muscles greatly relaxed, or perhaps separated; or where the sacro-vertebral curve is very prominent; in these cases the anterior obliquity of the uterus is proportionally increased; and should some of these causes happen to concur in any individual case, the uterus may not only be thrown into a position of excessive obliquity, but may project horizontally. The organ has even been found, under a combination of such circumstances, with its fundus turned a little downwards;—as happened in the case of the little deformed woman mentioned by William Hunter*. Having enumerated the inconveniences thus entailed, I† would suggest that many of them may be very effectually relieved by the use of a simple article of dress;—consisting of a broad band or belt, with Indian-rubber straps let into it; and so arranged that it will raise the uterus a little, and carry it at the same time upwards and backwards.

Advantages resulting from the Obliquity of the Uterus.—Now let us turn our attention to the advantages secured by this anterior projection of the uterus; and we shall find how greatly they preponderate;—as is ever the case in all the arrangements of Infinite Wisdom; but in none more strikingly or beautifully displayed, than in those by which the perpetuation of our species is effected. These advantages, then, are felt alike during the progress of gestation, and at the time of labour. During the former period, the uterus, with its contents, is prevented from sinking perpendicularly downwards, into the bottom of the pelvis; where, owing to the upright position of the female, it would have a continual tendency to prolapse through the soft parts forming the floor of that cavity; and even if this did not happen, such pressure would be made on the bladder and rectum, as must completely prevent the performance of their respective offices; whereas, by the existing arrangement, the weight of the uterus and its contents is supported by the anterior wall of the pelvis, and the adjoining lower section of the abdominal parietes. Again: by this position of the uterus, its longer axis,—or the line in which, when in action its expulsive effort is directed,—is brought into coincidence with the axis of the abdominal aperture of the pelvis; so that, when labour commences, the child is presented for entrance into that cavity, in the direction the best possible to facilitate its transmission. The particular changes affecting the os and cervix uteri, will be fully considered in a future section.

Tendency to Plethoric Affections.—It has already been noticed‡ that the state of pregnancy is one of increased vascular action;—not only in the great organ primarily affected, but generally throughout the system; which vascularity is created by a disposition to certain affections indicative of plethora, and is best alleviated by venesection or other depleting measures. This natural tendency to redundance,

* See the "Anatomy of the Gravid Uterus"; Page 9.
† Dr. Montgomery. ‡ See Pages 1019 and 1020.

during this state is too often cherished and increased,—to the great prejudice of the woman,—by mismanagement of her diet, neglect of the state of the bowels, and the want of proper and sufficient exercise; all of which mutually react upon each other;—each rendering the effect of each still more decidedly injurious. It cannot escape observation that, during gestation, the activity of the alimentary canal is almost always greatly impaired; and hence one strong reason is suggested for greater caution in selecting food of a proper kind, and for restriction in its quantity. Nature, as a safeguard, resorts to vomiting;—thereby, as it were, declaring her opinion, that there is in the system something superfluous; the evacuation of which is not only beneficial to the parent, but subservient to the welfare of the child; which, we know, is but too surely threatened when, in the early months of pregnancy, the disposition to vomit suddenly subsides. The popular prejudice on this subject, is that the pregnant woman, having two to feed, ought to swallow a double supply of nutrition; while nature declares the exact contrary;—by disposing her to reject a large proportion of what she takes; and making her averse from many of the richer kinds of meat, which at other times she would eat with pleasure. Experience, moreover, has shown that the perfection of the fœtus, either as to health or size, depends very little on the quantity of nutriment supplied to the mother during gestation. Hence the attempts that have been made to restrain the growth of the child by diminishing the food of the mother, have not only signally failed in accomplishing the object intended *, but the children, in some of the trials, have been unusually large and well-thriven. It is a common remark, that women who became emaciated during pregnancy, bring forth healthier children, and have easier labours, than others; and the same observation will frequently be verified even where the irritability of stomach is so great, that they are continually rejecting its contents;—even to such a degree as to endanger their safety from exhaustion; as in such cases as that related by Mr. Vaughan †; while, on the other hand, we have the experience of Denman, that "if the mother has little uneasiness and grows corpulent during pregnancy, the child is generally small."

Dangers of Repletion.—But supposing the vulgar notion to be correct, and that the nutrition and bulk of the child are promoted by such means, the result to the mother must be a proportional increase of difficulty in her labour, and of suffering from its size; as well as from the less regular action of the uterus, in a system overloaded, and under the influence of feverish excitement. Even protraction of labour is but a secondary evil, among those to which repletion and excited circulation expose the female. Inordinate secretion of the liquor amnii, with its frequent consequence, (relaxation of the uterus after delivery); hæmorrhage; convulsions; inflammation;—these are evils which will be the more surely entailed, if, at the same

* See Dr. Merriman's "Synopsis"; Pages 178, 319, and following.

† "Memoirs of the London Medical Society"; Volume 2; Page 125. See also the observations of Assalini;—"Nuovi Stromenti de Obstetricia é Loro Uso"; 1811.

time, the state of the bowels be neglected; and we are fully entitled to add to this catalogue, mania with its train of horrors;—the fearful visitation of which, we have often good reason to believe, owes its origin to improper indulgences in diet, and want of attention to the action of the alimentary canal! As another means of guarding against such evils, the necessity for regular exercise during pregnancy should be strongly enforced; and we should point out the absurdity of the fashionable habits, so much and so injuriously indulged in by fine ladies; who lounge on their sofa, or spend half their day in bed;—gratifying a mere indolence of habit, which they calculate on being allowed or even encouraged to indulge in, on account of their situation; while others erroneously adopt such a course, from a belief that exercise is unfit for them, or likely to prove injurious. But they should be made fully aware, how hostile to their present comfort and future welfare is such inactivity;—by which a universal torpor of the system is induced; with sluggish action of the liver, indigestion, want of sleep; and a train of nervous anxieties, which harass and depress the spirits. How different this from the joyous buoyancy of the sturdy peasant female; whose daily round of laborious occupation, is continued without interruption to almost "the hour of nature's sorrow". It should be strongly impressed on the mother, that the advantages obtained by well-regulated habits, are by no means exclusively conferred on her; but that others, equally important, are thereby secured to the child; for whom a larger supply of nutrition, and of a better quality will thus be provided; and so, being plentifully nourished by sound and healthy fluids, it will commence its career of life strong, vigorous, and less liable to those morbid debilities and derangements, which afflict the children of the indolent, the pampered, or the debauched! It is even asserted, by late observers, that the number of cretins in the Valais *, is much diminished since the women have adopted the custom of passing the time of their pregnancy in elevated situations of the country; where they are not exposed to the damps which prevail in the depths of the valleys. Many a mother, with whom no other argument would prevail, might be weaned from injurious indulgences, if it were thus represented to her, that not only her own, but the future health and happiness of her already loved unborn infant, must be vitally influenced by the life she leads, while it is as yet drawing its very existence from her blood.

Effects of Mental or Moral Emotions.—When speaking of the physical changes which the uterine system undergoes, in consequence of impregnation, it was remarked† that the nerves distributed to the organ and its appendages, are augmented in size and number; and, having their sensibility exalted, diffuse throughout the system generally an increase of nervous irritability; which displays itself under a great variety of forms and circumstances;—rendering the female much more excitable, and more easily affected by external agencies; espe-

* For an interesting account of these unfortunate idiots, see Dr. Elliotson's "Principles and Practice of Medicine"; Edited by Dr. Rogers; Published by Joseph Butler, London: Pages 605 and 506.

† See Page 957.

cially those which suddenly produce strong mental or moral emotions, whether of the exhilarating or depressing kind; such as fear, joy, sorrow, and anger. The powerful influence of such impressions over the functions and actions of the uterus, in every stage of female life after puberty, is recognised in a multiplicity of circumstances;—whether as deranging menstruation, inducing abortion, modifying the energy of parturient action, or affecting the recovery from child-bed *. Hence the importance of preventing pregnant women, as far as possible, from being exposed to causes likely to distress, or otherwise strongly impress their minds. Sights of an affecting kind, books, pictures, or theatrical representations which may deeply excite the imagination or engage the feelings, are decidedly unsafe; and, in illustration of the dangers which may thence arise, I shall mention one or two instances.

Case 1.—I † was once urgently called to see a lady, who had gone to the theatre, when two months pregnant, to witness some grand spectacle; in which armed knights, on horseback, were to cross a bridge and storm a castle. While they were doing so, the bridge gave way; they were precipitated into the canvass-torrent; and some of them were much hurt. The lady was dreadfully terrified. She screamed, fainted, and was carried home almost insensible; when it was discovered that she was flooding profusely. Under the influence of the hæmorrhage and the previous fright, she soon became alarmingly exhausted. By the adoption of proper measures, however, she was restored and tranquillized; but she miscarried before morning.

Case 2.—Another case was that of a lady, who,—after passing several years of her life in straitened circumstances, and actively employed,—married when no longer very young; and was thereby placed in a condition of comparative affluence; which, unfortunately for herself, enabled her to dispense with any further exertion, and to indulge a natural inclination to indolence and sedentary habits. She soon became pregnant; and spent her whole day lying on a sofa at the fire-side, or with her feet on the fender;—reading novels; eating and drinking heartily; and having a discharge from the bowels once or twice, perhaps, in the week. Among the books which she thus daily devoured, was one containing a highly wrought description of one of the "Maisons de Santé" in France, and of its inmates. This affected her strongly, and took great hold on her mind; and she expressed the greatest desire to visit one of the large lunatic asylums in this city‡;—that she might assure herself of the reality of such things as she had been reading of. In this wish she was indulged;—as in every thing else, whether right or wrong, to which she took a fancy: and the consequence was, that the appearance of the persons she had seen, and their extravagant expressions and gesticulations, continued to haunt her imagination incessantly, up to the time of her delivery;

* See "Burrows on Insanity", Page 378; and Merriman's "Synopsis", Pages 33 and 224.

† Dr. Montgomery.

‡ Dublin.

on the third day after which, she showed symptoms of insanity; which became rapidly confirmed, and continued for many months. During her illness, and after her recovery, she repeatedly told me that, from the time of reading the book and visiting the asylum, she felt as if she would certainly become deranged.

Case 3.—Morgagni tells us of "a certain woman in the fourth month of her pregnancy, and just entering upon the fifth, when news was suddenly brought to her of the sudden death of her absent husband. Being struck with grief and fear at the same moment, she, from that very time, at first observed the motion of the fœtus to be made more languid, and after that to cease entirely; at the end of the eighth day after, she ceased to feel the child's motion; and she miscarried. You see, then", he subjoins, "what power passions of this kind have in producing these effects."*

Case 4.—A striking and pathetic illustration is also recorded in the first book of Samuel, in the account of the death of Eli's daughter-in-law†. Dr. Merriman‡ relates a most melancholy case, in which, during labour, the abrupt entrance of a person much disliked by the female, was instantly followed by a fit, which put an end to her life. I§ believe it is well known, that during the years which immediately succeeded the lamented death of the Princess Charlotte, the most gloomy anticipations clouded and depressed the minds of pregnant and parturient women, in these countries‖; and, in the opinion of some of the most competent judges, many untoward events were thus produced in child-bed. "Indeed," says Dr. Merriman, "this calamitous event is still¶ found to operate unfavourably on the minds of patients in a certain rank of life"**; and a similar opinion is expressed by Dr. Ramsbotham, with reference to that unfortunate case; from which, he says, "danger was transferred to others. The shock sustained by many women, towards the close of pregnancy, on the distressful communication, shed a baneful influence on the process of parturition in their several instances"††. The writer§ had an opportunity of witnessing such an effect derived from this source, so lately as 1831.

Necessity of Avoiding these Emotions.—This extreme impressibility of the nervous system, in pregnant women, teaches us the necessity for preventing them from witnessing scenes of acute suffering or distress;—such as those of sickness (especially convulsive affections), or the agonies of a death-bed. They should not be present when others are in labour; which sometimes greatly terrifies the timid, and

* Epistle 48; Articles 18 and 19; Volume 2; Page 721. (Alexander's Translation).

† See Pages 3 and 421.

‡ "Synopsis"; Page 224.

§ Dr. Montgomery.

‖ Great Britain and Ireland.

¶ In 1826.

** Dr. Merriman's "Synopsis"; Fourth Edition; Page 227.

†† Dr. Ramsbotham's "Practical Observations"; Part 1; Page 192.

even those who pass with courage through the same process themselves. They should not expose themselves to infectious disorders; for if they should happen to catch them (though they seem less liable to do so than others), they will at least be very likely to miscarry; and even though they may not be themselves susceptible of the disease, the unborn infant may suffer from it; as has been proved with regard to small-pox*. Neither, if possible, should they be permitted to see disgusting objects; for although no injury may be thereby done to the child, their minds are apt to remain much troubled with anticipations of some deformity or disfigurement likely to ensue.

Influence of Mental Emotions on the Child.—In reference to this matter,—without meaning, in any way, to advocate or countenance either the indiscriminate doctrine of effects produced by the mother's imagination, or the ridiculously absurd fabrications by which it has been attempted to maintain it,—I † cannot help thinking it quite consistent with reason, and the present state of our knowledge, to believe that a very powerful impression on the mother's mind or nervous system, may injuriously affect the fœtus; and it will, at least, be always safe and prudent to act on such a presumption; for "although", to use the words of Morgagni ‡, "I do not approve these things [that is the absurd stories], there are cases wherein it seems to me to be very hard to depart totally and altogether from that opinion which is common to the greatest men" §. In a case already quoted from this celebrated writer ‖, a mental impression was quickly followed by the death of the child; and if such an influence can thus destroy its life, it is surely not unreasonable to admit, that it may have the power of modifying organization ¶. An instance of this kind occurred, under my own observation, about two years ago;—a case so remarkable, that I trust I shall be excused if I think it presents something more than a mere coincidence, however striking.

Case.—A lady, pregnant for the first time, to whom I† recommended frequent exercise in the open air, declined going out as often as was thought necessary;—assigning as her reason, that she was afraid of seeing a man whose appearance had greatly shocked and disgusted her. He used to crawl along the flag-way on his hands and knees; with his feet turned up behind him. The latter were malformed and imperfect;—appearing as if they had been cut off at the instep; and he exhibited them uncovered, in order to excite commiseration. I

* See cases by Jenner, in the "Medico-Chirurgical Transactions", Volume 1, Page 269; and a very remarkable one by Mead, in which "a certain woman who had formerly had the small-pox, and was now near her reckoning, attended her husband in the distemper. She went her full time and was delivered of a dead child. It may be needless to observe, that she did not catch it on this occasion; but the dead body of the infant was a horrid sight; being all over covered with the pustules;—a manifest sign that it died of the disease before it was brought into the world".—*Dr. Mead's Works; Edition of* 1767; *Page* 253.

† Dr. Montgomery.

‡ Epistle 48; Article 54.

§ He refers to Böerhaave and Van Swieten. ‖ Page 1028; Case 3.

¶ A celebrated writer of the present day, Esquirol, is led (from observation and experience) to refer one of the species of congenital predisposition to insanity, to the impression of terror on the mind of the mother while pregnant.—*Montgomery.*

afterwards attended this lady in her lying-in; and her child,—which was born a month before its time, and lived but a few minutes,—although in every other respect perfect, had the feet malformed and defective;—precisely in the same way as those of the cripple, who had alarmed her, and whom I * had often seen.

Here was an obvious and recognised object, making a powerful impression, of a disagreeable kind; complained of at the time; and followed by an effect in perfect correspondence with the previous cause;—there being a similarity so perfect between the two, that (with the distinguished author above referred to †) I* "will not easily suppose that chance could have been so ingenious (if I may be allowed to speak thus), and so exact an imitator"‡; and though I must acknowledge, in the words of Van Swieten, that "I do not understand the connexion of the cause acting upon the mother, with the effect observed in the fœtus"§, I also agree with him, that it must not therefore be denied that such a thing has really happened; and while I totally reject those relations which can attract attention only by the monstrous absurdities with which they over-tax our credulity, I would not wish to adopt the philosophy of those "multi medici"‖ complained of by Galen ¶, "qui, rerum quæ manifestè conspiciuntur causas reddere nequentes, eas esse omninò negant"**; for were such a rule of judging to be adopted, there would indeed "be too many things in physics that I must deny; if they were to be denied, because I do not understand the manner in which they are brought about"†. Many of the acknowledged and demonstrable phenomena connected with generation, would thus be rejected as untrue, because inexplicable; and, from among others, may be selected one, which, from reasoning alone, would appear far more incredible, than could be any effect produced on the fœtus in utero, by a cause acting on the mother during gestation. I allude to the well-known fact, that when the Earl of Moreton's Arabian mare was covered by the quagga, not only did the mule so begotten partake of the characters of the sire, but when the mare was subsequently submitted to an Arabian stallion, by whom she had three foals at different times, the first two continued to exhibit some of the distinctive peculiarities of the quagga, conjoined with the characters of the Arabian breed ††. Mr. Mayo mentions that a similar occurrence was observed, by Mr. Giles, in a litter of pigs; which resembled in colour a former litter by a wild boar ‡‡, Such occurrences appear forcibly to suggest a question, the correct solution of which would be of immense importance, in the history and treatment of disease. Is it possible that a morbid taint,—such

* Dr. Montgomery. † Morgagni.
‡ Epistle 48; Article 54. See, also, Epistle 67; Article 16.
§ Van Swieten's "Commentaries"; Section 1075.
‖ "Numerous Physicians". ¶ "De Locis Affectis"; Book 5; Chapter 3.
** "Who, because they cannot assign the cause of phenomena which manifestly appear, deny the existence of such phenomena altogether."—N. R.
†† See the "Philosophical Transactions", for 1821; Page 21.
‡‡ "Outlines of Physiology;" Third Edition; Page 376.

as that of syphilis, for instance,—having been once communicated to the system of the female, may influence several ova; and so continue to manifest itself in the offspring of subsequent conceptions, when impregnation has been effected by a perfectly healthy man;—the system of the mother appearing to be at the time, and to have been for a considerable period previously, quite free from the disease. My belief is certainly in favour of the affirmative.

Changes Induced in the Moral Temperament.—The irritation of the nervous system is, in some, most obviously perceived in the change induced in the moral temperament *;—rendering the individual depressed and despondent; or, perhaps, she who was naturally placid and sweet-tempered, becomes peevish, irritable, and capricious to a degree as distressing to herself, as it is disagreeable to others. Over this she has little control, and therefore much allowance must be made for such waywardness; which,—instead of exciting opposition, resentment, or reproach,—should claim our utmost indulgence and commiseration; and our best endeavours to comfort, sooth, and cheer. A lady of rank and very superior acquirements, told me †, that for the first two or three months of her pregnancies, she became so irritable, that (to use her own words) she was a perfect nuisance in her house; and was so painfully conscious of it herself, that she would sometimes remain in bed all day, or confine herself to her room;—in order to avoid displaying her irritability, to the annoyance of others. I have known the effect produced to be the reverse of this; and a decided amelioration to take place in the temper;—as we sometimes see happen, also, in the exercise of the bodily functions during pregnancy. A gentleman informed me, that, being afflicted with a step-mother naturally more disposed to practise the "fortiter in re" ‡ than to adopt the "suaviter in modo" §, he and all the household had learned, from experience, to hail with joyful anticipations the lady's pregnancy; as a period when clouds and storm were immediately exchanged for sunshine and quietness.

Some suffer most from being deprived, by this irritability, of sleep night after night; especially if they have not guarded against feverishness, by proper attention to the state of the bowels; or if they sleep in rooms too warm, or insufficiently ventilated. Yet it is singular how little they appear to suffer from this loss of rest;—seeming really as much refreshed and recruited by the short snatches of sleep which they obtain, as they would, at other times, when enjoying unbroken repose.

I † suppose many have noticed a curious fact connected with the state of mind in pregnant women, when their bodily health is at the same time good; namely, that however depressed or dispirited with gloomy forebodings they may have felt in the early part of their

* "Usque adeo nempe fœcundat virtus a mare in coitu proveniens, ut integram fœminam tam *moribus animi* quam corporis vigore immutet." (Harvey; Quarto Edition; Page 593.)—"Such is the influence exercised by the male in coition, that it may affect the sound female as to her moral dispositions, as well as her bodily powers."—N. R.

† Dr. Montgomery.

‡ "Firmness of purpose".

§ "Gentleness of manner".

pregnancy, they in general gradually resume their natural cheerfulness as gestation advances; and, a short time before labour actually commences, often feel their spirits rise, and their bodily activity increase, to a degree that they had not enjoyed for months before. I * have known instances in which this took place so regularly and distinctly, in successive pregnancies, that the patients were able, from its occurrence, to anticipate and announce the near approach of their labour. This must strike us as a wise and beautiful arrangement; by which, on the eve of suffering, the mind rises with a spring to meet the trial with cheerfulness and fortitude; which, as experience proves, so materially contribute to a happy result.

Occasionally, however, the depression assumes a more serious aspect; and the woman is constantly under the influence of a settled and gloomy anticipation of evil;—sometimes accompanied with that sort of apathetic indifference, which makes her careless of every object that ought naturally to awaken an interest in her feelings;—a state which we sometimes observe in fever and other severe disorders, in which it is justly considered a most unfavourable symptom. When this occurs in pregnancy, it will generally be found accompanied by very evident derangements in bodily health. A dull heaviness or aching of the head; a loaded tongue; a bitter taste in the mouth; constant nausea; costiveness; a foul state of the alvine discharges; not unfrequently, a bilious tinge in the skin, and other symptoms indicating hepatic derangement; a quick pulse; a dry hot skin;—these constitute the group of symptoms likely to be present; and which urgently demand attention, for their removal before the time of labour; as, otherwise, serious consequences are to be apprehended. Sometimes this state appears to depend on some peculiar condition of the brain; the nature of which we probably cannot appreciate; and which our treatment will but too often fail to correct. In one strongly marked instance of this kind, which was under my care, the lady became maniacal on the fifth day after delivery; and continued deranged for many months.

Disorder of the Intellect.—Reasoning, by analogy, from such considerations as those we have just been engaged in, we should be led to expect as probable, what experience confirms as certain;—that the cerebral disturbance during pregnancy, which in most instances only shows itself in unevenness of spirits or irritability of manner or temper, amounts in some to absolute disorder in the intellectual faculties; especially in habits naturally very excitable, or where there is hereditary predisposition. "If we consider", says Dr. Pritchard, "the frequent changes or disturbances occurring in the balance of the circulation,—from the varying and quickly succeeding processes, which are carried on in the system during and soon after the periods of pregnancy and childbirth,—we shall be at no loss to discover circumstances, in which a susceptible constitution is likely to suffer. The conversions or successive changes in the temporary local determinations of blood, which the constitution, in such circumstances, sustains and requires, appear sufficiently to account for the morbid

* Dr. Montgomery.

susceptibility of the brain"*. With regard to congenital predisposition, Esquirol has furnished us with a result of his experience, which bears strongly on this part of our subject. He affirms, that many facts have occurred, within the sphere of his information, proving that a strong congenital predisposition to madness, has arisen from some accidental fright sustained by the mother during pregnancy. Many cases of this description, are said to have occurred during the period of the French Revolution†. In some, this sensorial agitation may be confined to the more strongly marked forms of hysteria; or only exhibit itself in those unaccountable "phantasies, called longings; which", says Dr. Burrows, "are decided perversions or aberrations of the judgment; though, perhaps, the simplest modifications of intellectual derangement"‡. Others are truly and even violently maniacal. I § have, on another occasion ‖, noticed a case, where mania occurred in eight successive pregnancies¶; and another, in which the woman was three times similarly affected soon after conception, and remained deranged until within a short time of her labour; when she became sane, and continued so until the recurrence of pregnancy. Goubelly relates a case of an opposite kind; in which the lady was of sound mind only during her pregnancies; but was then deficient in memory; of which, also, Mrs. Durant** presented a remarkable instance††.

If to physical predisposition there should, unfortunately, happen to be superadded the influence of some moral evil,—some absorbing mental trouble, the tendency to this unhappy malady is much increased. In the opinion of Esquirol, the moral causes affecting pregnant women are in relation to the physical as four to one‡‡; and of ninety-two cases of puerperal mania reported by him, twenty-nine were in unmarried women. How deplorable, then, must be the condition of the mind in a woman who,—led astray by the profligate from virtue's paths of pleasantness and peace, and then abandoned,—is compelled to consider her pregnancy as a curse instead of a blessing; and has, in addition to the ordinary troubles of that state, to bear up against the agony of disappointed hopes,—of affections misplaced and cruelly abused; to endure the present scorn of society, and the anticipation of a still increasing shame; for which she is to find no "sweet oblivious antidote", of power to "pluck from the memory a rooted sorrow", or "raze out the written troubles of the brain" §§! How often has such a state of mind been followed by convulsions; or, ending in insanity, has armed with the weapon of

* Dr. Pritchard's "Treatise on Insanity"; Page 312.
† Esquirol's "Treatise on Insanity"; Page 161.
‡ Dr. Burrows's "Commentaries on Insanity"; Page 147.
§ Dr. Montgomery.
‖ In a paper on the Occurrence of Mental Incoherence during Natural Labour; published in the "Dublin Medical Journal"; Volume 5; Page 52.
¶ "Some are insane on every pregnancy or lying-in; others only occasionally." Dr. Burrows's "Commentaries on Insanity"; Pages 364 and 378.
** The wife of a dissenting minister at Poole. See Page 1034.
†† Durant's "Memoirs of an only Son"; Volume 1; Page 147.
‡‡ See Dr. Burrows's "Commentaries on Insanity"; Page 379.
§§ "Macbeth"; Act 5; Scene 3.

suicide * the once gentle hand of her, who (to use the words of William Hunter †) "might have been an affectionate and faithful wife,—a virtuous and honoured mother, through a long and happy life; and in whom, probably, that very reflection raised the last pang of despair which hurried her into eternity"! I ‡ have myself seen instances of such miserable results.

Although hysteria, in its ordinary or slighter forms, does not properly, perhaps, deserve the name of "mental disturbance", yet its more aggravated conditions are so closely allied thereto, that it would be extremely difficult to draw the line of distinction. "Cases of this kind", says Dr. Conolly, "approach near to insanity; and, indeed, a mind subject to the violent agitations incidental to the hysteric constitution, cannot be considered as perfectly sane" §; Sydenham has given an admirable and graphic description of this state; in which, he says, the patients "observe no mean in any thing, and are constant only to inconstancy. So unsettled is their mind, that they never are at rest" ‖. Of one fact, at least, my own experience and that of others ¶ afford sufficient evidence;—that when the aggravated form of hysteria prevails throughout pregnancy, puerperal mania is much to be apprehended.

Unusual Susceptibility of the System during Pregnancy.—I wish to observe here, that in noticing some of the more remarkable phenomena occasionally displayed during pregnancy, it is not intended to imply that such are the usual concomitants of that condition. On the contrary, most of them are to be considered as rare occurrences (some of them remarkably so); and all as exceptions to the general rule; but, for this very reason, deserving of particular notice; as probably connected with a morbid state of the system, either absolutely existing at the time (though perhaps not otherwise clearly appreciable), or about to be developed;—as in the case of Mrs. Durant **, whose memory of the whole time of her pregnancy was a complete void. My object is forcibly to point out,—what experience seems to have fully established,—that during pregnancy the system is in a state of unusual susceptibility;—the activity of both the nervous and circulating systems being, at that time, greatly exalted; by which exaltation the female is rendered much more liable to be injuriously affected even by ordinary causes, and still more so by any of a more impressive kind; and that, knowing this to be the case, we may be on the watch to counteract the influence of such a predisposition; and so prevent the accession of danger;—by a proper regulation of the patient's habits, with regard to exercise, food, and occupations; and attention to the state of the digestive organs: or, if unfavourable

* See the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge"; Volume 2; Page 63. See, also, the "Philosophical Transactions" for 1817.

† "Medical Observations and Enquiries"; Volume 6; Page 270.

‡ Dr Montgomery.

§ "Cyclopædia of Practical Medicine"; Volume 2; Page 563.

‖ Swan's "Translation"; Edition of 1769; Page 414.

¶ See Dr. Burrows's "Commentaries on Insanity"; Page 378.

** See Page 1033.

symptoms have already made their appearance, that, by a more correct appreciation of their origin, we may be enabled to adopt the treatment best suited to the circumstances. Neither was it my intention to represent pregnancy as a state of disease; but as one in which a great temporary alteration takes place in the condition of particular functions;—not, however, of such a kind or to such a degree, as could with propriety be considered as constituting disease. On the contrary, several of the functional derangements naturally accompanying that condition, are subservient to new but healthy actions, necessarily associated with its favourable progress. Thus, increased activity in the circulation is required, at a time when there is proceeding a rapid formation of new parts; and when the vessels have to elaborate the materials both of structure and nutrition for a new being, and to exhale for its protection the liquor amnii. Even when this latter action of the exhalants is exerted in situations where it apparently assumes a morbid character, the result is often found decidedly beneficial, and relief of some more serious ailment quickly follows;—such as the removal of undue determination of blood to the head, lungs, or uterus, on the occurrence of œdema of the feet and legs; which, as Denman* observes, may in some cases "be esteemed as a critical disposition upon the inferior extremities, of something superfluous or injurious to the constitution". So, on the other hand, we very frequently find, that the sudden or premature cessation of some of those sympathetic disorders,—the sickness of the stomach, for instance,—is but too certain an indication that the healthy action of pregnancy has been arrested, and that abortion is likely to ensue. Hence, to use the words of the excellent writer just quoted,—words in the truth of which I† concur,—"It is a popular observation, confirmed by experience, that those women are less subject to abortion, and ultimately fare better, who have such symptoms as generally attend pregnancy, than those who are exempt from them"‡. We may add that if, with a few, pregnancy has deserved the name of "a nine-months' malady", fully an equal number suffer little or no inconvenience; and with some it is a period of decided improvement in health. It appears from experience, moreover, that women who bear children generally enjoy more even health, and are less disposed to disease, than those who lead a life of celibacy; or who, having married, remain unfruitful. Indeed, I think we have sufficient evidence to justify the belief, that pregnancy acts, in a great degree, as a protection against the reception of disease; and, apparently, on the common principle that, during the continuance of any one very active operation in the system, it is thereby rendered less liable to be invaded or acted on by another. Thus, it has been observed, that during epidemics of different kinds, a much smaller proportion

* Dr. Denman's "Introduction to Midwifery"; Seventh Edition; Page 165.
† Dr. Montgomery.
‡ Dr. Denman's "Introduction to Midwifery"; Seventh Edition; Page 144.

of pregnant women than of others, have been attacked; and when women who have been labouring under certain forms of disease happen to conceive, the morbid affection previously existing is either greatly mitigated, or is checked, or even altogether suspended for a time;—as has been frequently observed in persons affected with phthisis. I* had under my care, some years ago, a patient affected with white swelling of the elbow-joint; which had gone to a great length, and was very little benefitted by treatment; when, all of a sudden, a very rapid amendment was observed. On questioning the lady, I found that she had reason to think herself about six weeks pregnant; which proved to be the fact. From that time, the cure advanced uninterruptedly; so that, before the end of her gestation, the arm was perfectly well; and has continued so ever since.

At the same time it is not to be forgotten, that the natural sympathetic affections may occasionally become excessive, and be very injurious, or even destructive of life; as, for instance, when total exhaustion and death have resulted from incessant vomiting; or when the violence of that act has caused the rupture of internal organs (such as the uterus or liver). Moreover, the influence of pregnancy, in modifying or preventing other active processes proceeding in the system at the same time, is sometimes detrimental to the female; as when, in cases of fractures the formation of callus and the reunion of the bone are prevented (or, at least, retarded) until after delivery†; and it may probably be owing to the same cause, that the cure of syphilis and of paralytic affections, is rendered imperfect during that condition.

There is a fact connected with the history of pregnancy, when complicated with disease, which has always appeared to me one of great interest. When a pregnant woman labours under a malady which is to end fatally before the completion of her gestation, it almost invariably happens that, a short time (generally a day or two) before her death, the uterine action is established, and the child born. I* have so frequently observed this occurrence, that I cannot but regard it as a pre-ordained arrangement; in order to prevent the unborn child from participating in the decease of the mother.

Simulation of Disease accompanying Pregnancy.—There is a simulation of disease, which occasionally accompanies pregnancy; and which depends, apparently, on disturbance of the nervous influence; which sometimes very remarkably affects the functions of some of the organs of the external senses. No appreciable organic change, can, at the time, be discovered in these organs; and that none such does really take place, seems sufficiently evident from the fact, that the affection lasts only during gestation. Thus, instances of temporary amaurosis,

* Dr Montgomery.

† See Cases by Mr. Wardrop, in the "Medico-Chirurgical Transactions", Volume 5, Page 359; and by Mr. Alanson, in the "Medical Observations and Enquiries", Volume 4, Page 410. See, also, Meckel's "Manuel d'Anatomie"; Volume 1; Page 337.

induced by pregnancy, are by no means uncommon *. I † lately saw a lady thus affected. She could see certain objects distinctly;—such as a line drawn on paper. Others appeared confused; and some she could hardly discern at all. Occasionally, she imagined she saw objects which were not present; as a person crossing the room, or flower-pots, or bunches of flowers on her table; when nothing of the sort was there. Salmutius relates a case, in which a lady became blind every time she was pregnant; and recovered her sight as soon as she lay-in. Beer ‡ saw a young Jewess, who, at the very beginning of her first three pregnancies (which followed each other quickly), regularly became amaurotic; and who continued blind till after delivery; but on the third occasion she did not recover her sight. Chambon ascribes these affections to plethora; but such an explanation is scarcely consistent with the occurrence of amaurosis from protracted or undue lactation, when the constitution is in a state of great debility and exhaustion;—two well-marked instances of which I saw in two sisters, who quickly recovered their sight by weaning their children. Gardien notices this part of our subject fully §; and mentions a variety of affections which I have not met with. Dr. Bennewitz has detailed the particulars of a case, in which a young woman was, in three successive pregnancies, affected with diabetes mellitus; which each time completely ceased on delivery, but again returned when she became pregnant ‖.

Laws and Customs relating to Pregnancy.—If we take a review of former times, a conviction will be forced upon us not very flattering to our fancied superiority above our ancestors, in our watchful care of our women when pregnant, or in the legal provisions enacted for their protection and comfort; in both of which respects, the laws and customs of the earliest periods seem to have greatly excelled, both in justice and humanity, those which even at this day prevail amongst us. The Jewish law ¶ decreed, that if two men (quarrelling) injured a pregnant woman, so as to make her miscarry,—she not suffering in health thereby,—they should be liable to punishment at the discretion of her husband, and to such fine as the judges should determine. If she sustained bodily harm, then the law of retaliation was to be put in force; but if she lost her life, the punishment of death was awarded; and although the Jews were, in general, strict observers of the Mosaic law, they allowed pregnant women the use of forbidden meats; lest the child might suffer from their longings. The Athenians spared the life of the murderer who took refuge under the roof of a woman with child; and by the kings of Persia

* See Mason Good's "Study of Medicine"; Class 4; Order 2; Genus 1; Species 11; Volume 4; Page 247; Third Edition. See, also, Cooper's "Surgical Dictionary"; Article "Amaurosis."

† Dr. Montgomery. ‡ "Lehre von den Augerkrankheiten."

§ "Traité des Accouchemens"; Volume 1, Page 76; and Volume 2, Page 487.

‖ Ossan's "Clinical Report for 1823". "Edinburgh Medical Journal"; Volume 30; Page 217.

¶ Exodus; Chapter 21; Verses 22 to 25.

every such woman was presented with two pieces of gold. The Roman laws allowed them the same privileges as did those of France; in the code of which country, at the close of the last century, there existed an enactment, which forbad that a pregnant woman should be brought to trial*;—the humanity and propriety of which provision we cannot too much admire. Although not aware of the grounds on which such a prohibition was framed, I † can see two excellent reasons for its adoption;—first, lest the mental disturbance, arising from the state of the nervous system, should in any degree render the accused less capable of defending herself; and, secondly, lest the agitation and terror excited by her trial, might have an injurious effect upon her offspring. Such, I find, is the light in which the matter is viewed by Raige Delorme‡. By the British law no such merciful exemption is provided. A pregnant woman may be tried for her life; and, if found guilty, executed; and, with her, her guiltless offspring;—unless it can be made appear, that she is not only pregnant, but quick with child. When examined as witnesses, and in other circumstances, pregnant women frequently refuse to take an oath; and, I believe, their objection is generally allowed in unimportant matters; but of the grounds of this usage I am not aware.§]

CHAPTER IX.

SIGNS OF PREGNANCY.

[Few questions occur, in legal medicine, of greater importance, than the one we are about to consider. On its proper decision may depend the property, the honour, or the life of the female. It will probably lead to a better understanding of this subject, if we notice the following particulars:—

1. The laws of various countries, with respect to the presence of pregnancy.
2. The signs of real pregnancy; together with the best mode of ascertaining concealed or pretended pregnancy.
3. The arguments and proofs in favour and against the doctrine of superfœtation.
4. Some questions arising out of the previous examination.

* See Foderé's "Medicine Legale"; Volume 1; Page 428.
† Dr. Montgomery.
‡ "Dictionnaire de Medecine"; Volume 10; Page 449.
§ "An Exposition of the Signs and Symptoms of Pregnancy". By W. F. Montgomery, M. D.; Chapter 1; Pages 1 to 28.

SECTION 1.—THE LAWS OF VARIOUS COUNTRIES AS TO THE PRESENCE OF PREGNANCY.

Law of Rome.—The Roman law exempted a condemned female from punishment, if she was pregnant, until after her delivery;—"quod prægnantis mulieris damnatæ pœna differatur quoad pariat."*

Law of England.—There are two leading cases in the English or common law, which may require a knowledge of the signs of pregnancy. One is a proceeding at common law; "where a widow is suspected to feign herself with child, in order to produce a supposi-
ti. tious heir to the estate. In this instance, the heir presumptive may have a writ "de ventre inspiciendo"†; to examine if she be with child or not; and if she be, to keep her under proper restraint until delivered. But if the widow be, upon due examination, found not pregnant, the presumptive heir shall be admitted to the inheritance; though liable to lose it again, on the birth of a child within forty weeks from the death of a husband."

The interest that cases of this nature sometimes occasion, and the precautions that have been taken in England, may be learned from the following report. Sir Francis Willoughby died, possessed of a large inheritance. He left five daughters (one of whom was married to Percival Willoughby), but not any son. His widow, at the time of his death, stated that she was with child by him. This declaration was evidently one of great moment to the daughters; since, if a son should be born, all the five sisters would thereby lose the inheritance otherwise descending to them. Percival Willoughby prayed for a writ "de ventre inspiciendo", in order to have the widow examined; and the sheriff of London was accordingly directed to have her searched by twelve women, &c. Having complied with this order, he returned that she was twenty weeks gone with child; and that, within twenty weeks "fuit paritura"‡. "Whereupon another writ issued out of the Court of Common Pleas;—commanding the sheriff safely to keep her in such a house; and that the door should be well guarded; and that every day he should cause her to be viewed by some of the women named in the writ (wherein ten were named); and when she should be delivered, that some of them should be with her to view her birth, whether it be male or female;—to the intent there should not be any falsity." Upon this writ the sheriff returned, that accordingly he had caused her to be kept, &c.; and that, on such a day, she was delivered of a daughter §.

The other instance is evidently borrowed from the Roman law, as quoted above. When a woman is capitally convicted, and pleads her pregnancy, though this is no cause to stay the judgment, yet it

* "That the punishment of a condemned pregnant woman may be delayed, until she shall have brought forth".—N. R

† "Of examining the abdomen".

‡ "She would be delivered".

§ Croke's "Elizabeth;" Page 566. See, also, in the matter of Martha Brown *ex parte* Wallop, in Brown's "Chancery Cases", Volume 4, Page 90; *ex parte* Alscough Peere, Williams's "Reports", Volume 2, Page 591; *ex parte* Bellet, in Cox's "Chancery Cases", Volume 1, Page 297.

is to respite the execution till she be delivered. "In case this plea be made in stay of execution, the judge must direct a jury of twelve matrons, or discreet women, to ascertain the fact; and if they bring in their verdict,—"quick with child" (for barely "with child", unless it be alive in the womb, is not sufficient), execution shall be staid generally till the next session; and so from session to session, till either she is delivered; or proves, by the course of nature, not to have been with child at all. *"

"Here," says Dr. Paris, "the law of the land is at variance with what we conceive to be the law of nature; and it is at variance with itself; for it is a strange anomaly that, by the law of real property, an infant in "ventre sa mere"† may take an estate from the moment of its conception; and yet be hanged, four months afterward, for the crime of its mother ‡". In the striking language of Dr. Kennedy, "the maxim of British law is, that a child in the *fifteenth* week of its fœtal existence, is to be deprived of life for its mother's crime; while a child in the *sixteenth*, is to be protected from such an unjust and unmerited fate". Nor is the evil confined to this. The manner of administering the law is equally repugnant to the dictates of humanity and justice. "A jury of twelve matrons, or discreet women", are little calculated to decide on the presence or absence of pregnancy, at the very period when (as we shall hereafter see) there is often the greatest doubt. A few examples will strikingly illustrate this. Ann Hurle, condemned for forgery at the Old Bailey, in 1804, as a last resource pleaded pregnancy. She contrived so to baffle the skill of the female examiners, that they could not come to any decision. The sheriff had recourse to the judgment and experience of Dr. Thynne; who declared that she was not pregnant; and she was executed. In a case that happened in Ireland, where also the female jury could not decide, some of them were *unmarried*, and not one of them ever attended a lying-in case §. But they are sometimes not contented with the confession of ignorance. At Norwich, in March 1833, a murderess pleaded pregnancy. Twelve married women, after an hour's investigation, returned a verdict that she was not quick with child. She was ordered for execution; when three of the principal surgeons in the place, fearing that there might be a mistake, waited on the convict, examined her, and found her not only pregnant, but "quick with child". They ascertained this by manual examination. On a representation to the judge she was respited; and, on the eleventh of July, was safely delivered of a living child. ‖"

* Blackstone; Volume 4; Pages 394 and 395.
† "The womb of its mother".
‡ Paris and Fonblanque; Volume 3; Page 141.
§ Kennedy; Page 195.
‖ "London Medical Gazette"; Volume 12; Pages 24 and 585. "Kennedy"; Page 200. Mr. Smith, who has added some legal notes to Dr. Kennedy's work, has ingeniously argued that the above provision is not contained in the ancient common law; and that all which it required was the presence of pregnancy. I fear, however, that the quotation from Blackstone gives the *actual* law of England. —*Dr. Beck's "Medical Jurisprudence"*.

Law of Scotland.—In Scotland, a pregnant female is entitled to have sentence delayed; or (if it has been passed) to be respited, till her delivery takes place; and that equally whether she be quick with child or not.*

Law of France.—Foderé and Capuron appear to have examined every law in the French Code, which has a bearing on this subject. The Civil Code (Section 185) declares, that no female shall be allowed to contract marriage before the age of fifteen full years. Nevertheless, such marriage shall not be dissolved, first, when six months have elapsed after the female, or both of the parties, shall have attained the required age; and, secondly, when the female, although not of the required age, has become pregnant before the expiration of six months. The Penal Code (Section 27) also declares, that if a female condemned to die state that she is pregnant, and if it be proved that she is so, she shall not suffer punishment until after her delivery. Several other laws are mentioned; which, by implication, may be referred to this subject; but it is not necessary to state them. The above are the important ones now in force in France †. I may add, however, that the law last quoted was in existence and has been acted upon since the year 1670, in that country.‡

Law of America.—The following is a recent enactment in the state of New York; and is intended to take the place of the common law§:—"If a female convict, sentenced to the punishment of death, be pregnant, the sheriff shall summon a jury of six physicians, and shall give notice to the district-attorney, who shall have power to subpœna witnesses. If, on such inquisition, it shall appear that the female is quick with child, the sheriff shall suspend the execution, and transmit the inquisition to the governor. Whenever the governor is satisfied that she is no longer quick with child, he shall issue his warrant for execution; or commute it for imprisonment for life in the state-prison."‖]

SECTION 2.—SIGNS OF PREGNANCY THAT ARE COMMON IN OCCURRENCE DURING LIFE.

The most certain mode of knowing whether a woman is in a state

* Alison's "Practice of the Criminal Law of Scotland"; Page 654.

† Foderé; Volume 1; Pages 421 to 432. A law, passed in 1795, was still more mild in its provisions. It prescribed, that no woman accused of a capital crime should be brought to trial until it was properly ascertained that she was not pregnant. In conformity with this, the Court of Cassation reversed several decisions of inferior criminal courts, where it appeared that the female had not been properly examined; and it seems, indeed, that it demanded proof that, in such cases, the examination had always been made. (Foderé; Volume 1; Pages 428 to 431.) This is probably abolished; as no mention is made of it in the code now in force.—*Dr. Beck's "Medical Jurisprudence".*

‡ I take the following from a newspaper;—"The supreme court of Massachusetts, at its law session in Boston, in March 1834, decided, that a grandchild born eight-months-and-a-half after the death of his grandfather, is included in a bequest to grandchildren 'living at his decease'".—*Dr. Beck.*

§ "Revised Statutes"; Volume 2; Page 658.

‖ Dr. Beck's "Medical Jurisprudence"; Sixth Edition; Chapter VI.; Pages 111 to 115.

of gestation or not, is by waiting till the term of nine months is completed; when,—unless the pregnancy be extra-uterine, or unless there occur some of those extraordinary and rare prolongations which have sometimes been made the subject of physiological or forensic litigation,—the ovum will be expelled. It not unfrequently happens, however,—and I have met with such instances myself,—that women, from various causes, are exceedingly anxious (in the earlier, or middle, or latter months) to know whether they are or are not pregnant; and hence the accoucheur has been led to bring together a variety of signs, by which the decision of this question may be effected.

Classification of the Signs.—The indications of pregnancy, in number not a few, may be commodiously divided into three classes:—1. Those which are of ordinary occurrence. 2. Those which are rare, or anomalous. 3. Those common to all women; but which can be ascertained solely by means of a careful manual examination. First, we will consider those signs of more frequent occurrence, to be ascertained, in a great measure, from mere verbal inquiry.

Bearing-Down, and Vesical Irritation.—If a patient apply to me, anxious to know whether she is in a state of gestation or not, one of the first questions I propose is,—"Have you any feeling of bearing-down; together with a sort of irritation about the bladder or the rectum; but more especially about the bladder?" For,—in consequence of the enlargement of the uterus, and its descent into the pelvis, and of that increased action (approaching to inflammation) which occurs in the womb and the parts contiguous,—it not unfrequently happens, in the earlier months, that micturition, and some little obstruction of the bladder, together with bearing-down, are produced.

Œdema of the Lower Limbs.—From a variety of causes, an enlargement of the lower limbs (of a dropsical kind) occurs. In some women, especially, this enlargement,—whether of the one or both limbs,—is apt to be produced in the earlier or subsequent months of gestation. If, therefore, a patient suppose herself to be in the earlier months of pregnancy, you ought always to ascertain whether the lower limbs are œdematous or not; and if your patient, previously in good health, has this œdema of the lower limbs unexpectedly, and in considerable degree, together with the other signs of gestation, you may then consider this as a sign indicative of pregnancy; and, indeed, as one of no small value.

Nausea and Vomiting.—It is obvious that you must not hastily conclude a woman is pregnant merely because she is attacked with vomitings and retchings in the morning; inasmuch as these retchings and vomitings in women, as in ourselves, may be produced by a variety of other causes. When pregnancy occurs, however, women, perfectly well before, are sometimes seized with morning-sickness, attended with retchings and vomitings; so that, during the greater part of the day, they are well enough; but when they rise, or even

sit erect in the bed, in the morning,—if I may confide in reports,—both nausea and retching are produced. In cases like these, a little mucous and gastric juice alone are expelled from the stomach; and not an ill-digested chyme;—proving, apparently, that the disease is not to be ascribed to dyspepsia, but rather to gastric irritability. If, therefore, a woman,—previously exposed to the cause of gestation, and not wanting the other signs,—is suddenly seized with nausea, retching, and vomiting,—attacking her, morning after morning, when she quits her bed, or even when she takes the sedentary posture,—there can be little doubt that all this is the result of gestation; and the sign becomes of no small value.

Salivation.—[By an extension of the sympathetic irritation which, in the stomach, causes nausea and vomiting, the salivary apparatus is, in some persons, excited to such a degree, as to produce complete and copious salivation *. This fact was expressly noticed by Hippocrates, as one among the symptoms of pregnancy †; and has since been observed by many others ‡. Dr. Dewees records a well-marked instance of the kind §; and the writer ‖ was consulted about another, in which it occurred profusely in two successive pregnancies, but ceased immediately on delivery. This case entailed much undeserved blame on the attendant physician; who was accused of having given the lady so much calomel, as to bring her system under the peculiar influence of mercury; whereas, in fact, she had not taken any; and although she consulted several medical men, the real nature of the case was not guessed at. Such a condition is, however, easily distinguished from the ptyalism induced by mercury;—by the absence of sponginess and soreness of the gums, and of the peculiar fœtor; and by the presence of pregnancy. ¶]

In the earlier months of gestation,—say in the first two or three,—when the embryo is small, the movements of the fœtus cannot be felt; but in the middle and latter months, when the fœtus becomes large and strong, its movements are readily perceived by the mother. Where the motions of a child are,—as they frequently are throughout the whole of the pregnancy,—obscure and unfrequent, they become of small value, as an indication of pregnancy;—even though the woman may have had a large family; and though, judging from this symptom, she persuades herself that she is pregnant. I know an instance of a lady, possessing more than average intelligence, the mother of twelve children; who was led, by these abdominal movements, into an erroneous persuasion that she was pregnant again;—for spasms of the abdominal muscles, and flutters of the bowels, may, now and then, be mistaken for the movements of a child. You ought

* "Copiosa salivæ excretio".—*Rœderer's "Elements"; Page* 45.

† The passage is quoted by Van Swieten; Volume 13; Page 371; Section 1293.

‡ See Gardien; Volume 2, Page 32; and Burns, Page 237.

§ "Compendium of Midwifery"; Page 115. See, also, Schmitt's Twenty-Second Case, Second Division; and Capuron, Page 43.

‖ Dr. Montgomery.

¶ Dr. Montgomery's "Exposition of the Signs and Symptoms of Pregnancy"; Pages 54 and 55.

not to be ignorant, moreover, that some women, by the action of the abdominal muscles, possess (as I am informed) the power of simulating the fœtal movements so exactly, that even an experienced accoucheur might be decived. By women of intrigue, this piece of slight may be abused. A woman, who possessed considerable skill of this kind, formerly exhibited her talents in this town* for hire. She was visited by Lowder, Mackenzie, and some other celebrated accoucheurs of the day; and, after satisfying themselves that the womb was not enlarged, they made the usual examination of the abdomen; when they all agreed, that the movement was so exactly analogous to that of a fœtus, that no distinction could be clearly made out;—adding, that if no internal examination had been made, they should, judging from this movement only, have satisfied themselves that the woman was with child. Should it be your duty, then, to examine a woman, who not only has her reasons for supposing she is pregnant, but who finds her interest in this supposition, be on your guard against this simulation. These cases, however, are not frequent; and, in general, it is sufficient to recollect, that when the motions of the child are somewhat obscure, but little reliance is to be placed on them as a sign of pregnancy, even where women are perfectly honest; but where the child is very turbulent, and its motions are (in consequence) both frequent and violent, the sign becomes so strongly marked, and so decisive, that, without looking any further, you may venture to infer that gestation is undoubtedly begun.

Sounds produced by the Movements of the Fœtus.—[During the early stage of pregnancy,—while the fœtus is very small in proportion to the size of the cavity which contains it, and while the free movements of its limbs are consequently unrestrained,—these sounds may occasionally be distinguished as gentle taps, repeated at intervals, and continuing uninterruptedly for a considerable time. They are often mistaken, by the unpractised, for the beatings of the fœtal heart; but that they are produced by the motion of the limbs of the fœtus, is evident from the fact, that whenever they are more than usually frequent and loud, the mother becomes sensible of the motions of the child; and the action of the fœtal heart is accelerated. They become less distinct, in proportion as the quantity of the liquor amnii diminishes, with the advance of pregnancy; and at the end of utero-gestation, the movements of the fœtal limbs cannot be heard, and are even scarcely to be felt;—the chief proof that they still take place being afforded by that occasional acceleration of the heart's action, which they have been found to cause. These sounds may sometimes be distinguished several weeks before the mother becomes conscious of the motion of the child; and also earlier than the pulsation of the heart, or the uterine "souffle".†]

* London.

† Dr. H. F. Naegele's "Treatise on Obstetric Auscultation"; Translated by Charles West, M.D.; Pages 50 and 51.

[Auscultation is another test that has recently been proposed; but although it has been recommended by high authority, the Editor* is not inclined to attach much value to it. By the stethoscope, it is said, the circulation through the placenta and the pulsation of the fœtal heart may be distinctly recognised; but it requires a practised ear to distinguish them;—especially in the earlier months. Indeed, it is stated that the attempt would be useless prior to the fifth month; and at this period the uterus will be sufficiently developed, to enable any one to distinguish it by a vaginal examination, if he be at all accustomed to such operations. The Editor has heard the pulsations of the fœtal heart, by placing the stethoscope on the naked abdomen, at the time of labour; but has been repeatedly foiled in his attempts at an earlier period, when the female has been dressed. It might probably be brought usefully into practice, to assist in forming a judgment respecting the life of the child, when the use of instruments is required; and thereby to enable the accoucheur to determine, whether the long forceps or craniotomy-instruments should be used, in those cases where there is contraction of the superior aperture of the pelvis.†]

Enlargement of the Abdomen.—When women are pregnant, there is always, in the middle and latter months, an enlargement of the abdomen;—greater where the hollow in the back is deep, less conspicuous when it is shallower; but observed in all, when pregnant; more especially towards the end of gestation. You are all aware, no doubt, that abdominal enlargement may be produced by a great variety of other causes than pregnancy; so as to render this enlargement, to the inexperienced, a very uncertain sign. An intumescence may arise from air, fat, water, or a diseased growth of the viscera; and the appearance of pregnancy may thus be deceptively produced. From the enlargement of the abdomen, however, the more expert accoucheur may often form a very just opinion, as to whether the woman be pregnant or not;—provided he proceed with due caution.

The form of the tumour, as observed by the eye, is of no small importance; and I would advise you to acquire, from observation, a correct idea of it. Nor must we forget its situation;—lying in front of the abdominal cavity, and occupying the lower and middle parts. Swellings from air, being very elastic, always yield under the continued pressure of the hand; and may be urged from one part of the abdomen to the other, and allow the fingers to sink deep upon the spine; but the intumescence of pregnancy is firm and unyielding. When the enlargement is from gas, the intestines frequently gurgle; and, though sometimes lasting for weeks together, tympanites is frequently fugacious;—appearing and vanishing in the compass of a few hours. Swellings from water undulate, more or less distinctly, when struck with the hand; but in pregnancy, unless

* Dr. Waller.

† Dr. Waller, in Denman's "Introduction to the Practice of Midwifery"; Seventh Edition; Page 171.

there be a distended bladder, or a dropsical womb, no fluctuation can be felt*. An enlargement from fat is not topical, but diffuses itself over the whole body. It may more especially be detected in the limbs, face, and haunches. The diseased and solid growth of the viscera, is a work of much time; but the enlargement of pregnancy is rapid; so that we may often distinguish between the swellings which arise from these two causes, by ascertaining the time that they have been observed to subsist. In a word, mere abdominal intumescence is but an equivocal indication of pregnancy; but,—by ascertaining its age, its firmness, its want of fluctuation, its seat in the abdominal cavity, and the form which it assumes,—we may, in general, distinguish such a swelling from those various morbid enlargements, which arise from air, water, fat, the diseased growth of the viscera, or from the operation of these causes combined.

Mammary Symptoms.—After women have suckled, you cannot, in general, detect a subsequent pregnancy by the breast; but where they are pregnant for the first time,—and, in general, it is then that they are most anxious for information,—you may form a notion whether gestation be or be not begun, from the increase of the size of the breast; from a certain fulness and tenderness, and an approach to inflammation; and, now and then, from the secretion of a fluid; —serous, milky, or of a mixed character. There are some women in whom, before pregnancy, the breasts are remarkably small; and whose breasts become twice or three times as large, or even larger, after gestation begins. When these sudden enlargements, and other changes, supervene in a first pregnancy,—and this after the patient has been exposed to the cause of gestation,—there can be little doubt that pregnancy is begun. You must not, however, hastily conclude, that a woman is pregnant, merely because she has

* The enlargement of the abdomen from dropsy, may give rise to the idea of pregnancy; but a reference to the general circumstances accompanying other morbid states, will generally prevent our falling into error; from which we shall be further protected by the consideration of some diagnostic signs, peculiar to that disease;—a disease in which, besides the degree of fluctuation and the absence of any solid tumour, the form of the abdomen (when the patient is standing or lying) is different from that of pregnancy; in which the abdomen retains very nearly the same degree of prominence in both postures; while in dropsy it subsides, flattens down, and spreads out, when the patient lies supine. In dropsy, also, the symptoms of constitutional disturbance increase with the size; while in pregnancy they diminish, or cease. In ascites, there is much thirst and scanty urine; which symptoms are not observed in pregnancy; in which, also, the swelling of the feet is subsequent to that of the abdomen; but in dropsy is more usually observed before. But it must not be forgotten, that pregnancy and dropsy may exist together; and, when they do, they may present a combination of circumstances of the most embarrassing description; under which our best guide will be a carefully instituted examination of the uterus per vaginam, and of the state of the breasts, —especially the areola. In such complicated cases, the sensation of quickening is often deferred to a later period than usual, and is apt to be very indistinct; and we are liable to be effectually prevented from ascertaining the fœtal motions, or even the outline of the uterus, by the excessive tension of the abdominal parietes, and the quantity of interposed water.—*Montgomery, on the "Signs and Diseases of Pregnancy"; Pages 95 and 96.*

an enlargement of the breasts. She may be getting very corpulent after her marriage; and the breasts may be enlarging in common with the other parts of the body. Enlargement of this kind, however, is known (easily enough) by the concomitant increase of the hips, face, and limbs. Again: you must not hastily infer that a woman is pregnant, merely because she has a good deal of uneasiness about the breasts; for if she suspect pregnancy, and is often handling the mammæ, she may, in this manner, cause them to become irritable and tender;—as, in young females, they frequently are prone to be; nay, secretion itself may thus be produced. Again: you should not infer there is pregnancy, merely because there is a secretion of milk. I remember a woman, in this Hospital*, who had milk in her breasts; and who yet had not had a child for three years; nor had she been suckling for a length of time before. In this woman,—whom I examined at the request of the officers of the Hospital,—the milk formed so copiously, that when the breast was pressed, the milk oozed forth freely; and yet I satisfied myself, most unequivocally, that she was not with child. In the Ethiopian variety of mankind, the genitals are very active; and my friend, Dr. Chapman, gave me the case of a negress of Demerara; who, after her pregnancy, formed milk for twenty years together.

Mammary Sympathy from Cessation of the Catamenia.—About the age of five-and-forty, sterility supervenes;—the catamenia ceasing to flow; and frequently, at this period, fulness, pain, and some enlargement of the breasts, take place. It is obviously necessary, therefore, that the accoucheur should guard against delusion in these cases; and the rather, because it has repeatedly occurred. A woman, perhaps, marries at two-and-forty; and is anxious to have children. The catamenia cease; the abdomen becomes tympanitic; the bosom swells and is uneasy; and she supposes herself to be pregnant. She engages her nurse; and cozens her accoucheur; and receives the gratulations of her friends; and consults about caps and long petticoats; and hopes it will be a boy; and, finally, gets laughed at for her pains;—though I must add, that I think the ridicule is a little unfeeling!

To bring my observations to a point here: if a woman have had no child before; if she have been exposed to impregnation; if she have also the other signs of gestation; if the breasts double their size; if the enlargement be knobular, and not from fat; if there be a secretion of milk, tenderness, and pains;—then the enlargement of the breasts is to be looked upon as a very valuable indication of pregnancy. But where the enlargement is obscure; when the patient is very corpulent; when the woman has suckled a large family, and the breasts have been brought under a geat deal of action; when, again, the patient is about forty-five, so that the catamenia are likely to cease, and the breasts likely to sympathize with the cessation;—then the indications of the breast cannot be relied on. Some ladies remain

* Guy's.

at five-and-thirty for half-a-score of years or so! Time and tide wait for no *man*; but with *women*, "c'est une autre affaire."*

Appearance of the Areola.—If you examine the nipple, in either sex, you will frequently find round it a discolouration of the skin,—and this circular discolouration of the skin,—sometimes distinguished by a rosy tint, and sometimes by its being of the same colour with the contiguous skin, but lighter,—constitutes what is called "the *areola*"†;—a part which, in consequence of pregnancy, is liable to become changed, even from the first; for when a woman becomes pregnant, the areola may become broader and darker than it was before; and may, too, undergo, a complete change of colour;—the rosy or cutaneous tint becoming converted into a coppery red, or a dark mahogany-brown.

[Most of those who have noticed this change, appear (from their observations on it) to have attended to only one of its characters;—namely, its colour; which is, in my opinion, the one of all others most liable to uncertainty. I‡ should here, perhaps, except the description by Rœderer; which is, by far, the most accurate I have met with:—"Menstruorum suppressionem mammarum tumor insequitur; quocirca mammæ crescunt, replentur, dolent interdum, indurescunt. Venæ earum, cœruleo colore, conspicuæ redduntur; *crassescit papilla*; *inflata videtur*; *color ejusdem fit obscurior*; *simili colore distinguitur discus ambiens, qui in latitudinem majorem expanditur, parvisque eminentiis* (*quasi totidem papillulis*) *tegitur*"§. The description by Musitanus is tolerably accurate; but not so full‖. The several circumstances here enumerated, ought in all cases to form distinct subjects of consideration, when we propose to avail ourselves of the condition of this part, as an indication of the existence or absence of pregnancy.

One other circumstance, equally constant and deserving of particular notice, is a soft and moist state of the integument, which appears raised and in a state of turgescence;—giving one the idea that, if touched by the point of the finger, it would be found emphysematous. This state appears, however, to be caused by infiltration into the subjacent cellular tissue; which, together with its altered colour, gives us the idea of a part in which there is going forward a greater degree of vital action than is in operation around it; and we not unfrequently find that the little glandular follicles, or tubercles (as they are called by Morgagni), are bedewed with a secretion sufficient to damp and colour the woman's inner dress. These changes do not take place immediately after conception; but occur in different

* "It is another matter".

† The seat of the areola is the rete mucosum; so that, in removing the rete, you remove the areola too.—*Dr. Castle.*

‡ Dr. Montgomery.

§ "Suppression of the catamenia is followed by swelling of the mammæ; which increase in size, and become full, harder, and sometimes painful. Their veins, of a blue colour, become conspicuous; the nipple increases in size, and appears turgid; its colour becomes darker; the surrounding margin acquires a similar colour, becomes broader than usual, and is sprinkled with little papillary eminences".—"*Elements of the Obstetric Art*"; *Pages* 46 *and* 47.—N.R.

‖ See his Work; Page 64.

persons after uncertain intervals. We must therefore consider, in the first place, the period of pregnancy at which we may expect to gain any useful information from the condition of the areola.

The Earliest Period for Observing the Areolar Sign.—I* cannot say, positively, what may be the earliest period at which this change can be observed; but I have recognised it fully at the end of the second month; at which time the alteration in colour is by no means the circumstance most observable. The puffy turgescence (though as yet slight), not alone of the nipple but of the whole of the surrounding disk, and the development of the little glandular follicles, are the objects to which we should then principally direct our attention;—the colour at that period being, in general, little more than a deeper shade of rose or flesh-colour, slightly tinged occasionally with a yellowish or light brownish hue†.

Progressive Character of the Areolar Sign.—During the progress of the next two months, the changes in the areola are in general perfected, or nearly so; and then it presents the following characters:—A circle around the nipple; its colour varying in intensity, according to the particular complexion of the individual;—being usually much darker in persons with black hair, dark eyes, and sallow skin, than in those of fair hair, light-coloured eyes, and delicate complexion. The extent of this circle varies from an inch to an inch-and-a-half in diameter; and increases, in most persons, as pregnancy advances;—as does also the depth of colour. In a young woman of very dark hair and complexion, I* have seen the areola, at the time of labour, almost black, and upwards of three inches in diameter; while, in another instance, its breadth around the base of the nipple did not, at any period of gestation, amount to a quarter-of-an-inch; and, at first, was not more than an eighth. This circle, however, narrow as it was, was studded at nearly regular intervals with the glandular tubercles; which were not unlike a ring of beads‡. In negro women, the areola becomes jet-black; with somewhat of a purple shade through it§.

State of the Nipple.—In the centre of the coloured circle is observed the nipple; partaking of the altered colour of the part, and appearing turgid and prominent; while the surface of the areola, especially that part of it which lies more immediately around the base of the nipple, is studded over and rendered unequal by the prominence of the glandular follicles; which, varying in number from twelve to twenty, project from the sixteenth to the eighth-of-an-inch ‖; and, lastly, the

* Dr. Montgomery

† In Dr. Montgomery's Work, these appearances are represented by a Coloured Plate.

‡ A somewhat similar case occurred to Dr. Hamilton. See his "Practical Observations"; Page 145.

§ In some of the monkeys, the change in the nipple and part around it, is very remarkable towards the latter period of gestation; for it then becomes turgid, and of a bright vermilion-colour.—*Dr. Montgomery.*

‖ These follicles or tubercles of the areola, although by many considered merely as sebaceous glands, have really a much more important character, and more intimate connexion with the peculiar structure and function of the breasts; and hence

integument covering the part appears turgescent, softer, and more moist than that which surrounds it; while on both there are to be observed, at this period,—especially in women of dark hair and eyes,—numerous round spots, or small mottled patches, of a whitish colour, scattered over the outer part of the areola, and for about an inch or more all round;—presenting an appearance as if the colour had been discharged by a shower of drops falling on the part. I* have not seen this appearance earlier than the fifth month; but towards the end of pregnancy it is very remarkable, and constitutes a strikingly distinctive character exclusively resulting from pregnancy. The breasts themselves are, at the same time, generally full and firm;—at least, more so than was natural to the person previously; and venous trunks, of considerable size, are perceived ramifying over their surface, and sending branches towards the disk of the areola, which several of them traverse. Along with these vessels, the breasts not unfrequently exhibit, about the sixth month and afterwards, a number of shining, whitish, almost silvery lines like cracks. These are most perceptible in women who, having had before conception very little mammary development, have the breasts much and quickly enlarged after becoming pregnant. This appearance, however, deserves more particularly to be dwelt on in considering the signs of delivery; but, for the present, it should be remarked that, when once formed, these lines continue permanent; and, consequently, will not serve as diagnostic marks in a subsequent pregnancy.

Such, then, are the essential characters generally belonging to, or connected with the true areola,—the result of pregnancy; and when the areola is found possessing these characters, it ought to be regarded as a very strong proof of the existence of that condition;—no other cause being capable of producing it. It also affords us facilities in forming an opinion, not otherwise available; first, in being appreciable at those early periods of gestation, which are involved in most doubt; and, secondly, because an opportunity will be given of examining it, when other modes of investigation would be denied us; or when, perhaps, the bare mention of a suspicion could not be ventured on.†]

might naturally be expected to display an active sympathy, in any condition of the system which called into action the peculiar function of these organs; which function is the secretion of milk for the support of the new being; and for which purpose certain previous changes in the glands and ducts are necessary. Now it appears that these areolar tubercles are intimately connected with the lactiferous tubes; some of which (as Morgagni pointed out) can be traced into them and opening on their summit; so that, in pregnant women, a sero-lactescent fluid may be often distinctly perceived issuing from them; and, in nurses, they have been observed to pour forth drops of perfect milk. "I have seen", says Morgagni, "lactiferous tubes going to each of these tubercles, and expanding within them; so that, in fact, their formation was, in a great degree, caused by the dilatation of these ducts, and their prominence beyond the surface of the areola". In addition to this, it appears (from the more recent investigations of Meckel and others), that each of these follicles is, in common with the nipple and surrounding areola, furnished with very small sebaceous glands, which lie around its base; and the ducts of which (from one to four in number) are found opening on the surface of the tubercle.—*Montgomery.*

* Dr. Montgomery.

† Dr. Montgomery, on the Signs and Diseases of Pregnancy; Pages 59 to 63.

The change of the areola I should recommend you to study with attention; and the best mode of studying it, is not by reading or hearing, but by inspecting for yourselves. When you are attending cases in town, for instance, I would recommend you to take every proper opportunity of examining the areola. This you may do, on many occasions, without much exposure of the bosom; and, moreover, you will have occasion often to notice the areola, when the child is applied to the breast. The changes of the areola I have studied with a good deal of attention;—both for your advantage, and my own; and I find that they may be distinguished into three varieties; numerically discriminated according to their degree. When the alteration of the areola rises to the highest point; when this part becomes broad and dark, and embrowned in the fullest measure; more especially when,—pale before, perhaps,—it changes to a brown so dark, that it reminds one of the skin of the negro;—the indication of the areola ought to have great weight; at least, in a first pregnancy. By this indication alone, pregnancy has been not unfrequently detected. More than once I have thus discovered it myself; but, on the other hand, when the areola is changed in the first or second degree only, its indications are of little value. When a woman has had a large family before, even though the areola be changed in the fullest manner, no certain reliance can be placed upon the sign; for experience shows that the smaller changes are indecisive; and when there has been pregnancy before, it is difficult to decide whether changes in the highest degree are to be attributed to the operation of a fresh pregnancy, or are the remaining effect of those which have preceded. To be short: the areola may, now and then, deceive, when you think that there is most cause to rely on it; but (allowances being made for anomalies) if the change be in full degree; if there have been no pregnancy before; if the eye of the observer be experienced; if the other signs of gestation attend; then the indications of the areola are deserving of a very confident reliance. In many cases, pregnancy may be detected by the areolar changes alone; and these changes have the advantage of manifesting themselves very early in gestation.

Some years ago, I was requested to interrogate a girl; and, upon examining the areola, I declared her to be pregnant. This, at first, she averred was impossible; but, soon satisfied that I knew a little more about it than she was at first aware, she altered her tone; and, three or four months afterwards, delivery occurred. In St. Thomas's Hospital, I was also requested to interrogate a woman. She resolutely denied her pregnancy; but the indications of the areola put the matter beyond doubt; and when I made an internal investigation, I could distinctly feel the head of the child through the uterus. The woman was delivered within one or two months afterwards. I was once requested to interrogate a young lady, of much talent and accomplishment, and great force of feeling. On examing the areola, I was at once convinced of her gestation; but she denied its possibility; and would have sworn by the throne of heaven, and Him that

sits upon it, had I not entreated her to be silent. An internal examination was made; when I found the os uteri opening, and the head of the child distinctly observable;—parturition taking place in the course of three or four days afterwards. I really once saw a woman actually in labour; who persisted, nevertheless, that she could not be pregnant. It may not be amiss to remark here, once for all, that in points of this kind, the asseverations of the ladies ought to have no weight whatever; nor, indeed, when a denial is given, ought these asseverations to be called for; especially in the presence of a third person. Women seem to have a sort of instinctive feeling, that no man has a right to propose to them interrogations of this kind; and, therefore, that in answering such impertinences, they may say (and with solemnity, too) what they please. Are the ladies the only persons who tell grave falsehoods?

Suspension of the Menses.—When pregnancy occurs, the catamenia,—that periodical flow from the uterus which is observed every three or four weeks,—are arrested; and, I believe, it is commonly from this sign that women judge for themselves, whether they are in a state of gestation or not. The catamenia appearing month after month, on a certain day of the week,—for, commonly, they appear every four weeks,—the patient is exposed, at length, to the causes of gestation; the catamenia cease to flow, and she infers that pregnancy is begun; nor is it often that she find herself deceived. Recollect, however, that in judging of pregnancy from the retention or suppression of the catamenia, you must bear in mind the following considerations:—In dubious cases, you must distinguish between the suppression of disease, and the suppression which is to be ascribed to gestation. The absence or the presence of the other signs will, in general, enable you to make your diagnosis here. It is to be remembered, too, that about the forty-fifth year the catamenia cease, independently of disease;—earlier, however, in some women; and later in others. At this time, as before intimated*, there may be abdominal tympanites; together with some enlargement and tenderness of the mammæ; so that, in cases of this kind,—where there is enlargement of the abdomen, irritation of the breast, and suppression of the catamenia,—the patient may deceive both herself and you. In dubious cases, manual examination alone can decide; but when this is improper, it is better to state frankly that the case is obscure; that a decisive opinion cannot be given; and that it is proper that the patient should not, in her hopes and confidence, too rashly commit herself with her friends; lest she become the subject of one of those ludicrous, yet painful disappointments, on which I before took occasion to remark†.

Pregnant Women sometimes Menstruate.—When a woman is pregnant, the cessation of the catamenia does not invariably occur; for amenorrhœa, though general in pregnancy, is not constant. A woman, supposing herself to be pregnant, asks whether gestation is possible; for, it is added, the system is still "regular." To such a

* See Page 145. † See Page 1047.

query the answer is, that it is not only possible, but probable; for, —notwithstanding what Denman has said to the contrary*,—I have myself known women in whom, during the first three or four months, the catamenia have continued to flow; though not in so large a quantity, nor so long, as if they were not pregnant; and, in rare cases, I am told,—though I have not seen any such case myself,—the catamenia may continue to flow up to the very last month. A gentleman, formerly associated with this class†, related to me the case of a lady of considerable intelligence, who had had several children; and, in three or four of her pregnancies, the catamenia continued till the last month. In return, in kind, in every point except continuance and quantity, the flow was of the catamenial character. I need scarcely add that women, when pregnant, are liable to red appearances, which are not of the nature of the catamenia. To bring our observations to a point here: amenorrhœa is, in general, a very valuable indication of pregnancy; but amenorrhœa may occur without pregnancy; and although gestation is certain, the catamenia may still continue to flow during the first months; and, in some rare cases, perhaps, during the latter months too.

Thus much, then, respecting the first class of indications;—those, I mean, of more frequent and general occurrence in pregnancy; and to be ascertained, in great measure, by mere verbal inquiry; —the central irritation; the swelling of the legs; the morning-irritability of the stomach; the movements of the fœtus; the abdominal intumescence; the mammary enlargement and secretions; the changes of the areola; and the cessation of the catamenia.

SECTION 3.—ANOMALOUS SIGNS OF PREGNANCY.

Besides the more ordinary signs of pregnancy already enumerated‡, there are other indications which manifest themselves in particular individuals only; and which, though of accidental and anomalous occurrence, are, nevertheless, sufficiently important to deserve attention. To the consideration of these we will next proceed.

Expression of the Countenance.—[Of the more common accidental changes accompanying pregnancy, may be noticed the alteration so often observed to take place in the features and expression of the face. This alteration has been made a subject of remark since the days of Hippocrates, who mentions it; and some of the French writers§, not unhappily, term it "a decomposition of the features"; which become sharper;—especially the nose, which seems as if it were lengthened. The mouth appears larger; the eyes are sunk, are often surrounded with a brownish or livid areola, and assume a languid expression; and the whole body emaciates, except the breasts and abdomen; which grow proportionally fuller.‖]

* Denman's "Introduction to Midwifery"; Seventh Edition; Page 148.
† The Obstetric Class at Guy's Hospital.
‡ See Page 1041 to 1053. § See Gardien; Volume 1; Page 485.
‖ Dr. Montgomery's "Signs and Diseases of Pregnancy"; Page 150.

Capricious Taste.—During pregnancy, women sometimes have certain likings, and still more frequently antipathies. Some take an aversion to sugar; some to butter; some to wine;—and this, perhaps, from the very commencement of their gestation.

Emaciation.—Sometimes women, when they are pregnant, become emaciated in a high degree; though perfectly healthy before. The breasts and abdomen enlarge, but the other parts diminish; and this constitutes, in certain individuals, a very conspicuous sign of gestation.

Change of Temper.—It is an unwelcome, but still a very good sign, when the *temper* changes, and becomes more acrimonious and morose; for certainly some females, who are naturally amiable, lose much of their good-humour when gestation begins. A similar change is observed in the disposition of animals; for the rabbit, as delivery approaches, seems to acquire increased ferocity; and, though herbivorous in its nature, not unfrequently assumes the disposition of a cannibal; and is guilty of devouring its own young.

Frightful Dreams.—Women are occasionally affected with frightful dreams, in the course of pregnancy. Dr. Lowder knew a woman, who actually hired a nurse to sit by her bed-side at night, and watch her countenance while she was asleep; that she might be awoke whenever her perturbed countenance seemed to show that she was labouring under those distressing visions of the night. The cause of this I look upon to be, a hurried circulation of the blood, and an afflux of it to the head;—the disease being allied, in its nature, to convulsions; an affection, apparently, of the same family. Two or three cases, under my own care, have hitherto been relieved by cupping and opening the bowels. The glasses ought to be applied to the nape of the neck.

Pains in Various Parts of the Body.—In pregnancy, pains are sometimes felt in various parts of the body;—in the fingers, toes, and more especially in the teeth. Odontalgia sometimes affects the whole of one side of the jaw, night after night, for weeks together; and this, too, though the teeth are sound. Bark, valerian, and arsenic, are the remedies which I have hitherto found of use.

Varicose Veins.—[Some women always have varicose veins during gestation; though not subject to such an affection at any other time. In such circumstances,—especially if the woman appears to be in good health, and otherwise unaffected with any complaint likely to induce such a condition of the veins,—their varicose state appears, to the writer*, not unworthy of consideration as a diagnostic sign. Some women are much troubled with frightful dreams whenever they are pregnant. Disorder of the alimentary canal, disturbing the already irritated nervous system, is, probably, the most frequent cause of this affection. It may also be induced by irregular or undue circulation of blood in the brain. Relief has been obtained by acting on such a presumption;—administering aperients; and detracting blood, by cupping on the nape of the neck.

* Dr. Montgomery.

Beccaria's Test.—According to Dr. Beccaria, there is a peculiar kind of headach accompanying pregnancy. This headach he describes as an acute pulsating pain in the occipital region; occupying, particularly, that part in which Gall places the organ of the instinct of reproduction. This pain, he says, is accompanied with giddiness on the least motion of the head, and with difficulty in supporting the light. It comes on suddenly; and, after continuing for some time, is succeeded by an inclination to sleep. After sleeping some minutes, the patient is said to awake free from the pain; and with a strong desire for food. This pain, he says, returns at nearly the same hour for about eight days; and often disappears without the use of any remedy. This symptom, according to Dr. B., commonly appears,—unaccompanied by the signs usually laid down, as denoting pregnancy,—previously to the fourth month; and he observed it in women who were not aware of their pregnancy, and who did not even suspect the fact*. Dr. Alexander Hamilton, also, enumerates headach amongst the early signs of pregnancy immediately consequent on the suppression of the menses†; but headach, in whatever form occurring, may be produced by such a variety of causes,—connected with derangements of the uterine system, or of the alimentary canal,—that, except in very peculiar circumstances, its occurrence could hardly be made available as an assistance to our judgment. ‡]

Quickening.—It is about the third or fourth month,—nearer the fourth than the third,—that women have the peculiar sensation which is denominated "the quickening";—an excellent sign; consisting in a certain feeling of motion in the abdomen, sickness of the stomach, perturbation of the mind, and a disposition to fainting. In many females, these sensations may scarcely be perceived at all. The symptoms are so slight, that you cannot place reliance on them; but in some, on the other hand, they are very conspicuously observed; and, in them, it furnishes a valuable indication of pregnancy.

Sizy Blood.—When women are pregnant, too, the blood is more or less *sizy*; so that when you take away two or three ounces from the arm, the size may often be seen, clearly enough, on the surface of the crassamentum; and though this size may be produced by other causes, yet, in conjunction with the other signs, it forms a valuable indication of pregnancy.

State of the Urine.—[A peculiarity in the urine of pregnant women, has long been a matter of popular belief; and in the work of Savonarola, published in 1486, there is given a minute detail of the changes which that secretion undergoes, in the different periods of pregnancy. Up to about the sixth month, according to this writer, "the urine is clear, and of a pale citrine colour, with a cloud on its surface; and about the middle of the fluid, a deposit like carded

* "Annali Universali di Medicina"; September, 1830. "Archives Générales de Médecine"; Volume 24; Page 443.

† Dr. A. Hamilton, on "Female Complaints"; Fourth Edition; Page 121.

‡ Dr. Montgomery's "Signs and Diseases of Pregnancy"; Pages 153 and 154.

wool; but as pregnancy advances towards its close, the urine becomes redder, and turbid when stirred". This condition of the urine, Foderé thinks entitled to consideration; having, as he says, "verified the accuracy of the observation"*. Still more recently, M. Nauche has brought this subject before the profession†. He speaks of it as a discovery of his own; and does not appear to be aware of the observations previously made by others. His words are:—"By allowing the urine of pregnant women, or of nurses, to stand for some time, in thirty or forty hours there takes place a deposit of white, flaky, pulverulent, grumous matter;—*being the caseum or peculiar principle of milk, formed in the breasts during gestation.* The precipitation is more readily procured by adding a few drops of alcohol to the urine". To this observation he subjoins a very strong case; in which he ventured to affirm the existence of pregnancy, in a woman who was subsequently examined (both per vaginam and with the stethoscope) by several medical men, and pronounced not to be with child; but her delivery, shortly afterwards, evinced the accuracy of his previous diagnosis. The Editor of "The Lancet" informs us, in a note, that he had "applied the test in one case; and found it perfectly correct". I‡ have myself tried it in several instances; and the result of my trials has been this:—in some instances, no opinion could be formed as to whether the peculiar deposit existed or not;—on account of the deep colour and turbid condition of the urine; but in the cases in which the fluid was clear, and pregnancy existed, the peculiar deposit was observed in every instance§. Its appearance would be best described by saying, that it looked as if a little milk had been thrown into the urine; and, having sunk through it, had partly reached the bottom; while a part remained suspended, and floating through the lower part of the fluid, in the form of a whitish, semi-transparent, filmy cloud. "Les urines", says Velpeau‖, "coulent plus abondamment, se chargent d'un nubecule, et deposent davantage"¶. In some cases in which pregnancy was suspected, but did not exist, no such deposit was observed; but there is such a host of accidental causes capable of altering the condition of the urine, as ought to make us very cautious indeed, how we venture to attach credit to a symptom so equivocal. Still, should it be found, on further examination, that the urine, when in a favourable state for observation, constantly exhibits this peculiar deposit during pregnancy (and I have not met with, or read of, a single exception), its absence would obviously be of considerable value, in enabling us to decide against the existence of pregnancy.**]

* "Médecine Légale"; Volume 1; Page 435.

† See the "Lancette Française"; and also "The Lancet"; No. 417; 1830-1, Volume 2; Page 676; August 27. 1831.

‡ Dr. Montgomery.

§ See the "Dublin Journal"; Volume 6; Page 422.

‖ "Traité des Accouchemens"; Volume 1; Page 178. See also "Capuron, des Accouchemens"; Page 43.

¶ "The urine flows more freely; is slightly clouded; and deposits more abundantly than at other times".—N. R.

** Dr. Montgomery's "Signs and Diseases of Pregnancy"; Pages 157 and 158.

Failure of the Milk in Pregnancy.—Impregnation is not common during suckling; yet it sometimes occurs;—especially after nursing has been continued for twelve or fourteen months. In these cases, gestation is indicated by the failure of the milk; for it rarely, I think, continues to form so copiously after the first two or three months; and I suspect that its quality alters. You may set down, therefore, among the anomalous signs of pregnancy, this suppression of the secretion of the milk; for wherever a sudden suppression occurs, without any other apparent cause to which it may be referred, it may (not without reason) be ascribed to pregnancy. In a word, all the morbid affections to which the system becomes obnoxious, in consequence of gestation, may be looked on as so many signs of its existence; but I have drawn out from them the indications which I deem more especially deserving of a separate notice; for the rest belonging to this class, I must refer you to a future department of my subject; in which I shall treat of the diseases of gestation.

SECTION 4.—SIGNS AFFORDED BY MANUAL EXAMINATION.

When women are anxious, as in illegitimate gestation more especially, to know whether they are pregnant or not, there is yet a third mode of ascertaining the point; and that is, by a careful examination with the hand. Indeed, in some dubious cases, this is the only certain mode in which it can be investigated. The manual examination of pregnancy, may be divided into two kinds;—that of the *earlier*, and that of the *latter* months.

a. In the Latter Periods of Gestation.

When an investigation is instituted, in the end of a reputed gestation, the patient may be placed in the recumbent position; with the pelvis and shoulders moderately elevated, and the lumbar vertebræ depressed;—so as to approximate the extremities of the abdominal muscles, and give a complete relaxation to the covering of the abdomen. Care must be taken also, that the bladder be emptied (either by the natural efforts, or by the catheter); as the interposition of accumulated water, may frustrate the whole inquiry. The abdominal surface may be well lubricated with oil.

Examination of the Abdominal Surface.—These preparations made, you may lay the hand on the abdomen, above the umbilicus; when you often perceive there, on pressure, the gurgling of the intestines, with some degree of elasticity; especially towards the middle months. Having completed this part of the inquiry, you next examine the middle and inferior parts. You observe the outline of the uterus;—its roundness; its firmness under pressure; its equable surface; its position in the middle of the abdomen; and, in addition to all this, in some instances, the movements of the fœtus. The movements of the fœtus may, perhaps, be sometimes produced by the sudden application of a cold hand, or by changing the position of the patient; who may place herself successively in the sedentary, lateral, recumbent, or other postures; while the hand still rests over the region of the womb. Under these movements, now and then,—I know not

that I can say "frequently,"—the accoucheur may be able to feel the child distinctly;—a sudden blow may be given by the arm or leg of the fœtus; and where there is no deception practised on the part of the woman,—which there will not be, unless she is anxious to be thought pregnant,—this sign may be looked on as decisive. I have sometimes felt the child leap three or four times, in the course of five minutes.

State of the Umbilicus.—[During the first two months of pregnancy, the umbilicus is rather retracted and more depressed than usual;—in consequence of the descent of the uterus. But when that organ begins to ascend, the umbilicus gradually rises also; so that in the third month it is restored to its natural state; in the fourth it is found less hollow than before conception; in the fifth or sixth it is nearly on a level with the surrounding integuments; in the sixth or seventh completely so; and towards the close of gestation it projects, in most persons, considerably above the surface.

The production of these changes by the enlarged uterus, suggests what we find to be the fact;—namely, that any solid tumour, enlarging the abdomen, may also be capable of effecting the elevation of the umbilicus. This circumstance, therefore, can of itself afford us no certain information, that the distending agent is a gravid uterus. Yet I* know, from experience, that a morbid tumour in the abdomen, of a size and elevation as great as those of the uterus in the seventh month, may co-exist with a perfectly depressed umbilicus. A striking instance of this, I saw with Dr. Churchill†; and I have thought that the reason probably was, that the tumour was prevented from pressing forward by adhesions, which are so constantly formed between such growths and the parts behind or around them. How far the fact observed will serve to establish a diagnosis, I cannot venture to pronounce; but I do not know any single instance in which the gravid uterus had acquired such a size without elevating the umbilicus; so that, in any case in which pregnancy is supposed to be advanced to the seventh or eighth month, if we find the umbilicus depressed and the abdomen flat, it will prove with certainty that gestation has not advanced to such a period; although it will not, as asserted by Dr. Gooch, be decisive evidence against the existence of pregnancy. The latter may be present, but not sufficiently advanced to effect the change; or the uterine development may have been arrested by the death of the fœtus. In the enlargements of the abdomen from flatulence and fat, the umbilicus is generally found more than usually sunk in; but, of course, we ought not to hazard an opinion until we have collected all the collateral evidence ascertainable in the case.‡]

Examination per Vaginam.—This point§ investigated, you desire

* Dr. Montgomery.

† The talented, and highly promising author of the "Treatise on the Diseases of Females."

‡ Dr. Montgomery's "Signs and Diseases of Pregnancy; Pages 97 and 98.

§ The movements of the fœtus.

the patient to change her position; and to lie in the posture of labour;—on the left side, close upon the edge of the bed; with the loins posteriorly, and the abdomen inclined towards the mattress; with the knees and bosom mutually approximated;—in the manner so often described *. Having placed the patient in a proper position, you then lubricate the first two fingers of the left hand, and pass them to the os uteri. In reputed pregnancy, an unbroken hymen is not impossible; so that it is no certain disproof of gestation. It may be proper, therefore, still to continue the investigation; and the examination may be made without much injury to this membrane; but only one finger must be employed. When one or more of the fingers have been passed to the os uteri, this may be found to be more or less expanded; so that, in many cases, without much disturbance, the membranes, and the head of the fœtus, may be felt at the opening; especially in the end of pregnancy. Further pursuing the investigation, you may place one or two fingers of the left hand on the front of the os uteri, and the contiguous cervix; making, at the same time, with the right hand, a counter-pressure externally, above the pubes, right or left; and by this manœuvre, provided the presentation be vertical, the head of the fœtus may often be felt, distinctly enough, between the two hands. Lastly: placing the fingers upon the cervix, between the mouth of the womb and the symphysis pubis, you may direct the patient to assume a posture intermediate between the sedentary and the recumbent; in which position the head of the fœtus may often be felt through the neck of the uterus; and if then, with a slight blow, you give it an impulse, it rises in the water; and, in a second or two, subsides upon the finger again. In many cases this may be observed repeatedly; and in a manner too obvious to admit of a mistake.

Indications Furnished by this Examination.—These observations cannot always be made; yet they may in many cases; and when they do occur,—whether separately or in combination,—they may, I think, be deemed decisive; for there can no longer be a reasonable doubt of pregnancy, when we can feel the movements, the membranes, and (above all) the head of the fœtus;—whether this is to be distinguished at the os uteri, or through the neck of the uterus, or by the joint examination of the region above the pubes externally, and the cervix within. By feeling, then, the membranes at the os uteri, and sometimes the head;—by feeling the head of the child through the neck of the uterus, between the os uteri and the symphysis pubis;—by feeling the head of the fœtus interposed between the two hands, placed at once (respectively) externally and within;—by feeling (as above described) the movements of the head, as it rises and falls when afloat in the liquor amnii,—you may (I think) in most, if not all cases, not only raise a high probability of pregnancy, but infer its existence with certainty; and by this method, in the end of gestation, I have often been able to decide the point.

* See Pages 92, 157, and 677.

b. In the Earlier Months of Gestation.

In the earlier months of gestation, you are sometimes requested to determine whether the woman is, or is not, pregnant; and if you possess the requisite dexterity, it is generally easy enough to distinguish an enlargement of the uterus; but it is not so easy to determine whether the enlargement is to be attributed to pregnancy, or other causes; for the womb may grow in consequence of scirrhus, or a polypus, or hydatids, or moles, or from a combination of these affections. An opinion in the earlier months, therefore, is always more or less doubtful; but these cases of morbid enlargement,—in general practice, at least,—are not very frequent; so that if the woman have been exposed to the causes of impregnation, a womb as large as the fœtal head, is a strong presumption in favour of gestation; and the presumption becomes strengthened, if the patient have manifested, previously, no indications of uterine disease.

Mode of Examination.—When anxious to ascertain with nicety what may be the bulk of the womb, in the earlier months, we may direct the patient to drink copiously of water a few hours before, so as to enlarge the bladder; which should then be thoroughly evacuated by the catheter, or the natural efforts; so as completely to relax the abdominal coverings, in the region of the pubes. The patient, prepared in this manner, is then to be laid upon the left side;—the nearer the edge of the bed the better; and two fingers of the left hand being placed on the os uteri, the fingers of the right hand may be placed above the pubes; where, with a moderate share of manual dexterity, the fundus, and (at the same time) the bulk of the womb, may be felt in most cases; unless the system be unusually loaded with adeps. This observation having been made with care, another may be instituted. The fore-finger of the left hand may be placed on the back of the womb;—for the rectum gives access to it. The thumb of this hand may, at the same time, be rested upon the mouth of the uterus; while, as before, the fingers of the right hand may be applied to the fundus, where it lies above and behind the symphysis pubis; and, by this method of examination, the bulk of the uterus may be again ascertained. Besides these nicer inquiries,—which all patients may not be able to bear,—two others may be tried. We may feel the large body of the uterus from the vagina, especially near the symphysis pubis; and we may throw the uterus from side to side;—balancing it upon the finger. Or we may place the patient in the semi-recumbent posture; so that the plane of the brim may lie horizontally; afterwards ascertaining the weight of the uterus, by supporting it upon the summit of the index-finger, inserted for this purpose a little way into the os uteri; when,—by the weight, the momentum, and the bulk of the uterus felt behind the symphysis pubis,—we may form a shrewd conjecture respecting its general size.

Indications Furnished by the Examination.—Thus, then, the enlargement of the uterus may, in general, be made out;—by examining

from the vagina, the rectum, and the coverings of the abdomen; by weighing, balancing, and feeling the body of the uterus from behind the symphysis pubis;—proceeding in the way which I have just described. Do not, however, form your opinion too hastily. If necessary, let a second examination be made, at the end of a few weeks. If the womb be pregnant, in the course of this time it will acquire a considerable increment of bulk; and this may further help our diagnosis here. All patients may not be able to bear these examinations. The neck of the womb is, in some women, very flexible; so that, while the body remains motionless, the cervix gives way with facility. Thus, when the womb is heavy, the cervix may move with little momentum; and an opinion taken from this observation, would be liable to deceive.

Thus much, then, respecting the indications by which gestation is known;—the ordinary, the anomalous, and those which are taken from manual investigation. Should all these signs prove indecisive, I should advise you, if pregnancy be still doubtful, to wait till the end of ten or twelve months; when,—unless the gestation is extra-uterine, or out of all rule,—parturition must, sooner or later, occur *.

SECTION 5.—SIGNS AFFORDED BY AUSCULTATION.

General Observations on the Employment of Auscultation.—[The auscultation † of pregnant and parturient women, is attended with difficulties precisely similar to those which retard the student's acquisition of skill in manual exploration. In both, the necessary dexterity can be obtained only by long-continued practice, with adequate opportunities for observation; and as the practitioner of midwifery will be unable to satisfy himself about many very important occurrences, until his sense of touch has been much exercised, so, before he can venture to rely upon the information which his ear affords, his sense of hearing must have undergone long schooling. Perhaps, indeed, even more diligence and patience are requisite in the latter, than in the former mode of examination; and he who is not possessed of at least a moderate amount of persevering attention, can never succeed in gaining such a knowledge of auscultation, as will enable him to apply it successfully in detecting pregnancy, or in ascertaining the different phenomena which take place during labour. This knowledge may be acquired in lying-in hospitals, incomparably better than elsewhere; though persons may both learn auscultation thoroughly, and employ it skilfully, without having had greater opportunities than those presented to them in private practice.

Some persons have asserted, that it is necessary to possess a more than usually acute sense of hearing, in order to practice obstetric

* The following are the signs of pregnancy:—1. Morning-sickness. 2. An areola round the nipples and the eyes. 3. An irritable state of the temper. 4. Cessation of the menses. 5. Increased size of the uterus. 6. Changes in the os uteri. 7. Placental murmur. 8. Pulsation of the fœtal heart.—*Dr. Fletcher.*

† From *ausculto*, "to listen".

auscultation with success. This, however, is by no means indispensable; for, by frequent exercise, the ear will become so expert, as at length to detect the most delicate variations of sound. One circumstance which greatly facilitates the acquisition of skill, in this method of examination, is a previous acquaintance with the use of the stethoscope, in detecting diseases of the chest; yet it should always be borne in mind, that the former is attended with far greater difficulties than the latter. Persons are very apt to forget this fact, and to feel disappointed with the slowness of their progress. Let them console themselves with Laennec's assurance, that "l'étude de ces phénomènes demande incomparablement plus d'attention, que celle de tous ceux que présentent les maladies de la poitrine." *

Abdominal Auscultation.—Auscultation of the abdomen, as of the chest, may be practised either with the unaided ear, or by means of the stethoscope. Both methods have had their warm advocates; and much controversy has arisen, respecting their comparative advantages. An undue importance seems to have been attached to this question; for a person may succeed, in either way, in ascertaining the existence of pregnancy, or in distinguishing the occurrences which take place during labour. The employment of *mediate* auscultation, however, has many circumstances in its favour. Its superior delicacy must be obvious to all; and it often happens that no sound is audible, except in some part of the abdomen, which it would be impossible to auscult without the stethoscope; such as the hypogastric, or inguinal region. But, independently of the needless indelicacy of applying the ear to the abdomen of the patient, the practitioner who does so must place himself in a position often exceedingly incommodious, and likely to occasion congestion about the head. Nothing interferes so much with the successful employment of this mode of examination, as an inconvenient posture; and it is useless to continue listening to the abdomen after our ear has become red, and the beating of the arteries of the tympanum perceptible. Moreover: if the ear is applied directly to the abdomen, the number and variety of the sounds heard is very confusing; while the stethoscope has the great advantage of limiting and isolating the field of observation. Another benefit which attends the use of this instrument, is that, by means of it, a moderate degree of pressure may be exerted upon the abdomen of the patient. This is often very necessary; if, in addition to her not being far advanced in pregnancy, the abdominal integuments be loaded with fat; or if the uterus contain an unusually large quantity of liquor amnii †.

Deductions from the Results of Auscultation.—The difficulties in the way of detecting pregnancy, and distinguishing it from a variety of morbid conditions in which similar symptoms occur, were formerly

* "The study of these phenomena demands infinitely more attention, than that of all the phenomena presented by diseases of the chest".—N. R.

† For a complete account of Auscultation, in all its branches, we refer to a master of the art,—Dr. Stokes. See his "Introduction to the Use of the Stethoscope"; and his "Treatise on the Diagnosis and Treatment of Diseases of the Chest"..—N.R.

much greater than they are, now that the utility of auscultation for this purpose is universally recognised. The only signs then relied on,—such as the motions of the child sensible to the hand of the practitioner, or its limbs evident through the abdominal parietes *,—were not perceptible until the latter half of pregnancy; and frequently could not be distinguished before its last months, or weeks; while they were even then often obscure, or too indistinct to be conclusive. The information which auscultation affords to the practitioner, then, is most important; since it places him in possession of new and certain evidences of pregnancy;—evidences which, although they do not exist from the very commencement of gestation, are yet, for the most part, to be found at an earlier period than those signs which are detected by the sense of touch.

Audible Movements of the Fœtus.—First among the signs learned from auscultation, may be classed the audible movements of the fœtus; which are often heard much earlier than the hand of the practitioner, placed upon the woman's abdomen, can feel them *; or than the mother herself becomes sensible of their occurrence. Unfortunately, however, although the earliest positive proof of pregnancy, they are not heard in every case, nor at all times.

Pulsation of the Uterine Arteries.—Another certain token of pregnancy,—likewise observed in the early months, and much more frequently met with than the preceding,—is the "bellows-sound" which proceeds from the enlarged uterine arteries. It is distinctly audible so early as the fourth month of utero-gestation; and the instances in which it cannot be detected, in a pregnant woman, are exceedingly rare. It can neither be feigned nor concealed; nor is it heard except in the gravid uterus; for no sounds resembling it were detected in cases in which the womb, or any other pelvic viscus, was diseased. It is usually discernible some weeks earlier than the pulsation of the fœtal heart; though the latter may almost always be detected during the whole of the second half of pregnancy.

Pulsation of the Fœtal Heart.—Although the pulsation of the fœtal heart cannot be distinguished till a later period than the other signs of pregnancy which are detected by auscultation, yet it is one of peculiar importance; and may, indeed, be regarded as the most valuable of all; for, while it makes its appearance at a time when the evidences which manual exploration affords are either absent or inconclusive, it is so readily perceived, that even the unpractised ear usually detects it with ease. Auscultation, however, can never supersede manual exploration; nor render it, in all cases, unnecessary. The former is a valuable auxiliary to the latter; and the results obtained by combining both, assist us in arriving at definite conclusions. The following cases may serve to illustrate this point:—There is reason to suspect that a certain woman is pregnant; but, on examining her with the stethoscope, the pulsations of the fœtal heart cannot be heard; although the uterine sound is audible, and the other symptoms of pregnancy are manifest. Doubt must exist

* See Pages 1057 and 1058.

as to the real nature of the case, unless some part of the child can be felt presenting; when it may be fairly inferred that the patient is pregnant, but that her child is dead. If, in another case of doubtful pregnancy, the characteristic sounds cannot be detected, and if the other signs palpable to the sense of touch should also be wanting, it is equally certain that pregnancy does not exist. In short, while each method of exploration has its peculiar advantages, the greatest are derived from the employment of both; when their results mutually control each other.

Diagnosis of Compound Pregnancy.—In all cases when the action of the fœtal heart is heard with greatest intensity at one part of the abdomen, gradually diminishing in loudness in proportion as the ear of the observer removes from that spot, it may be concluded that the uterus contains but one child. The diagnosis of compound pregnancy is by no means easy; for no reliance can be placed on the signs commonly adduced, as proving the existence of twins: and even after the birth of one child, the presence of a second in the uterus is often doubtful. Many persons have sought to obtain additional information, on this point, from auscultation; but the opinions which they have expressed are very discordant;—owing to the infrequency of opportunities for observing compound pregnancy.

In the ten cases to which the following observations refer, no such changes in the character of the uterine sound were noticed, as would have led to the supposition that the uterus contained twins. Hohl states, indeed, that "this sound is heard over a larger surface, with greater intensity, and with a more varied tone; that, for the most part, it is loudest on the right side, and extends thence towards the left; and that its loudness seems augmented at two different points"; but in none of these instances, was any thing of the kind observed.

It might, indeed, be very rationally conjectured, that the placental "souffle" would be louder, and extended over a larger surface, when the placenta is larger than usual, or when two placentæ are present; but experience most plainly contradicts this; and shows, on the contrary, that the uterine sound is very often, in simple pregnancy, heard on both sides; and consequently in two different situations. It frequently happens, too, in cases of simple pregnancy, that the uterine sound is very loud and widely diffused, although the placenta is small; or, on the contrary, that the placenta is very large, and the "souffle" weak and circumscribed.

The only sign which proves with certainty the presence of twins, is the hearing of the pulsations of two hearts. Usually, the beating of one heart is heard in the left or right inferior abdominal region, while that of the other is audible in the superior abdominal region of the opposite side; but it never happens,—be the position of the children what it may,—that the beating of the two hearts is heard on the same horizontal plane.

This difference in the place where the beating of the two hearts is most distinctly heard, deserves especial notice; because an isochro-

nism* often exists between their action. A very striking instance of this, occurred a short time ago. In that case, the existence of twin-pregnancy was discovered, merely from the heart's pulsations being heard, with equal distinctness, in two different situations. They were clearly audible in the left inferior abdominal region; which proved that the back of the child lay in that direction; while, quite high up in the right abdominal region, towards the hypochondrium, the beating of another heart was heard. The pulsations of both hearts were perfectly synchronous.

Dubois seems to have arrived at precisely the same conclusions, with regard to this point. He says:—"Tous nos soins furent employés à rechercher quel était le rhythme des deux circulations; il nous a semblé qu'il existait un isochronisme parfait entre les pulsations des deux cœurs"†. Kergaradec, indeed, thought that the necessary want of isochronism between the pulsations of the two hearts, would prove the presence of twins; but he confessed that he had had no opportunity of ausculting, in cases of compound pregnancy. Subsequent observers seem to have adopted this opinion, without any further inquiry;—as though it were perfectly well established.

The existence of a complete isochronism between the action of the two fœtal hearts, may seem to some persons so unlikely, as to lead them to doubt the correctness of this observation; yet the same condition often continues,—as it did in the case above alluded to,—even for a considerable time after birth. In that instance, both hearts beat (during labour) at the rate of one-hundred-and-thirty strokes in the minute. The children, a boy and girl, were born on the evening of January the twenty-fourth; and auscultation observed for nine days subsequently, indicated the number of pulsations to be, within a few beats, the same in each.

In order to avoid being deceived with regard to the pulsations of the fœtal hearts, in these cases, it is advisable that two persons, equally well practised in auscultation, should kneel by the side of the bed;—each having placed his stethoscope on the abdomen, where the pulsations of the hearts are very distinct; and should then begin to count at the same time, and cease together. One person alone is very apt to fall into error.

I‡ have never had an opportunity of examining a case of triplets. Hohl, who met with such a case, says that he was unable, from the pulsations of the hearts, to ascertain the number of children which the uterus contained.

With regard to the information afforded by the stethoscope, in extra-uterine pregnancy, in the absence of personal experience, we can merely conjecture that it must, as Kergaradec says, be a valuable auxiliary in forming a diagnosis.

* From ισος, "*equal*"; and χρονος, "*time*".

† "Every care was taken to ascertain the rythm of the two circulations; and it appeared to us, that a perfect isochronism existed between the pulsations of the two hearts".—N. R.

‡ Dr. Naegele.

Stethoscopic Signs Liable to Error.—All the previous paragraphs treat of the value of auscultation, and of its use in detecting pregnancy, especially at an early period; but it will be necessary to show how, in one particular instance, the employment of the stethoscope may lead to an erroneous conclusion.

The pulsation of the maternal heart, may often be heard diffused over a large part of the pregnant abdomen; and is distinguishable, in some cases, even as low down as the ossa ilii;—the intestines (distended with gas) serving, in all probability, to conduct the sound. Now, the same thing may occur in a case where the abdomen is distended in consequence of some morbid cause; and where also other symptoms,—such as suppression of the menses, swelling of the breasts, &c.,—may simulate pregnancy. The stethoscope is had recourse to with the hope of thereby solving the difficulty; and the pulsations of a heart are heard; which pulsations an observer who does not notice the acceleration of the maternal circulation, but merely judges from their frequency, would attribute to a fœtus; and he would therefore declare the patient to be pregnant. No German writer has, hitherto, alluded to the possibility of making this mistake; but it will be seen by the following case, which occurred to Dubois, that he fell into it for a short time.

A young person, who had not menstruated for five-months-and-a-half, applied for admission into the "Maternité"*. The enlargement of her abdomen corresponded to the statement she made, with regard to the duration of her pregnancy. The cervix of the uterus was softened, thickened, and flattened; and she said that she felt the motions of the child. Although no part of the child could be felt on a vaginal examination, and consequently the existence of pregnancy could not be looked upon as positively ascertained, yet, in consideration of her ill-health, she was received into the hospital. About a month after her admission, Dubois ausculted her; and detected, in the lower part and left side of the abdomen, quick double pulsations, beating one-hundred-and-twenty, or one-hundred-and-thirty times in the minute. Soon afterwards, on examining the mother's pulse,—in order to compare its frequency with that of the beating of the fœtal heart,—he was surprised to find that the two were in exact correspondence. On again applying the stethoscope to the abdomen, he discovered that these double beats increased in loudness as he approached the epigastrium; so that their source could now no longer be mistaken. The pulsations of the maternal heart extended, from above downwards, over the whole abdomen; at the lower part of which they became so feeble, that they might easily be supposed to proceed from the fœtal heart. It was subsequently ascertained, on repeating the vaginal examination with great care, that the patient was not pregnant.

A person may fall into just the same error in cases of real pregnancy; and, mistaking the beatings of the *maternal* for those of the *fœtal* heart, may imagine pregnancy to be much further advanced

* A celebrated Lying-In Hospital at Paris.

than is really the case. This error may be avoided, by counting the pulse at the wrist, at the same time that we listen attentively to the abdomen; but it may otherwise be very easily fallen into; since the pulsations of the heart of pregnant women, are often very much more frequent than is commonly supposed*. Kergaradec says,—"Il est essentiel d'observer, que la fréquence beaucoup moindre de ces pulsations doubles, ne permet, en aucune manière, de les confondre avec celles du fœtus" †. Dubois likewise insists upon the same circumstance; but he who relies upon it, is very liable to be deceived; for the heart of a healthy fœtus is often found beating only seventy or eighty in the minute during labour; and sometimes it has not exceeded ninety during the whole of pregnancy.‡]

SECTION 6.—SIGNS OBSERVED IN THE UTERUS AND APPENDAGES AFTER DEATH.

[It is unnecessary to repeat here, what has been already particularly set forth, with regard to the state of enlargement in which the uterus must be, when containing the product of conception §. In relation to our present subject, the first and most obvious fact to be noticed is, that when an examination is made after death, and the uterus found of its ordinary diminutive size, it is proof positive against the present existence of natural pregnancy. If, on the other hand, we find the organ enlarged, and its condition (apparently) corresponding to the period of pregnancy supposed to exist, nothing but a careful examination of its contents, or other cause of enlargement, can determine the question at issue. I will here only observe, that nothing less than the distinct and unequivocal detection of the ovum, or some of its component structures, ought to satisfy our minds, or justify us in giving an opinion in the affirmative.

Another condition of the uterus which may be presented, is that in which it is found enlarged but empty;—exhibiting, however, several of the changes which accompany gestation. Upon examination, however, these will only afford evidence sufficient to convince us, that the organ has recently contained something which had been attached to its internal surface by a vascular connexion. The substance expelled may, or may not, have been the product of conception; and the most careful examination of the appearances remaining, or of the structural changes effected, may not enable us to pronounce, safely, on the precise nature of the cause which had produced them. Thus, for instance, in a case where hydatids have been expelled, we could not determine, by examination of the uterus alone, whether the conditions there observable were the result of true pregnancy,

* I have often found the heart of perfectly healthy pregnant women continue to pulsate for several weeks, at the rate of from one-hundred-and-ten to one-hundred-and-twenty beats in a minute.—*Dr. Naegele.*

† "It is necessary to observe that the much less frequency of these double pulsations, does not permit them to be confounded, in any way, with those of the fœtus".—N. R.

‡ "A Treatise on Obstetric Auscultation; by Dr. H. F. Naegele". Translated by Charles West, M.D.; Pages 1 to 69.

§ See Page 1020.

and the expulsion of a fœtus or ovum; or whether they might not have been produced by some other cause unconnected with conception. We may not, in fact, be able to tell, without further investigation, whether the woman have recently conceived or not;—a question, which it may be, occasionally, of paramount importance to be able to answer. We must, therefore, turn our attention in another direction; and seek for proof of impregnation in the appendages; particularly in that part of them which is more especially the seat of conception.

This leads us, at once, to investigate the value of that peculiar change in the ovary, by which, after the vivification of the germ, there is produced a new structure, to which has been applied the name of "corpus glandulosum", or (more generally) "corpus luteum"; the presence of which is, by some, considered incontrovertible evidence of impregnation. Others, however, with equal confidence, discredit the value of its presence; asserting, that its existence may be owing to causes altogether accidental, and independent of sexual intercourse; and that, consequently, it cannot be taken as certain evidence of conception. It becomes, therefore, a matter of vital moment to examine the truth of such assertions; and to determine, if we can, how far they coincide with, or depart from, absolute matter of fact; which alone can be the measure of their correctness, and consequently of their value.*]

Form and Surface of the Ovaries.—In form, the ovaries bear a considerable resemblance to the body of the testis;—in our race, especially; and hence they were formerly denominated "the testes muliebres"†. Like the features of the face, these ovaries differ exceedingly in their size, in different females;—being three times as large in some women as they are in others; and we must not, therefore, hastily conclude that the ovaries are diseased, merely because we find them larger than ordinary. Again: in some women, these ovaries are of smooth and somewhat polished surface, like the testis of the male. In others, however, they are remarkable for their rugosity, and in some, the furrows are so deep and frequent, that they remind one of the walnut. In some women, further, the surface of the ovaries presents no appearance of a cicatrix; but in others, and not unfrequently, there are, on the surface, small wrinkled scars; probably produced, in many cases, independently of impregnation, from spontaneous rupture of the vesicles, or small eggs, with which the substance of the ovaries is filled.

Internal Structure of the Ovaries.—If we lay open the ovary, we find it composed of a perenchyma, and the peritoneal covering in which this parenchyma is enclosed;—to say nothing of a tunica propria. In some ovaries, this membranaceous covering is thin, and tends to transparency; while, in others, it is so thick that it reminds one of a piece of parchment; and this, too, without any consequent disorders of the system, which might lead us to consider the patient

* Dr. Montgomery's "Signs and Diseases of Pregnancy"; Pages 213 and 214.
† See Page 1001.

as the subject of disease. With this thickening of the coverings, a certain degree of whiteness and opacity is occasionally combined. In many animals of the mammiferous class, the eggs may be seen distinctly. Sometimes, as in the sow, they form an assemblage of small tubercles, rising beyond the surface of the ovary; but more generally, as in the rabbit, they are embedded in the body of the viscus; but may, nevertheless, be seen distinctly, like the small pearls which the jeweller sets upon the posy of a ring;—a comparison which those who have seen the ovary of these animals must, I think, allow to have some aptitude. In the human ovary, when recently removed from the body, the vesicles cannot, in general, be seen through the membranaceous surface; but in some (less common) instances,—when the tunics are remarkably thin, and the vesicles are remarkably plump and mature,—they may be seen, though more obscurely, through the membrane which encloses them. The bulk of the ovary, internally, is composed of a cellular web; sometimes long and lax, sometimes of firmer texture; and this cellular web, as injection shows, is plentifully supplied with minuter capillaries. In this cellular web, are found various appearances; which, so far as they deserve our notice, may be divided into three kinds:—1. The corpuscula serosa. 2. The corpuscula livida. 3. The corpuscula lutea. Of all these we shall treat in order; and first of the corpuscula serosa.

Corpuscula Serosa.—Vesicles filled (apparently) with a serous fluid,—"corpuscula *serosa*",—are found in the cellular web; varying in size between that of a mustard-seed, and that of a large pea;—sometimes very conspicuous, occasionally obscure;—sometimes few in number, occasionally several; though I have seldom observed, in either ovary, so many as ten or fifteen at a time. Sometimes the small spherical cysts which form them, are thick and coriaceous*; and at others, delicate and thin; and containing obvious, though small, red-blood capillaries. I suspect, though I am not sure, that every vesicle is contained within another; in a manner analogous to the calyx† in the ovary of the common fowl. I am not sure that the vesicles disappear in old age; but certainly those who maintain that they are not to be found before puberty, are in error; for I have seen them, distinctly, in the ovaries of a female child, not above a-year-and-a-half old; and I presume that they may generally be found at that age; perhaps as conspicuously as in women during the child-bearing period. Besides these embedded serous vesicles, there are also found vesicles which are marginally connected with the ovary, or which are completely detached from it; lying between the folds of the broad ligaments, at the distance of one or two inches; and usually about as large as a full-sized pea. These vesicles, then, may be conveniently divided into three kinds;—the embedded, the marginal, and those which lie detached. The larger vesicles seem to be in a state of incipient dropsy.

Corpuscula Livida.—In the substance of the ovary, we sometimes

* From *corium*, "leather".

† From καλυπτω, *to cover*.

meet with the "corpuscula *livida*", as they may be called; and they are not without their obstetric interest. Of these corpuscula livida, some consist of large vesicles filled with a clot of black or deep-red blood. Some of the vesicles are empty; but are superficially covered with a deep-red, or dark leaden tint;—as if they had been coated with paint. Some are made up of mere molecules or specks, of various tints;—red, purple, or of almost atramentous* blackness. Like the "serosa†", therefore, these "corpuscula *livida*" may be divided into three kinds;—the vesicle filled with clotted blood; the empty vesicle, the surface of which is coated with a deep tint (red, purple, or atramentous); and the solid molecule, of various situations in the ovary, and of the same tint as the preceding. Several of these corpuscules may exist in the ovary at once. The rupture of blood-vessels appears to give rise to them; and the tint is apparently derived from the colouring matter, and the carbonaceous material of the effused blood.

Corpuscula Lutea.—In the ovaries we also find, in the third place, "corpuscula *lutea*", as they may be called. The tint of these bodies varies exceedingly; but ranges, generally, between that of a bright lemon, and of a dark-coloured orange; to which I may add that, in their obscurity or conspicuity, there is no small degree of variety in these corpuscula; some of them striking on the eye, directly the ovary is laid open; and others requiring for their discovery some little research. Of these bodies, as of the "serosa" and "livida", we meet with different kinds;—the larger and more solid, the vesicular, and the mere specks or sparks. In the ovary, we occasionally see mere sparks of various yellow tints;—forming points, more or less conspicuous, in different parts of its substance. These form the *first* variety of these yellow corpuscules. The ovary sometimes contains vesicles which are, I suspect, often empty; and which are coated with bright yellow;—in the same manner as the livid vesicles are with the red. These vesicles, of different size,—varying in their dimensions between those of a pea and of a mustard-seed,—vary also in the colour of their yellow paint; which may, I believe, present all the different tints observed in the other corpuscula lutea. These form the *second* variety of the corpuscula lutea.

Corpora Lutea.—As a *third* variety of these "corpuscula lutea", we sometimes meet with solid bodies, of a colour more or less yellow;—the larger about as big as the kidney-bean; the smaller about the size of a small pea, or smaller; though it may be observed, that when they get below this size, these solid bodies may properly range among the specks or molecules above noticed. Of these solid bodies, there are two kinds;—the fabiform‡ and the spheroidal. Of the tint of the "spheroids", I have some doubts; but I believe they generally tend to the yellow colour. They usually contain within them, if I may judge from my preparations, a globular cavity; and the surface of the substance (exposed by sec-

* From *atramentum*, "ink".

† See Page 1069.

‡ From *faba*, "a bean"; and *forma*, "resemblance.

tion) all round the cavity, is marked with radiating lines or striæ; which give it something of a fibrous appearance. The "fabiform" bodies, which are far more interesting,—on account of their frequency, and for a reason which will be presently understood*,—resemble in shape, when divided, the half of a kidney-bean (whence the name I give them); and contain within them a shallow cavity; which reminds one of the printer's asterisk (*). The tint of these bodies is yellow;—sometimes decidedly. sometimes obscurely; and between the two extremes are many grades. The more frequent varieties of yellow, may be compared with those of lemon-peel, or of an orange which has been long in the chest. When the ovary is well injected, the yellow mass (being full of vessels) becomes of a deep-red tint. In the size of these bodies, too, there is much variety. The larger are equal to a kidney-bean; the smaller to a small pea. There are, indeed, solid bodies presenting the characters enumerated, and which are not larger than a mustard-seed; but, in the present survey, it is better to throw them out of notice; or to range them among the yellow sparks or specks before noticed*. These fabiform corpuscules constitute what are properly called the "corpora lutea"; and where they lie, a cicatricula†, or small wrinkled scar, will generally, if not always, be found on the surface of the ovary, immediately above.

Ovarian Signs Indicating Impregnation.—Having now described the various appearances in the ovary,—so far as they are interesting to the accoucheur,—we are prepared to apply this knowledge to the consideration of a point not without its interest; I mean, the discrimination of those ovarian appearances which are, and those which are not, to be looked upon as indications of intercourse with our sex.

The Wrinkled Cicatrix.—We may set forward by observing, that of all the appearances which we have enumerated, the wrinkled cicatrix, and the substances of yellow colour‡, have alone, in the present state of our knowledge, a claim to be considered as the indications of impregnation; and even of the wrinkled cicatrix here mentioned, it may be further observed that, standing alone,—independently of the corpusculum luteum,—it has no claim whatever to be considered as an indication, either of intercourse or of impregnation. These cicatriculæ, it is true, render it not improbable that a Graafian vesicle may have given way; but even when they exist alone, we have no proof that these ruptures may not occur independently of cohabitation. In judging of impregnation from the appearances in the ovaries, I should place no reliance whatever on these wrinkles and cicatriculæ.

Corpuscula Lutea.—Again: of the yellow bodies themselves (the corpuscula lutea §), it may be remarked, that they are not indiscriminately the indications of intercourse. Indeed, of the three kinds

* See Page 1072. † "A little scar";—the diminutive of "cicatrix."
‡ The "corpuscula lutea." § See Page 1070.

of bodies enumerated (the sparks, the vesicles, the solid bodies *), the latter only are deserving of attention. With respect to intercourse, the yellow *vesicles*† prove nothing; or, if anything, the negative; for these yellow substances, I feel persuaded, may sometimes, and probably do often appear, where intercourse has been unknown. If I am wrong here, future observation must correct me.

Solid Bodies Indicating Impregnation.—Of the solid bodies, "spheroidal" and "fabiform", the fabiform† alone can, in the present state of knowledge, be looked upon as indicating the connexion of the sexes; for though I dare not deny that the striated spheroids, before described † may be produced by impregnation, yet we have at present no proof of this; and to some, perhaps, it may appear, that they are rather the consequences of incipient disease, than of fruitful intercourse. Others, must, hereafter, decide this point.

Yellow Fabiform Bodies.—Lastly: even of the fabiform yellow bodies†, the larger only deserve much reliance, as indications of intercourse and impregnation; and unless they are as large as a split pea, or larger, I should pass them by, in inquiries of this kind;—as wholly undeserving of our confidence. Among other preparations, I have one consisting of two ovaries; in one of which may be seen a single corpus luteum; in the other no fewer than three, exactly similar (in colour, form, and character) to the corpus luteum of conception; only the largest of them is little bigger than a mustard-seed. Now these two ovaries were taken from a girl under seventeen years of age, who died in this Hospital ‡, from chorea; with a hymen unbroken, and a womb without any traces whatever of pregnancy;—as careful inspection showed. In this case, the jealousy of an Eastern seraglio, if not associated with Eastern ignorance, might have been satisfied, that repeated impregnations could not have taken place;—nay, that impregnation could not have taken place at all; and yet there are as many as four corpuscula lutea. This preparation alone fully satisfies me, that the evidence of the smaller corpora lutea cannot be relied on.

Conclusions.—We now come, then, to this simple conclusion;—that corpora lutea of fabiform shape, and as large as or larger than a pea, are alone deserving of confidence, as indications of impregnation. To this it may be added, that the force of this testimony will be strengthened, if a superficial and wrinkled cicatrix† be observed on the ovary, above the yellow mass. Thus far, then, all seems clear enough; and yet, without wishing to run headlong into wanton scepticism, I cannot forbear intimating a suspicion, that a corpus luteum, even with all these conditions, cannot be relied on, with absolute certainty, as an indication of impregnation;—at least, in the lower animals. Mr. Saumarez mentions, that a corpus luteum may be made to appear in the ovary of a rabbit, merely by keeping the male and female within sight; without being within communication with each other; and in the vaginal and uterine experiments, related at large when I treated of impregnation §, I had ample oppor-

* See Pages 1070 and 1071.
† See Page 1070.
‡ Guy's.
§ See Pages 907 and 908.

tunities of learning that, in the rabbit, corpora lutea may form in large numbers; and may possess, in the most marked manner, all the characters of the corpus luteum of pregnancy; and all this from intercourse with the male, in circumstances that put impregnation quite out of the question. With respect to the rabbit, therefore, I feel fully satisfied that genuine corpora lutea,—not to be distinguished from the lutea of impregnation,—may be constantly produced at pleasure; without such intercourse as may prove fruitful, and give rise to the formation of a new structure; and, if I may rely on Saumarez, I must go further; and must presume that, in this animal, the corpora lutea may even form without intercourse;—from the mere excitement of desire in a high degree. Whether, however, the corpus luteum, with all its prescribed conditions above laid down, may form in the *human* ovary without intercourse altogether, or even without such intercourse as may produce impregnation, I am not prepared peremptorily to decide. I prefer the cautious manner of the academics, to the decisive manner of the dogmatists, whether stoical or Christian; and I shall therefore content myself, in conclusion, merely with expressing my persuasion, that the fabiform corpus luteum, of a yellow colour, as large as a pea (or larger), with an asterical cavity, and seated beneath a cicatrix formed on the corresponding surface of the ovary*, may be looked on, in the present state of our knowledge, as a strong presumptive proof of impregnation; at the same time, however, I may add, that I conceive a jury ought to be cautious of giving too much weight even to this evidence, when human life is at stake. This yellow body seems to be formed in consequence of the change which conception produces in the Graafian vesicle; and it is to this yellow fabiform body, that I would confine the technical appellation "corpus luteum".

[The ovum is contained within the Graafian vesicle†; which consists of two distinct membranous envelopes; the outer of which is the stronger, and gives transmission to several blood-vessels passing to the inner one, which is softer and more vascular. Besides these two coats of the Graafian vesicle, there are two others through which the ovum has to pass, when leaving the ovary; namely, the proper coat of the ovary itself, and its peritoneal covering. On the occurrence of conception, there immediately takes place a great determination of blood towards the ovaries, as well as to the whole of the uterine system; and the coats of the Graafian vesicle, from which the impregnated ovum is to be discharged, become pervaded by a close net-work of vessels. The vesicle itself soon increases considerably in size; and as the close structure of the ovary prevents the enlargement being accommodated *inwards*, the ovary is pressed *outwards* towards the surface, and against the peritoneal coat of the ovary. At the same time, the inner coat of the vesicle becomes intensely vascular; and on its external surface (between the two coats of the vesicle) is poured out (for the formation of the corpus

* See Page 1071. † From *vesicula*, the diminutive of *vesica*, "a bladder".

luteum) a soft, gelatinous substance, of a yellowish-red colour; consisting, apparently, in part of blood, and in part of lymph. This substance is in considerable quantity, all around the vesicle; except at the point where it is pressed towards the external surface of the ovary, and against the peritonum; for at this point the coats of the vesicle are thinner, and apparently without vessels;—so as to exhibit a semi-transparent spot. In consequence of the formation of this new substance, and of its situation, there must be considerable compression of the inner coat of the vesicle; within which are the ovum and the fluid which always surrounds it. This fluid is thus forcibly pressed against the point where the thinnest and unvascular portion of the vesicle is in contact with the peritoneum; which is thereby caused to project a little from the surface, so as to form a small nipple. At the same time absorption proceeds; and by its agency, combined with that of the pressure from within, an opening through the four coats which surround the ovum is effected, and the expulsion of the ovum from the ovary into the fallopian tube is accomplished. Thus the vesicle, after impregnation, may be said to become, in relation to the contained germ, a kind of temporary uterus; lined by a serous membrane; covered externally by another; and having interposed between them the fleshy, or glandular substance of the corpus luteum; through which vessels ramify, and give out, through the inner membrane, a serous fluid for the support of the ovum; which, as yet, lives by imbibition. Thus, in addition to the mechanical agency which the corpus luteum exerts by its pressure, it appears to contribute to the evolution and nutrition of the ovum, before it is separated from the ovary.

If we examine the ovaries of a pregnant woman,—especially if her conception has been recent,—we observe that the one which has supplied the germ, differs in several remarkable particulars from its fellow of the opposite side. It strikes the eye, at once, as being larger, rounder, and more vascular; while, to the touch, it feels fuller and softer. We perceive, further, that this increase of size is not so much the result of an increased development of the whole organ, as of the addition to it, at one part, of a tumour projecting (more or less) from its natural outline;—just as we find, in the eye, the surface of the cornea projecting from the outline of the globe;—the segment of a smaller circle being superimposed on that of a greater. When we examine this protuberant part of the impregnated ovary, we find that the increased vascularity is principally confined to its limits; and we perceive a few small, thread-like, and convoluted vessels, creeping on or near its surface. We generally find the colour of this part quite different from that of the rest of the organ; for it appears a deep or dull brownish yellow, seen through a slightly red medium. Somewhere on the surface of the prominent part, we observe a distinct cicatrix, or appearance as of a rent imperfectly united; to a small extent around which, the peritoneal coat appears as if abraded, or removed by slight, superficial ulceration; and here it is that the twining vessels, just mentioned, are most distinctly

observable. This is the point through which the ovum escaped from the ovary; but it is always found closed up and impervious, unless it happens to be examined within a few days after the passage of the germ; as in the case examined by Sir Everard Home and Mr. Clift; where the woman died eight days after impregnation was supposed to have taken place. "The right ovary", they say, "had a small torn orifice upon the most prominent part of its external surface. We slit it open in a longitudinal direction, in a line close to the edge of this orifice; which orifice was found to lead to a cavity filled up with coagulated blood, and surrounded by a yellowish organized substance".

We should now make a section of the ovary; carrying the knife through the middle of the prominent part, so as to expose the corpus luteum; which will be found to present the following characteristic appearances:—It is almost always more or less oval; with its long axis varying from four to five-eighths-of-an-inch, and its shorter axis from three to four-eighths. Its thickness is generally less than its breadth. Thus it occupies from a fourth to one-half of the whole area of the ovary; according to the period of gestation at which it is examined;—the size being generally in the inverse proportion of the time which has elapsed since conception. There is considerable difference, however, in the size of this structure, at the same period of gestation, in different instances. This depends on the size of the Graafian vesicle around which it has formed; on the rapid or retarded closure of the central cavity, from which the ovum has escaped; and on the degree of vascular activity existing. The size diminishes slowly during gestation; but more quickly after delivery.

The structure of the corpus luteum is glandular; having a lobulated appearance, with slight convolution; so as to resemble, not a little, a section of the human kidney; or (as some one has said) the centrum ovale of the brain. William Hunter describes the corpus luteum as "tender and friable, like glandular flesh"; and Rœderer compares its structure to that of the supra-renal capsules. It is very vascular;—small vessels being frequently visible, without any preparation; but if fine, coloured injections have been previously thrown into one of the arteries going to the ovary, the vessels of the corpus luteum will be filled with the colouring matter; and will be seen, very distinctly, running from its circumference towards its centre. The injection will also pass, readily and freely, into the little serpentine vessels on the surface of the ovary, over the corpus luteum, and around the rent in the external covering; and, especially at an early period after conception, some of the injection is not unfrequently extravasated into the central cavity.

The colour of the corpus luteum is a dull yellow; very similar to that of the buffy coat of the blood; and generally exhibiting, when recently exposed, a slightly reddish tinge. This description, however, applies only to the human subject; for the colour varies in different animals. In sheep, it has a slightly pinkish shade; in sows,

a reddish; and in cows, a bright orange-yellow. If the examination be made within three or four months after conception, we shall always, I* believe, find a cavity still existing in its centre; and of such a size as to be capable of containing a grain of wheat, and often of much larger dimensions. This cavity is surrounded by a strong white cyst (the inner coat of the Graafian vesicle); and, as gestation proceeds, the opposite parts of this cyst approximate, and at length close together;—so as completely to obliterate the cavity, and leave in its place an irregular white line, of a radiated, or arborescent form. This appearance is visible, as long as any distinct trace of the corpus luteum remains; and forms one of its most essential characters;—so as to distinguish this body from any other that might be confounded with it. I am unable to state exactly, at what period the central cavity disappears, or closes up to form this line. I have always found it existing up to the end of the fourth month; I have one specimen, in which it was closed in the fifth; and another, in which it was open in the sixth. Later than this I have never found it.

After the period of gestation has been completed, or the contents of the uterus have been prematurely expelled, the corpus luteum begins to exhibit a very decided alteration in all its characters; until, at length, it is no longer to be found in the ovary. The exact period of its total disappearance I* am unable to state; but I have found it distinctly visible so late as at the end of five months after delivery at the full time; but not beyond that period. The corpus luteum of a preceding conception, is never to be found along with that of a more recent one, when gestation has arrived at its full term; but in cases of miscarriage repeated at short intervals, it may. At the time of delivery, the corpus luteum is neither so large nor so vascular as at the earlier periods of pregnancy; unless the woman should happen, at the time of her death, to be labouring under inflammation of the uterine system; in which case the corpus luteum partakes of the turgescence of the other parts; and, very remarkably, of their increased vascularity. In a preparation taken from a woman who died of inflammation of the womb, two days after delivery, the central radiated white line is very distinct; and,—the vessels having been injected,—the substance of the corpus luteum is quite crimsoned. In another preparation, taken from a woman who died of pneumonia. five weeks after delivery, the corpus luteum is reduced to about one-half of its original dimensions. It is closer in its texture; and its colour is becoming indistinct, in numerous points (so that it appears paler); but the central line is quite distinct. Owing to a diminution in its vascularity, fine injection could not be made to pass into it. There was only one cicatrix observable on each ovary; although the woman had borne six children. In another specimen, taken from a woman who died in the twelfth week after delivery, the corpus luteum had lost much of its colour; and its texture was much condensed;—so as to resemble that of a cut apple. Lastly: in the case of a young woman who died five months after giving birth to her first child, the

* Dr. Montgomery.

corpus luteum exhibited its peculiar colour only in one very small spot; but still exhibited, in its centre, the irregular white line.

The common notion is, that the corpus luteum is a permanent structure; and, consequently, that we have only to examine the ovaries after death, to enable us to tell, not only whether a woman has borne children, but the exact number of her offspring. This is quite an error, however; and probably arose from a misconception of Haller; who only meant that the number of corpora lutea corresponds with that of the fœtuses lodged in utero at one gestation. Hence, when there is only one fœtus, there is only one corpus luteum; while, in cases of twins or of triplets, there will be a corresponding number of corpora lutea in the ovary or the ovaries; for they may either be all formed in one ovary, or some in each. Occasionally a corpus luteum may be found without a fœtus; or a greater number of corpora lutea than there are fœtuses produced at the time. Thus, in one instance, I * found two corpora lutea in the ovary of a woman who killed herself by medicine taken to procure abortion; and who was said to have expelled but one ovum. Haller notices such an occurrence as occasionally taking place; and says that the other fœtus must have been lost by abortion, or been destroyed by some other means. I once found ten corpora lutea in the ovaries of a sow, but only nine fœtuses in the uterus. After a very diligent search, however, I discovered, in one of the cornua, the remains of another fœtus, which had been blighted. On the other hand, a vesicle may contain two ova; in which case, twins may be accompanied by only one corpus luteum. From such facts it follows, that the presence of a corpus luteum, although it would be a decided proof that the woman had conceived, would not prove that she had borne a child; for it is quite obvious that the ovum, after its vivification, might, from a great variety of causes, have been blighted and destroyed, long before the fœtus had acquired any distinct form. It might have been converted into a mole, or into hydatids. Thus, however paradoxical it may appear, it is nevertheless true, that a woman may conceive, and not become truly with child. But the converse will not hold good; for I believe no one ever found a fœtus in utero, without a corpus luteum in the ovary.

The cicatrices on the surface of the ovaries are supposed, by many, to be permanent and ineffaceable; and, consequently, to be certain indications of the number of children borne by the woman, or of the number of twins she has conceived. But such is not the case; for the ovaries of women who have borne several children, will sometimes be found exhibiting only one or two of these marks. In the case of a woman who had borne seven children, the youngest of whom was four years old at the time of the mother's death, there was not even one cicatrix in either ovary. On the other hand, the bursting of small abscesses in the ovary may produce cicatrices, which cannot be distinguished from those caused by the escape of the impregnated ovum.

* Dr. Montgomery.

I * never saw a corpus luteum, such as above described, except in females who had been impregnated; and my firm conviction is, that such a corpus luteum was never found in a virgin. According to Wrisberg and Sir Everard Home, however, the corpus luteum is a provision for conception; by which the ovum lodged within it is prepared and fitted for impregnation. According to others, the corpus luteum is properly the effect of impregnation; but may also be produced by other adventitious circumstances, causing high excitement of the generative apparatus, independently of sexual intercourse†. My own observations have been continued through a period of nearly ten years; during which time I* have never omitted a single opportunity within my reach of examining the bodies of women of all ages, and in all the varying circumstances of virginity, after intercourse, during gestation, and after delivery. These opportunities have been afforded by more than one large hospital, as well as in private practice. I have also dissected hundreds of the inferior animals, with reference to this point; and my firm conviction is, that conception never happens without the production of a corpus luteum; and that a corpus luteum is never found in virgin animals, but is the effect of impregnation. Those who have supposed that corpora lutea may exist without impregnation, appear to have been led into the error by confounding appearances and structures essentially different;—forgetting that (as Meckel observes) "every yellow substance in the ovary is not a corpus luteum". It is allowed by these writers, that "the corpora lutea of virgins may, in general, be distinguished by their smaller size, and by the less extensive vascularity of the contiguous parts of the ovarium". I have seen many of these "virgin corpora lutea", as they are unhappily called; but not in any instance did they present what I should regard as even an approach to the assemblage of characters belonging to the true corpus luteum. These spurious corpora lutea differ from the true in all the following particulars:—1. There is no prominence or enlargement of the ovary over them. 2. The external cicatrix is almost always wanting. 3. There are often several of them found in both ovaries; especially in subjects who have died of tubercular disease; in which case they appear to be mere depositories of tubercular matter; and are frequently without any discoverable connexion with the Graafian vesicles. This is the true explanation of a case mentioned by Dr. Dunlop, in his edition of Beck's "Medical Jurisprudence". He says,—"The subject, who died of tubercular disease of the lungs, was not more than five years old; yet in her ovaries were numerous corpora lutea, as distinct as I ever saw them in the adult impregnated female". *One* real corpus luteum, as it is found "in the adult impregnated female", is fully as large, or even larger, than the ovary of a child five years old; so that it is impossible there could, in such a case, be several of them. 4. They present, in their substance, no trace of vessels; of which, in fact, they

* Dr. Montgomery. † See Pages 1072 and 1073.

are entirely destitute; and, of course, cannot be injected. 5. Their texture is sometimes so deficient in firmness, that they seem to be merely the remains of a coagulum; and at other times appear fibro-cellular, like the ovary itself; but never present the soft, rich, lobulated, and regularly glandular appearance, which Hunter meant to express, when he described them as "tender and friable, like glandular flesh". 6. In form they are often triangular or square, or of some other figure bounded by straight lines. They never present, either the central cavity, or the radiated or stelliform white line which results from its closure*.

This latter peculiarity, in common with several others observable in these spurious productions, depends in their different mode of formation;—a circumstance which deserves especial attention. The history of their formation appears to be this:—Accidental, or morbid determination towards a vesicle takes place; in consequence of which it becomes distended with fluid; and either bursts and discharges its contents (in which case there may be found an external cicatrix), or the fluid is again absorbed; but, in either case, there is often deposited in the internal surface of the vesicle, a substance somewhat resembling in colour the corpus luteum; but, in general, not more than one-sixteenth-of-an-inch in thickness, and entirely destitute of blood-vessels. In this condition I† have often found these bodies;—the vesicle being enlarged to three or four times its natural size; full of fluid; and its internal surface of a bright yellow colour; but when the vesicle collapses,—either in consequence of rupture of its coats, or of the absorption of the contained fluid,—the inner surface of this new deposit closes upon itself, and forms an irregular line of junction, which is generally darker than the rest of the structure. Not unfrequently, these bodies present the yellow colour only at their circumference; while their centre is so dark as to be almost black; but, from their situation, they are entirely without a lining membrane, to form either a central cavity, or a white stellated line; which, in the true corpus luteum, is formed by the closure of the inner coat of the vesicle. These accidental formations are, in general, much smaller than the others; and, being totally without vessels, however minutely the rest of the ovary may be pervaded by a fine injection, not a particle will pass into these false corpora lutea.‡]

SECTION 7.—MEDICO-LEGAL QUESTIONS CONNECTED WITH PREGNANCY.

[Two questions relating to pregnancy have been suggested, and deserve some notice.

Can a Woman become Pregnant, and be Ignorant of it until the Time of Labour?—I§ cannot better preface an examination of this

* See Page 1076.

† Dr. Montgomery.

‡ The foregoing minute and accurate description of a corpus luteum,—the best account in our language,—is condensed from Dr. Montgomery's "Signs and Diseases of Pregnancy"; Pages 214 to 216.—N. R.

§ Dr. Beck.

question, than by observing, that, with women, certain appearances are often referred to the cause from which they wish them to originate. Thus, married females attribute their indisposition and ailments to the presence of pregnancy; while those who,—from being unmarried, and enjoying guilty pleasure,—dislike that idea, attribute to disease any alteration that may occur. Of this nature is the case related by Mauriceau; where a female who had been secretly married, took every precaution to avoid pregnancy; and not only deceived herself, but also an old physician,—who prescribed for her, as having a scirrhous womb,—until the night before her delivery. In another instance, a female (aged thirty-five) who had made the most solemn vows of chastity, deceived many physicians; who had treated her for dropsy of the womb *. Foderé himself relates an instance, which happened to an acquaintance of his. He was sent for to a nun, who was said to labour under a violent colic; and who continued to deny her being with child, until the cries of the infant silenced her †.

We may smile at these narratives; but the subject assumes a grave importance, when the question is asked judicially. A case in which it was made the matter of investigation, is related in the "Causes Célèbres"; and an abstract of it may prove useful.

In 1770, a female, aged twenty-five, and named Louisa Bunel,—residing in the bishopric of Avranches, in France,—was seduced, and became pregnant. It was in the month of August, when field-labour is the most severe, that she experienced a cessation of the menses. She attributed this to the fatigue she had undergone; and, feigning ignorance of her situation, declared herself dropsical. She applied to several monks for medical aid, and took diuretics; but without effect. At the sixth month, she was married, but not to her seducer; and after that repeatedly took an infusion of savin in wine. At the end of three months, being alone, she was delivered of a child; which she afterwards declared was born dead; and which she covered with linen, carried to a neighbouring field, and put under some leaves. Eight days after, a dog discovered the body; and brought some rags from it to the house of a neighbour. Judicial search was now made. Louisa was discovered to be the mother; and was condemned to death for committing infanticide. Her pleas were:—1. That she was perfectly ignorant of her pregnancy; and that the remedies she had taken were solely with a view to remove her supposed dropsy. 2. That the child was born dead. 3. That, at the time of delivery, she was so extremely weak for four hours, that she could not call for assistance; and on reviving, preferred to bury her shame;—since it was useless to expose herself by shewing a dead child. An appeal was made to the superior court at Bayeux; which court, after taking the opinions of sixteen physicians, at Paris, on the case, reversed the sentence (November 11, 1772), and discharged the prisoner.

* Mauriceau; Volume 2; Pages 111 and 205.
† Foderé; Volume 1; Page 491.

The case, in the opinion of these physicians, turned on the following points:—1. Could the accused be ignorant of her pregnancy, and confound it with another complaint? 2. Could she innocently make use of the remedies that she confessed she had taken? 3. Is it certain that the child was born dead; and, if so, what occasioned its death? The first two only relate to our present subject; as the third belongs to infanticide. The medical judges answered both questions in the affirmative;—on the ground of the uncertainty of the signs of pregnancy, and the ease with which it might be confounded with other diseases. They adduced, in favour of this, the authority of Astruc, Zacchias, Senac, and Hebenstreit. The last-mentioned author observes, that a female might be impregnated when intoxicated, and might go to the full time without knowing it; and, on being seized with a labour-pain, might mistake it for colic or painful menstruation.*

Foderé, in remarking on this case, very justly observes, that although instances have occasionally occurred where married women have mistaken their situation, yet the sex generally ridicule the idea of this pretended ignorance; and in those cases which usually come before a court of justice, the reply to such a plea should be,—"Have you not exposed yourself to become pregnant; and on what account, then, were you so confident of the usual consequence not following it?"†

The following are laid down by our author‡, and (I § think) correctly, as the only cases in which ignorance is possible:—

1. *Where the Female is an Idiot.*—An instance of this kind occurred to Dr. Desgranges, in a young woman (in France); who, having been long tempted, was at last prevailed on to have connexion in a bath; as that, it was stated, would prevent conception. In a short time, however, the menses ceased. She became alarmed for

* Hebenstreit; Page 386.

† A reviewer in the "Edinburgh Medical and Surgical Journal",—who, I presume, is Dr. Christison,—speaks thus on this point:—"Can a female be ignorant of her pregnancy till the child is brought forth? There are manifestly three conditions required, before we can believe such a thing possible; namely, that impregnation took place without her knowledge; that her pregnancy imitate some natural disease; and that her delivery be accomplished either suddenly, or without her knowledge". As to the first, he concedes that it may take place, if she be not a virgin, and (in every case) during the profound sleep induced by narcotics. It may also be deemed to be hydrometra or dropsy of the uterus; and thus deceive, during the whole progress of pregnancy, not only the female, but the most accomplished accoucheurs. The last, we know, does sometimes occur. He remarks, therefore, "It is obvious that a person may be delivered, without being previously aware of her pregnancy; but since each of the three requisite conditions is exceedingly rare, we may justly pronounce it barely within the bounds of possibility; and only to be credited, in individual cases, when the female gives sufficient evidence that the conditions in question did actually exist. Further: as the third condition can exist only in the case of those who have borne children, the plea of ignorance must necessarily be excluded from the greater number of trials; *which too generally concern those who have erred for the first time*". (Volume 19; Pages 452 to 454.)—*Dr. Beck.*

‡ Foderé. § Dr. Beck.

her health; and consulted several physicians, who administered medicines; and, in this state, she continued without suspicion, until the approach of labour. Dr. Desgranges states it as his opinion, that the assurances of her lover had banished all ideas of the possibility of pregnancy. The female herself made this assertion to him; and her conduct, previously to delivery, was calculated to strengthen it; for there were no attempts at concealment *.

2. *Where a Female has Conceived when in a State of Stupor, either from Spirituous Liquors or Narcotics; or when in a State of Coma or Asphyxia.*—A virtuous young woman was thus violated at Lyons, during the period when the horrors of the French revolution were at their height. A powerful dose of opium was administered; the crime was completed; and, in a short time, she found herself pregnant, without knowing by whom.

In all other cases, the female may, indeed, entertain doubts concerning her situation; but doubt presupposes something to be suspected; while ignorance is not aware of any thing †.

Can a Female become Impregnated during Sleep, without her Knowledge?—This question has already been incidentally noticed ‡; and it is not necessary to enlarge on it in this place. In females habituated to sexual connexion, or where sleep is unnaturally produced, there is no doubt of its occurring; whereas, in the opposite cases, the probability is greatly lessened. Authors, in remarking on this question, run into copious disquisitions on what is necessary to cause conception; but on this I have already intimated an opinion §, which it is not necessary to repeat ‖.¶]

* This and the succeeding case were communicated to Foderé by Dr. Desgranges. See Foderé; Volume 1; Pages 496 and 497.

† I find the following case mentioned in Dr. Gooch's "Lectures on Midwifery"; Page 81. A maid at an inn, who was always thought to be virtuous, and bore a good character, began to enlarge in a way which excited suspicions of pregnancy. She solemnly declared that she never had connexion with any man. At length she was delivered, and was afterwards brought before a magistrate to swear to the father; but she repeated her former declaration. Not long fterwards, a post-boy related the following circumstance:—One night, he came late to this inn; put his horses in the stable; went into the house; and found all gone to bed except this girl, who was lying asleep upon the hearth-rug; and, without waking her, he found means to gratify his desires. This shows that impregnation may take place without the knowledge of the female, or any excitation of the sexual passion".—*Dr. Beck.*

‡ See Page 953. § See Page 954.

‖ The following case may be added to those already related:—A pregnant female, in her last moments, solemnly declared that, to her knowledge, she never had connexion; but that a person in the family, some time previous, had given her some wine to drink, after which she fell into a profound sleep. She was not, however, conscious of any thing having occurred to her during that state; but mentioned the circumstance, as probably explaining her situation. See Meierius in Brendel; Page 99.—*Dr. Beck.*

¶ "Elements of Medical Jurisprudence": by Theodoric Romeyn Beck, M.D.; and John Beck, M.D.; Sixth Edition; Chapter 6; Pages 150 to 153.

CHAPTER X.

DISEASES RESEMBLING PREGNANCY.

[Single women sometimes have the common symptoms of pregnancy, yet obstinately deny the possibility of its existence. This denial is generally so positive, and apparently so sincere, that the young practitioner is sure to be influenced by it; but experience will teach him to turn a deaf ear to it. It appears difficult to explain the obstinacy of assurances, made by those who know them to be false; but I* suspect they deny to the last that they *can be* pregnant, because they hope to the last that they *are not* so. Another circumstance likely to bias him, is the respectability of the patient; but this, too, must be disregarded. Single women sometimes become pregnant, in all ranks of life;—not only among the low, but among the high; and not only among these, but in the middle ranks; and the practitioner, in his intercourse with the world, will often be placed in puzzling situations; and have to listen to very curious disclosures.

Irregular Menstruation.—There are two other circumstances in which the practitioner will often be pressed for an opinion; and in both of which it is generally impossible to give one. Some women are very liable to pass over the natural period of the month without menstruating,—by one, two, or three weeks, and then to have a violent and somewhat painful hæmorrhage; during which nothing visible passes away, but coagula of blood. These cases are commonly said to be early abortions; but this is a mere conjecture without proof.

Hæmorrhage.—Another case in which it is difficult and often impossible to form a decided opinion, is when hæmorrhage has occurred in early pregnancy, and has ceased without any ovum having been detected. This is no proof that it has not passed away; for it may be so small as to be overlooked in the coagula. Has the patient aborted, and is she no longer pregnant; or has she retained the ovum, and is her pregnancy going on? It is generally impossible to tell, with certainty, till some time has elapsed; and the more we refrain from decisive opinions, the less are we likely to give erroneous ones.

Torpidity of the Uterus, and Flatulence.—The next class of cases I* shall describe, consists in a torpid state of the uterus, with a flatulent state of the intestines. This is most liable to occur near fifty years of age; when the uterus is about to discontinue its functions. At this time, menstruation will often cease for several months; and the abdomen becomes distended with a flatulent tumour. The air in the bowels, moving about, gives an inward sensation; which is mistaken for the child. There is often slight nausea; various nervous feelings; and an anxiety to believe in pregnancy, as a test of youthfulness. About this age, also, the omentum and parietes of the abdomen often

* Dr. Gooch.

grow very fat;—forming what Dr. Baillie once called "a double chin in the belly". This assemblage of symptoms, at this age, frequently leads to the supposition of pregnancy; but I have met with many similar cases in young women. I* have repeatedly known those who, on the return of their husbands after a long absence, have suddenly ceased to menstruate, and grown large about the abdomen, conclude that they were pregnant, and make preparations for their confinement. I have known the same happen to single women, who had been secretly incurring the risk of pregnancy. They were generally women of sickly constitutions, who were very subject to obstructed menstruation; and it is probable that, in these cases, the puzzling assemblage of symptoms, was the result rather of mental agitation than of sexual intercourse.

Tumours of the Ovary.—Another class of cases liable to be confounded with pregnancy, are tumours of the ovary. This organ,—which, in its healthy state, is smaller than even the unimpregnated uterus,—is often more enlarged by disease, than the uterus is by pregnancy; and forms, like the latter, a circumscribed tumour; which rises out of the pelvis, to various heights in the abdomen. These tumours are sometimes mistaken for pregnancy; but this mistake can hardly be committed by a careful and a competent judge. In most of the cases which I* have seen, the duration of the tumour,—already much beyond nine months,—is alone a sufficient guide;—if it were ever safe (which it never is) to be guided by one circumstance. Another guide is a fluctuation, which can generally be felt on striking the abdomen; but the tumour may not have lasted nine months, and may be too solid to afford fluctuation. In these circumstances, the examination of the uterus through the vagina, at once settles the question. If the tumour has lasted a few months, and already distends the abdomen to a visible magnitude, the neck of the uterus, if pregnant, would be short and soft; its body enlarged; and the moveable fœtus would be capable of being felt. On the contrary, when this tumour is an enlarged ovary, the neck of the uterus is long and firm, and its body unenlarged.

Pregnancy sometimes Mistaken for Dropsy.—When a large ovary is mistaken for pregnancy, the error is a harmless one; but pregnancy is sometimes mistaken for dropsy of the ovary; and the patient has been tapped. A woman was taken into the operation-room of a well-known hospital, for this purpose; but the surgeon, on learning that she had not been examined, sent her back to her ward. This caution was fortunate; for, before the next operation-day, she brought forth a child. I* have heard several instances of this mistake.

Enlarged Ovary complicated with Pregnancy.—But a woman may have an enlarged ovary and yet conceive. Morgagni has said, that one ovary might be diseased throughout, and the other nearly so; but, provided a portion containing one vesicle remained healthy, the woman was capable of impregnation. I* have known several instances, in which the ovary was enlarged by disease, and the uterus by pregnancy, in the same person. The two tumours went on grow-

* Dr. Gooch.

ing, side by side, to the full time; and the patients were delivered of living and healthy children;—leaving the abdomen still distended with the ovary. Of these patients, one has borne three children since her ovary (the right one) had attained considerable magnitude *. She is still alive; but has ceased to have children. In these cases, no serious error was committed. The patients were doubtful of their state, till it was far advanced; when the strong movements of the child,—felt externally by the hand,—informed them that they were pregnant. I can easily suppose that such cases might sometimes be very puzzling. The cessation of the catamenia would prove nothing, for it is a common occurrence in ovarian dropsy; the enlargement of the uterus might be mistaken for the progressive enlargement of the ovary; the child might be still or dead; and the protrusion of the umbilicus attends both pregnancy and enlargement of the ovary. In these circumstances, the true nature of the case could be detected only by an examination through the vagina; when the obliterated neck, the enlarged body of the uterus, and the moveable fœtus, would immediately discover it. The bare possibility of such cases, is a strong reason for never tapping a married woman, without having the uterus previously examined by a person skilful in such examinations†.

In the cases resembling pregnancy already described‡, the cause which distends the abdomen is external to the uterus; and discovering that this organ is not enlarged, we know that the patient is not pregnant. But sometimes the cause which distends the abdomen is within the uterus. The enlargement of the abdomen may depend on enlargement of the uterus; and yet the patient may not be pregnant. The bodies which sometimes form within the uterus, and distend it to a size equal to that of pregnancy, are,—fortunately for the facility of diagnosis,—rare, compared with the other causes of

* We see women who, although dropsical, nevertheless have children. In proof of this I will allude to the wife of M. Duvieux, my colleague. Having become dropsical after delivery, she was treated, during several months, with all the usual remedies, without any benefit; after which, without suspecting it, she discovered that she was pregnant notwithstanding her dropsy; which, far from diminishing after her delivery, increased, and lasted nine years. During this time, she had three other children;—one a girl; who, at the age of five-years-and-a-half, looked as if she was seven years old. Another was a healthy boy.—*Mauriceau; Volume* 1; *Page* 73.

† When a retention of urine takes place in the latter months of pregnancy, as the water accumulates, the bladder cannot enlarge equally in all directions; because of the resistance which it meets with posteriorly from the gravid uterus. It therefore assumes a flattened form; and spreads upwards and laterally, to a great extent, over the anterior part of the uterus;—at the same time giving, under percussion, an evident sense of fluctuation to the hand; insomuch that the case has been mistaken for a dropsy. An unfortunate instance of this kind, happened to a practitioner in Ireland; who tapped his patient for this supposed dropsy. Death was the consequence; and, on examination, it appeared that the trocar had passed through both sides of the bladder, through the uterus, and even into the head of the child.—*Lowder's Manuscript Lectures.*

‡ See Pages 1083 to 1085.

spurious pregnancy. Those which have been mentioned by writers, are air, water, hydatids, and moles.*]

Tympanites Uteri.—Tympanites† uteri is a disease in which gas forms in the uterus. I never met with a case in which the womb acquired a very large size;—say that of an eight or nine months' pregnancy. Such a case, however, is said to occur. Collections of gas in the uterus in smaller quantities,—say to the measure of two or three ounces,—are by no means of unfrequent occurrence.

[Tympanites of the uterus has been described under two forms. In one, the air is formed in the cavity of the uterus; is retained for several months; distends it to a considerable magnitude; and is then expelled. Of this I‡ have never seen one instance. For the other form, of which I have known several examples, a better name would be "*flatus* of the uterus". Air is formed in this organ; but, instead of being retained,—so as to extend the uterus,—it is expelled (with a noise) many times a day. It has been doubted whether it really comes from the uterus; but, in one of my patients, there was a circumstance conclusive on this point. She was subject to this infirmity only when not pregnant; but she was a healthy and breeding woman; and the instant she became pregnant, her troublesome malady ceased. She continued entirely free from it, during the whole of her pregnancy; but a few weeks after her delivery it returned.§]

Frequent with Hysterical Women.—Hysterical women are very liable to an inflation of the bowels; so that the lower class denominate hysterics "*wind*"; and not inaptly. The gas, I strongly suspect, is not evolved from food taken into the stomach; but is really a secretion, formed by the inner membrane of the stomach and bowels. You will sometimes find your patient,—under a paroxysm of gaseous secretion,—throwing herself on the bed, and eructating air from the stomach continually, for two or three hours together;—many cubic feet being emitted; till the patient, at length, falls back upon the bed exhausted. A distinctly marked case of this kind, I have met with myself; and Mr. Gaitskell has met with others. Now tympanites of the uterus, of which I am speaking, occurs more especially in those hysterical women just referred to; and it is not impossible that, just in the same manner as the inner membrane of the bowels secretes air, the inner membrane of the womb may secrete air also. Add to this, that air-tumours have been found in the body, without communication with the external surface, or with the cavity of the bowels; and that many fish regulate their specific gravity by an air-bladder; which may be filled with gas, or not, at pleasure. These bladders are well supplied with blood-vessels; and the air,

* Dr. Robert Gooch's Account of some of the most important Diseases of Women. Chapter 3; Pages 209, 217, 227, 230, 231, 232, and 233.

† The "*physometra*" of Sauvages and later nosologists;—a compound term from φυσάω, "to inflate"; and μήτρα, "the uterus".—*Dr. Castle.*

‡ Dr. Gooch. § Dr. Gooch on the Diseases of Women; Page 23.

most probably, is produced by an action of the will; for the very function and office of the bladder seem to require this. Why, then, may not the uterus also secrete gas? Sterility is not a necessary result of this secretion of the air into the uterus. I have known pregnancies subsequent to tympanites; and I have known the disease to occur very soon after delivery;—say, in the course of three or four months.

Treatment.—When tympanites attacks the patient, it produces an uneasy feeling of uterine distention; and, the womb contracting, it may expel the gas;—not always inaudibly; which is, of course, very unpleasant to the patient. On pressing above the symphysis pubis, the womb appears to be enlarged; and, by this pressure, gas may be expelled. Hence, in order to relieve the disease, the patient may occasionally retire to her bed, and lay her hand on the uterus;—the proper place (if necessary) being pointed out to her; she may then make a strong pressure there,—partly with the hand and partly with the muscles: and thus part of the air may be expelled; though sometimes not very readily. If necessary, as I have said, the region of the womb may be pointed out; but this is frequently indicated to the patient herself, without instruction from her physician, by a feeling of pain and distention in the part where the womb lies. This disease I have hitherto seen in married women only. It seems, as before stated *, to be closely connected with hysterics, and perhaps with distress and agitation of mind. Drugs appear to be of little avail; and the best of all cures is pregnancy. During the continuance of the paroxysm, perhaps a tube might be inserted into the neck of the uterus, and left there, with advantage;—so as to give vent to the gas. No competent investigator can be at a loss, in making a distinction between these vaginal emissions of gas, of uterine origin, and those which are derived from the intestines, when the rectum and vagina are in communication with each other, in consequence of some preceding disease.

Dropsy of the Uterus.—[Of dropsy of the uterus I† have never seen a case; but there are many on record. The reality of this disease has been often doubted; but an instance related in the "Medico-Chirurgical Transactions", by Dr. A. T. Thompson, serves to verify the cases of the older observers. The testimony of a contemporary whom we know and can trust, produces more effect on our minds, than that of twenty witnesses in remote times and places.‡]

Friable Matter.—The womb and vagina, severally or together, sometimes secrete a friable material, by which the two cavities may become loaded. The disease is indicated by pains, like the parturient; by a watery, or perhaps sanguineous, discharge from the uterus; and by the occasional escape of the friable material itself. Of this disease, it has been my lot to see more than one instance; and, I presume, it is not very uncommon. The quantity of the material may amount to some ounces, or to a few drachms only. In one case, which I

* At Page 1086. † Dr. Gooch.

‡ Dr. Robert Gooch's "Account of Some of the most Important Diseases of Women"; Chapter 3; Page 234.

examined with care, the material seemed to be generated in a state of the membranes lining the genital cavity similar to that observed in the mouth under thrush.

Fleshy Substances.— Sometimes, independently of intercourse with our sex, there form in the uterus fleshy substances; which, in structure, resemble a good deal the placentar part of the ovum, in the earlier months. In some cases, these fleshy masses are, in truth, nothing more than blighted ova;—the result of intercourse; but, in other cases,—to my own knowledge,—they form, month after month, in unmarried ladies of undoubted honour. I will not lay down a decisive diagnostic; lest this should be made use of, in any way, to injure female reputation; though, I conceive, it is by no means impossible to form a shrewd guess, whether these substances result from intercourse or not. Indeed, considering that we do not allow of reciprocation, I do think that the male part of our species has, for the last three or four thousand years, manifested too much of the spirit of the ubiquitous Paul Pry in these matters!

Moles.— Sometimes there form, in the uterus, other masses, of looser or firmer consistency, called "moles". Some of these masses appear to be made up of layers of coagulable lymph; which layers have been successively poured out under inflammatory action. Others, of firm make, resemble the body of a polypus, or a scirrhous tubercle; so that, on dividing them, an anatomist would scarcely know the difference. These masses may be as small as a pullet's egg, or even smaller; or they may be as large as the head of the fœtus, or larger. Generally, there is one mass only; occasionally there are several; and they may be expelled at uncertain intervals of several days. The uterus of a woman who died from flooding, was once shown in this Hospital*, by Mr. Callaway, a surgeon of acknowledged talents;—and I there found one of these masses nearly detached, and bigger than the fœtal head. This mass, however, though detached in the main, had some connexion with the uterus;—as, I believe most of these masses, of firmer consistency, have. The connexion consisted of cellular web and blood-vessels; but the union was of so tender a kind, that you might detach it with the fingers;—just as the ovum might, in the same manner, be detached from the surface of the uterus. Indeed, the connexion between those masses and the uterus, seems to be very similar to that which subsists between the womb and the ovum.

Hydatids.—Hydatids in the uterus, are sometimes small in their bulk, and few in number; but, in other cases, they grow in large numbers, and to a great size;—so that a quantity sufficient to fill two or three wash-hand basins may come away. (I purposely use a measure known and familiar.) The difference between hydatids which form in this, and in any other part of the body, is that, in all other parts, they have no peduncle; but when they grow from the uterus, they are always peduncular;—being connected by a sort of stalk; somewhat in the same manner as grapes are collected

* Guy's.

into a bunch. As, in other parts of the body, we find hydatids without there having been a connexion between the sexes, so in the uterus, I presume, hydatids may be formed without intercourse. In general, however, they are the result of impregnation.

Hydatids in the Ovum.—When hydatids form in the ovum, they are exceedingly small at first; and the ovum ultimately disappears, more or less, in consequence of these animalculæ feeding upon it. I have seen this disease in all its stages. I have known hydatids to exist, where there was scarcely a trace of the ovum. I have known them to exist where much of the ovum was still remaining, though the hydatids were large and numerous; and I have also met with one or two cases where, at first sight, what came away appeared to be an ovum; but where, on cutting into the supposed ovum, we found that it contained an assemblage of hydatids.

Causes.—The formation of these zoophytes *,—for such they appear to be,—is the more interesting, as it has its influence over female reputation;—a plant so sensitive, that, like its emblem in the greenhouse †, it can scarcely bear a touch! When hydatids are forming, you may be sometimes asked, whether their appearance is not a proof of intercourse with our sex? I certainly think that, in most instances, they result from that cause; but I think also, that it is our duty to declare distinctly, that we have no satisfactory proof whatever that they cannot be produced without the approach of the sexes. Indeed, the presumption (taken from analogy) lies entirely the other way. In most of the other parts of the body, hydatids are produced quite independently of this cause; and why should they not, in like manner, be now and then generated here?

Treatment of Hydatids.—The treatment of hydatids,—so far as they admit of any treatment,—is extremely simple. If a woman is supposed, or known to labour under disease of this kind, but suffers no pressing inconvenience,—as meddlesome midwifery is bad, and as, in midwifery, you may do mischief when you are attempting to do service,—I would recommend you to abstain altogether from interfering. You may give a little medicine, if you please; but take care you do not give any that will do injury. If the pains of parturition should supervene,—and they are likely, sooner or later, to assail the patient,—and if these masses are coming away of themselves, again,—as meddlesome midwifery is to be proscribed,—I recommend you to sit at the bed-side, and to suffer Nature, the great obstetrician, to proceed in her own method. But what if a great eruption of blood should occur? Why, in these cases, if the parts are rigid, the introduction of the hand is unjustifiable; for contusion and fatal laceration must be the consequence. The practitioner, therefore, in such circumstances, should sit at the bed-side; and should frequently examine, to ascertain whether relaxation has been effected. If the parts are lax, and the introduction of the hand is easy, then the uterus should be

* From ζωον, *an animal*; and φυτον, *a plant*.
† Alluding to the *Mimosa Pudica*, or "Sensitive Plant".

emptied by the operation of the hand; for although it is true that risk must attend the operation, and although the risk of tearing the womb or the vagina, may be greater in these cases than in ordinary floodings,—owing to the thinness of the parts,—yet, if the flooding is large, there may be less danger in a delivery by the hand, than a delivery (if so it may be called) effected by the unaided power of the womb.

Treatment of Moles.—The management of the other form of disease,—that in which moles are generated in the uterus,—turns on the same principles as the treatment of hydatids. That is, if the womb is known to contain this growth, and no pressing symptoms occur, the accoucheur ought not to interfere. If pains, like those of parturition, assail,—provided there is no flooding,—we may safely trust to the natural efforts, for the evacuation of the contents of the womb. If there is rigidity with flooding,—so that the introduction of the hand might lacerate and destroy,—we must wait at the bed-side of the patient;—frequently examining, to ascertain if relaxation has occurred. If relaxation concur with the flooding, and the floodings be dangerous, the sooner we deliver (by the hand or by instruments) the better;—provided such delivery be practicable, and without violence. But is it not, in many cases, impracticable? Moles are not, I think, in general attended with dangerous floodings. To all these cases, the general principles of flooding-deliveries will apply; and to them I must refer you*. Of course, no means of checking bleeding must be left untried. With moles, another disease is sometimes combined;—such as tubercular scirrhus of the womb† or ovary‡, or both. Remember this in giving a prognosis.

CHAPTER XI.

PROGRESS AND DURATION OF PREGNANCY.

Of the progress of pregnancy, we may judge in two ways;—by "the reckoning" (as it is called), and by examination; and to the consideration of these methods we will now proceed.

SECTION 1.—INDICATIONS AFFORDED BY MANUAL EXAMINATION.

As gestation advances, the neck of the uterus becomes expanded; and, the womb enlarging, there is of necessity an ascent of the fundus; which, together with the dilatation of the uterine neck, bears a certain relation to the progress which the pregnancy has made.

* See Pages 168 to 209, and 257 to 278.
† See Page 730.
‡ See Page 809.

Position of the Uterus in the Early Months.—During the first three or four months, the whole bulk of the uterus will be found in the neighbourhood of the pelvis; where the summit may often be felt, lodging a little above the brim. As the fifth month approaches towards its close, the summit will be found about half-way between the navel and the pubes; and a little below the navel, in the close of the sixth. In the end of the seventh month, the uterine summit is elevated above the umbilicus; and lodges half-way between the umbilicus and the point of the ensiform cartilage, in the end of the eighth month; while, at the close of pregnancy, the fundus approaches very near to the sternum;—unless it be sunk again in the abdominal cavity, in consequence of that preparatory contraction which occurs during the last week. These statements you may receive as approximations to the truth; though not, perhaps, as true in the strictest sense. I have verified them, in part, by my own observations; but never having turned my attention assiduously to this subject, I wish it to be considered, that I am not personally pledged for their accuracy. In different women, at the same stage of pregnancy, the elevation of the fundus may vary; nay, it may vary somewhat with the positions of the body in the same individual, and in the same stage of her pregnancy.

Variations in the Length of the Cervix Uteri.—Further: the length of the cervix bears a fixed relation to the progress of pregnancy; for, during the first five months, unless dilated by dropsy of the ovum, the neck retains its full length of an-inch-and-a-half;—being, at this time, annexed to the body of the uterus in the way of an appendix. Gestation advancing however, the neck expands;—so as to form a part of the general receptacle for the ovum. In the end of the sixth month, its length is reduced to one inch; in the end of the seventh, to half-an-inch; and in the course of the two remaining months the cervix becomes completely dilated;—so that it can no longer be distinguished as a part forming an appendix to the great body of the uterus.

When it chances to be relaxed, the neck may sometimes be measured by passing the finger along its canal, so as to touch the membranes; but I would condemn this practice, as not unlikely to disturb the process of gestation. A safer measurement is afforded by passing the finger between the os uteri and the symphysis, so as to touch the body; when the length from the uterine body to the mouth may be ascertained, and with tolerable certainty.

[The indications to be ascertained from the state of the cervix uteri, are among the most important and the least liable to error of any available to us; as they enable us, not only to form an opinion as to the existence of pregnancy, but also to determine, in most instances, with considerable accuracy, the period of gestation. During the first four months, the changes of texture by which the cervix is rendered fuller, rounder, softer, and more elastic when pressed by the finger, are all that we can expect to recognise as indicative of

the altered condition of the part; for, as yet, the particular change of form and length has not taken place;—the natural cylindrical shape still remaining unaltered. But in the fifth month, when the finger is passed along the cervix towards its upper end, it feels swelled out there, especially in front; and, in fact, its sides have begun to diverge from each other; and are becoming a part of the body of the uterus; which now feels nearer to us, so as to be more easily examined by the finger; while, at the same time, the cylindrical part of the cervix feels somewhat diminished in length. In the sixth month, these alterations are still more distinct; and the narrow undilated part of the cervix is decidedly abbreviated;—owing to a further portion of its upper end having been dilated, and taken up (as it were) to form a part of the distended cavity containing the child. This obliteration of the cervix uteri, from above downwards, continues to be gradually effected; while, at the same time, there takes place a progressive retraction of that portion of the cervix which is situated below its junction with the vagina; so that we find, at length, if we examine towards the close of gestation, that the projecting cervix is no longer to be felt; but in its place there is detected, at the upper extremity of the vagina, a globular tumour; which is the enlarged uterus, with the head of the child to be distinctly recognised through its parietes. Such is the natural and usual order of these changes; but from that order there is a peculiar deviation, which is occasionally met with, and which is deserving of notice. It sometimes happens, that the portion of the cervix below the attachment of the vagina, and more immediately around the os uteri, yields before the part above it (or the middle portion); the texture of which is generally exceedingly close and resisting*. The consequence of this is, that the os uteri sometimes becomes relaxed and expanded, several weeks before the organ is prepared to expel its contents;—a condition which has often given rise to an erroneous belief, that the woman was either actually in labour, or on the point of being so.

It is usual to state the abbreviation of the cervix, by exact proportional parts†; and thus it is said that, during the sixth month, it loses one quarter; that in the seventh, it is only one half its original length; that in the eighth, only one quarter remains; which, in the ninth month, is reduced to an eighth; which, finally, is obliterated before the end of that month. All this may be true, in very many cases; and I‡ believe it is so; but we can derive from it little or no practical benefit. Such precision is only available with a uterus in a preparation, or on a dissecting-table; but not in the examination of a living woman; where, unless we had a previous knowledge of the length of the part before impregnation, we could not tell the exact proportion of it which has been obliterated; and nothing is more

* Desormeaux, in the "Dictionnaire de Medecine"; Volume 10; Page 377. Rœderer's "Elements of the Obstetric Art"; Section 60; Page 17.

† See Page 961. ‡ Dr. Montgomery.

certain, than that there is great variety, in this respect, in different individuals;—some women having the cervix double as long as others. Owing to this, and also to the fact that this part, though healthy and of the ordinary length, yields much more slowly in some than in others, it happens that more of it will be found undilated in *one* woman at the *eighth* month, than in *another* at the *sixth**. This will be, cæteris paribus, most likely to happen in the first pregnancies; and hence it is that we not unfrequently find a portion of the cervix, amounting to nearly a quarter-of-an-inch, undilated and projecting at the commencement of labour; while, at other times, the whole cervix is obliterated, and the os uteri considerably opened, one, two, or three weeks before delivery.

Hence this abbreviation cannot always be relied on alone, as a sufficient evidence; although, in general, it is a correct indication of the period to which pregnancy has advanced. In order to determine this, we should assist our judgment, first, by a general review of all the rational or other signs which have been observed; and secondly, by carefully ascertaining the height to which the uterus has risen in the abdomen.†]

Position of the Fundus.—If the patient be recumbent, and the bladder emptied, and the abdominal coverings relaxed, and the abdominal surface lubricated, the fundus of the uterus may,—especially in women of spare habit,—be felt distinctly enough; and, by the elevation of it, we may, in many cases, judge (not inaccurately) of the progress of the pregnancy;—remembering, generally, that when the summit is above the umbilicus, the gestation is in the latter months; when below, in the middle or the earlier; and that during the first three months, the body of the womb is lying entirely in the vicinity of the brim. Sometimes the elevation of the fundus will be made out more distinctly by placing the patient in the posture of parturition, and placing the fingers of the left hand on the os uteri, and those of the right externally, where the fundus lies.

The Reckoning.—But, independently of these examinations, the progress of pregnancy is often ascertained, and more commodiously, by that computation which is called "the reckoning", than by these more difficult and uncertain observations on the length of the cervix, or the elevation of the summit of the womb.

SECTION 2.—THE PERIOD OF HUMAN GESTATION.

[Whether we regard the question of the period of human gestation in reference to the determination of its natural (or ordinary) limits, or turn our attention to the still more debated occurrence of pro-

* The examination of many females has taught me, that the neck of the uterus is as much altered in *some* women at the *fourth* month, as in *others* at the *sixth*; especially in those who have had several children; for in these the neck yields more readily than in first pregnancies.—*Dr. Gooch, on the "Diseases of Females"; Page* 214. See also Smellie; Volume 1; Page 185.

† Dr. W. F. Montgomery, "On the Signs and Symptoms of Pregnancy"; Pages 104 to 106.

traction of its period, we find, connected with the investigation, a multitude of considerations of deep and varied interest,—when viewed, on the one hand, as subjects of physiological inquiry; and, on the other, of paramount importance, as connected with the due administration of law and justice. These considerations, moreover, involve some of the most delicate investigations that affect our social relations. It is sufficient only to remember, that the purity of virtue, the honour and peace of domestic life, legitimacy, and the succession to rank, titles, and property, not unfrequently depend solely for their invalidation or establishment on the settlement of this question; while the fact to be established is, unfortunately, one which does not always admit of being tested by any fixed criterion, either in law or physiology: but, on every new occasion of doubt or difficulty, depends for its elucidation on the contradictory evidence of witnesses, and the opinion that may, in the particular instance discussed, be formed by judges or committees, of the connexion between facts stated and admitted, and their relations with other circumstances, in general not admitting of any certain or satisfactory method of proof.

In those laws of this country* which bear upon the question of legitimacy, and the period of human gestation, there is frequent reference to "the usual period of gestation", "the course of nature", "the laws of nature", &c.; a conformity to which, in the birth of any individual whose legitimacy may happen to be questioned, constitutes one of the requisites essentially necessary to satisfy the law; which, however, does not more strictly define the "legitimum tempus pariendi"† than declaring it to be, *usually*, nine calendar months, or forty weeks. Blackstone says,—"From what has been said it appears, that all children born before matrimony are bastards by our law; and so it is of all children born so long after the death of the husband, that by the *usual course of gestation* they could not be begotten by him. But this being a matter of some uncertainty, the law is not exact as to a few days"‡. Hence the legitimacy and civil rights of children born within that period are, as far as the time of gestation is concerned, acknowledged in law.

Farther than this, neither our§ laws, nor those of America, fix any precise limit. Whenever a question involving the determination of the usual period of gestation in women, and the variations to which it may be liable, is brought before the judges, the matter is made, on every new occasion of the kind, a subject of discussion;—to be decided by the evidence of witnesses examined at the time. The facts proposed to be investigated, in reference to such questions, are generally the following:—1. The natural period of gestation in women. 2. Premature births. 3. The possibility of protracted gestation. ‖]

* Great Britain and Ireland.

† "The legitimate time of bringing forth".

‡ "Commentaries"; Volume 1; Page 456. § British.

‖ Dr. Montgomery on the "Signs and Symptoms of Pregnancy"; Pages 251 and 252.

Natural Period of Human Gestation.—Human gestation, it is asserted, is of forty weeks duration; but I doubt the correctness of this opinion, and suspect, rather, that it lasts only thirty-nine weeks, plus one day. A friend of my own knew, from peculiar circumstances, when impregnation was accomplished;—thirty-nine weeks, plus one day. From this time the delivery began. An acquaintance of M. Chambou made his observations on three pregnancies of his lady. In two of them, the delivery commenced at the end of thirty-nine weeks, plus one day; but was accelerated some few days, in the other of the three cases, in consequence of a fall. In the working classes of this town*, deliveries frequently commence on a Sunday;—for Nature does not scruple to make her creatures labour on that day. Respecting the cause of this desecration, I leave you to draw your own inference. Consult Sterne, if you like! I was surprised to learn that, in a late investigation before the supreme tribunal of the empire†, nine calendar months and forty weeks, were, by some of the witnesses, used interchangeably;—as if they were commensurate periods. The error will appear on a little calculation; as the period of nine months is exactly equal to that of thirty-nine weeks, plus one day; provided that of these nine months, five are of thirty days only, and four of thirty-one. Hence the duration of pregnancy, as here stated, is confirmed by popular observation. This term (thirty-nine weeks, plus one day) may be measured by the *lunar* months or the *solar*; and the reckoning is called "long" or "short", according as the long or short month (in other words, the *calendar*-month, or the month of *four weeks*) is employed in it. Our‡ women generally use the *long* reckoning;—the ancients seem, at first, to have used the *short*.

Rœderer made his observations on as many as a hundred cases; and found, that in four out of five of these, the quickening (formerly described§) occurred in the fourth month. When pregnancy occurs, the catamenia are usually suspended from the first.

With these data, it is by no means difficult to ascertain the date of delivery with useful accuracy; for I believe it will generally take place five months after the quickening, nine months after sexual intercourse, and about nine-months-and-a-fortnight after the last appearance of the catamenia;—later or sooner by a few days.

A lady once told Lowder, that her delivery would occur on the civic festival,—the ninth of November‖; and her decision was confirmed by the event. When the reckoning is grounded on sexual intercourse, its accuracy is sometimes surprising. The reckoning from the commencement of the amenorrhœa and from quickening, are not equally exact; yet women are, in general, compelled to adopt

* London.

† Alluding to the "Gardner-Peerage Cause", before the Committee of Privileges of the House of Lords, in 1825 and 1826. See Dr. Lyall's Account of the Medical Evidence given on that occasion; and Pages 1105 of the present Work.

‡ English. § See Page 964.

‖ The day on which the Lord Mayor of the City of London is annually installed.

them. Sometimes, however, furtive intercourse, a separation from the husband, or peculiar sensations felt about the bladder, the sacrum, and the central parts of the body, a few hours after intercourse with our sex, are found to mark out, clearly enough, the congress by which impregnation has been produced.

Premature Births.—[The premature birth of children, not unfrequently, gives rise to discussions of a very delicate and important nature;—involving, on the one hand, the legitimacy of the child; and, on the other, the honour and fair fame of the mother; and affecting, consequently, the happiness of families. This is the case when suspicions are entertained, that the development of the fœtus does not correspond to the period which ought to have been that of gestation;—dating from the time of marriage, or the return of the husband, and so forth. It is essentially necessary, therefore, that all who are likely to be consulted on such matters, should acquire as accurate a knowledge as possible of the progressive development of the embryo; and the marks, or characters, which belong to each successive period of intra-uterine existence, even in the earlier months.

A full detail of the successive advances in fœtal development, would, in the writer's * opinion, be superfluous and misplaced here; and, to be satisfactory, would require a very lengthened account, which the reader will readily find elsewhere†; but it appears very important to notice here, that,—from the results of accident, or the existence of disease in some of the structures of the ovum, especially in the placenta,—the size and external characters of the fœtus may not at all correspond to the real period of gestation. The very obvious reason for this is, that,—in consequence of the diseased condition of the medium of support,—an insufficient, and (at the same time) unhealthy nutrition is afforded to the child; by which its growth and natural development are retarded; so that, at a given period, it will be found to present appearances properly belonging to a much earlier period of intra-uterine life. Thus, a woman,—who had been, for two entire years previously, labouring under disease of the heart, and with the catamenia suppressed all that time,—had not cohabited with her husband for six months; when she miscarried of a fœtus presenting characters belonging to the fifth month; but, on examination, more than half the placenta was found in that state of consolidation, which is called the tubercular disease of that organ; and the umbilical extremity of the cord, just at its junction with the abdomen, was twisted to such a degree, that it

* Dr. Montgomery's.

† See Sœmmering's "Icones Embryonum Humanorum"; Velpeau's "Embryologie"; and his "Traité d'Accouchemens", Volume 1, Page 320; Pockels; and Beck's "Medical Jurisprudence", Fifth Edition, Page 178; where there is a very full summary of the accounts given by different authors. But the best account of the development of the fœtus, known to the writer, is that by Devergie, in his "Medecine Légale"; Volume 1; Page 495.—*Dr. Montgomery.*

looked as if it had been tied tightly round with a thread;—being there reduced to one-tenth of the diameter of the rest of it. The same circumstance was observed in a case which occurred to Dr. Ireland; who very kindly sent me* the fœtus and placenta for examination. In this instance, the lady was more than six months pregnant, when she miscarried of a fœtus corresponding to about four-months-and-a-half;—the placenta being in a state of disease similar to that just noticed. Several specimens of such occurrences are preserved in my museum. In one, the ovum of five months contains a fœtus not larger than it ought to be at two-months-and-a-half; and another ovum, of the same age, is accompanied by a fœtus of (apparently) six-weeks' development.

Duparcque† gives the particulars of a case, in which a lady sustained a severe shock by being thrown down violently, in the sixth month of pregnancy. She went her full time, however, and the child was born alive; but was hardly more developed than a fœtus of six months. In this case, also, the placenta was found altered in structure;—being compact and atrophied.

I* would suggest, as a salutary caution arising from occurrences of the kind just related, that before we venture to pronounce an opinion on the age of a child which presents characters of less development than it ought to have,—considering only the period of pregnancy known (or supposed) to exist,—we should carefully examine both the perfection of its own organization, and the state of the appendages;—especially the placenta and cord. If these are not to be had, we cannot, I think, in such cases, pronounce decidedly on the age of the child, without incurring the risk of being mistaken; and of imputing impropriety of conduct to the perfectly chaste and virtuous.

There are two points of view under which it is necessary to consider prematurity of birth. We must inquire, first, what is the earliest period of gestation at which the condition of viability‡ may be expected to exist; and, secondly, whether we can admit that a child may, in six or seven months, acquire that degree of maturity, which we observe to belong to those who have continued in the womb during the whole natural period of gestation.

With regard to the first of these questions, it should be premised, that by "viability" is meant such a degree of perfection in the newborn child, as renders it capable of sustaining its functions independently of the mother, and continuing its existence to adult age;—a condition which, judging from my own experience, I* do not believe to be acquired until seven months of intra-uterine existence have been completed. This was, also, the opinion of Dr. William Hunter; given in answer to an interrogatory put to him, on this subject, by Mr. Hargrave, when writing his notes on the legal time for human

* Dr. Montgomery.
† "Histoire des Ruptures de la Matrice"; Page 38.
‡ From the French *viable*, "likely to live".

birth:—"A child may be born alive at any time after three months; but we see none born with powers of living to manhood, or of being reared, before seven calendar-months, or near that time. At six months it cannot be"*. Still more recently, Dr. Hamilton has pronounced, as the result of his long extended observation, that he considers as fabulous all accounts of children living to maturity, who were brought forth at the fifth or sixth month†.

I‡ do not, therefore, take into consideration, or attach any value to such rare and wonderful histories as those of Fortunio Liceti, the Italian physician; who was said to have been born at four-months-and-a-half; and to have attained the age of manhood. Nor to that of Cardinal Richelieu; in whose case the Parliament of Paris decreed, that the infant of five months possessed that capability of living to the ordinary period of human existence, which the law of France required for establishing its title to inheritance.

Dr. Rodman, of Paisley, has related the particulars of a case, in which the child survived, although the gestation was considered not to have exceeded nineteen weeks; but this period seems to have been taken on the mother's belief; and the length and weight of the child were such, as would indicate a gestation of between six and seven months§.

The writer‡ saw one instance of a fœtus which, at the utmost, could only have completed the fifth month, and which lived for a few minutes; and another of five-months-and-a-half, which lived for four hours. In both, however, the state was that of a mere existence; without the presence of any condition that could lead to the most remote expectation of life being continued. It may be mentioned, here, that the celebrated Chaussier‖ was a seven-months' child; as was also George III;—one of the most long-lived and prolific of our kings.

In the consideration of the second point, we have to contend with a very formidable difficulty; intrinsic to, and inseparable from, the subject;—namely, the great variety constantly observed in the size, weight, strength, and appearance of children at the full time. Most of them, for instance, weigh from six to seven pounds¶; while, occasionally, we meet with instances where they are of double that weight. This should, at least, make us extremely delicate in forming, and cautious in pronouncing, our opinion; particularly when the period

* "Ante septimum mensem fœtus non potest superesse".—"Before the seventh month, the fœtus cannot survive". (Haller's "Elements of Physiology"; Volume 8; Page 423.) The French Civil Code, however, regards as legitimate and viable, all children born after one-hundred-and-eighty days, or six months. (Capuron's "Cours d'Accouchement"; Page 69.)—*Dr. Montgomery.*

† See Lyall's "Gardner-Peerage Cause". Introduction; Page 28.

‡ Dr. Montgomery.

§ See the "Edinburgh Medical and Surgical Journal"; Volume 11; Page 455.

‖ See his "Memoire Medico-Legale sur la Viabilité de L'Enfant Naissant."

¶ According to Chaussier, the average weight is six-pounds-and-a-quarter. (Devergie's "Medecine Legale"; Volume 1; Page 504.) Of one-thousand-six-hundred-and-one children born at the full time, the following were the weights:

of gestation may have advanced to within a month of its expected termination; in which case, it might be impossible for us, with all our care and all our knowledge, to draw the distinction between a child of eight months, and one of nine.

But in such a case as occurs from time to time, where a woman, six or seven months after marriage, or the return of her husband, produces a healthy, well-formed child of the full size and development, we need hardly hesitate about its illegitimacy. At least, I* never saw an instance where a child, avowedly of six or seven months' growth, presented an appearance even remotely resembling that of a full-grown and matured fœtus. Even though the size alone may not enable us satisfactorily to distinguish the one from the other, there are several characters of imperfect development which mark the really premature fœtus, whatever may be its size; while, on the other hand, there are others which accompany the fully-matured child, although deficient in bulk.

Of the latter kind, are the colour and firmness of the skin; the perfect condition of the hair and nails; the full development of the lower extremities; the solidity of the bones of the cranium, and their close approximation at the sutures. If, along with these, we find that the child is vigorous and active,—crying strongly soon after birth, and taking the nipple readily, or even eagerly, and sucking it effectually; that its length measures from nineteen to twenty-one inches†; and that the middle point of that length falls at the umbilicus;—we have an assemblage of characters which ought to leave but little doubt of maturity having been attained. The situation of this middle point, was first proposed as a test of the age of the fœtus by Chaussier; and his observations have been since confirmed by several others‡. From the trials I* have made of this test, I attach considerable value to it.

It should be recollected, also, that there are certain women to whom it is peculiar always to have the time of delivery anticipated by two or three weeks; so that they never go beyond the end of the thirty-seventh or thirty-eighth week, for several pregnancies in succession. The writer* was once engaged to attend a lady in her fifth confinement, who told him, a month before-hand, that (from particular circumstances) she knew her time would be up about the

—Three weighed two pounds; thirty-one weighed three pounds; ninety-seven weighed four pounds; three-hundred-and-eight weighed five pounds; six-hundred-and-sixty-six weighed six pounds; three-hundred-and-eighty weighed seven pounds; one-hundred weighed eight pounds; and sixteen weighed nine pounds. The average resulting from the above statement, gives six pounds and a very small fraction for each. See a very full account of this matter in Beck's "Medical Jurisprudence"; Fifth Edition; Page 184.—*Dr. Montgomery.*

* Dr. Montgomery.

† Rœderer concludes, from his examinations, that the average length of a male, at the full time, is twenty-inches-and-a-third; while that of a female is nineteen-inches-and-seventeen-eighteenths.—*Dr. Montgomery.*

‡ Capuron; Page 172. Hutchinson; Pages 6 to 14. Foderé; Volume 2; Page 149. Metzger, by Ballard; Page 168. Beck; Fifth Edition; Page 180.

twenty-third of the month; but that she expected her labour to occur about the ninth; as she had, on the two former occasions, anticipated by two weeks. She became in labour on the night of the tenth; and was delivered on the eleventh. La Motte * mentions two women who always brought forth at the end of seven months; and the same thing happened to the daughters of one of them. Van Swieten † takes notice of a similar circumstance; as does, also, Foderé ‡. A member of the writer's § family never passed the end of eight months, in three successive pregnancies; but such cases cannot be looked on as instances of gestation completed, but of premature labour from some infirmity of the system, or indisposition in the uterus to enlarge beyond a certain size. Nor is it contended or asserted by these writers, that the children had acquired their full growth. In the instances occurring under my own observation §, they certainly had not.

Protracted Gestation.—The possibility of an extension of the ordinary period of gestation, has been for a very long time, and still continues, a question of very warm debate. Some maintain that the time is fixed, and admits of no variation; while others, though they agree as to there being a certain period most frequently observed, believe that it is not exempt from variety, and may be prolonged. In this view of the subject, I || entirely coincide; and, indeed, cannot imagine why gestation should be the only process connected with reproduction, for which a total exemption from any variation in its period should be claimed. The periods of menstruation are, in general, very regular; but who is there who does not know that there are, on the one hand, women in whom the return of that discharge is anticipated by several days; and that there are, also, many in whom the return is postponed an equal length of time;—without the slightest appreciable derangement of their health ¶? Again: menstruation and the power of reproduction in the female, very generally cease, in these countries, about the forty-fifth year; yet, occasionally, instances are met with, in which both are prolonged ten or fifteen years beyond that time of life; and a similar variety is observable in the period of the first establishment of those functions in the system. I was consulted on the case of a young lady, who completed her eleventh year in April, 1836; and menstruated regularly since October;—having, also, the mammary development, and other characteristics of womanhood, quite perfect; while, on the other hand, I have another patient under my care, in consequence of her having arrived at the age of twenty without menstruating; though, in other respects, she is perfectly healthy.

The abbreviation and expansion of the cervix uteri, bear, in

* Book 1; Chapter 28.
† "Commentaries"; Volume 14; Pages 6 and 7.
‡ "Médecine Legale"; Volume 2; Page 128.
§ Dr. Montgomery's. || Dr. Montgomery.
¶ For a case in which the regular menstrual period was five weeks, see Burns's "Principles of Midwifery"; Seventh Edition; Page 168.

general, a very uniform proportion to the period of pregnancy; and the entire obliteration of that part, is usually coincident with the completion of gestation, and the establishment of labour. But we have already seen that,—while, in some instances, at the commencement of labour (at the full time), as much of the cervix remains unaltered, as might be expected in the seventh or eighth month,—at other times, the projection of this part is effaced, and the os uteri considerably dilated, several days (or even weeks) before the accession of labour*.

It is a law of nature, very constantly observed, that dentition should commence a few months after birth; and that some of the teeth of children should show themselves within the first year at farthest. Instances where the cutting of the first teeth is deferred to the end of a year, are unusual; yet, in the case of one of the writer's†, children the first tooth did not appear until the child had reached the twenty-first month of her age;—she being at the time, and having been previously, in perfect health; while both children of a patient of his, had two of the lower incisors appear within four days after birth.

If we turn our attention to brutes,—the conditions of gestation in which so closely coincide with those of the human female; and which are, at the same time, so much less exposed to the influence of causes likely to affect it,—we cannot for a moment doubt the fact, that there is a great inequality in the term of gestation, in different individuals of the same species. The experiments and observations of Tessier,—which were undertaken at the instigation of Condorcet; and were continued through a period of forty years, with a very unusual degree of precaution against error, or inaccuracy,—contain facts and information more than sufficient (as appears to me‡) to satisfy any one on this point, with regard to the lower animals.

The facts collected by Tessier§, were the results of observations (besides those on incubation) on so large a number of animals as two-thousand-one-hundred-and-thirty-six: — namely, five-hundred-and-seventy-seven cows, four-hundred-and-forty-seven mares, one-hundred-and-sixty-one rabbits, twenty-five sows, nine-hundred-and-twelve sheep, two asses, eight buffaloes, and four bitches. Of the five-hundred-and-seventy-seven cows,—the period of gestation in which is the same as that of the human female,—the variation between the shortest and the longest gestation was eighty-one days; and the greatest extension amounted to forty-one days beyond two-hundred-and-eighty (the natural period). Of the four-hundred-and-forty-seven mares,—the natural period of gestation in which is eleven months, or about three-hundred-and-thirty-five days||,—the difference between the extremes was one-hundred-and-twenty-nine days, and the greatest

* See Pages 1091 to 1093. † Dr. Montgomery's. ‡ Dr. Montgomery.

§ "Mémoires de l'Academie Royale des Sciences"; 1817; Volume 2; Page 1.

|| Tessier allows only three-hundred-and-thirty days;—considering each month as consisting only of thirty days. This period is not sufficient;—three-hundred-and-thirty-five being, as nearly as possible, the number of days in eleven calendar months.—*Dr. Montgomery.*

protraction eighty-four days. Of nine-hundred-and-twelve sheep,—the natural period of gestation in which is five months, or about one-hundred-and-fifty-one days,—the greatest variation was eleven days, and the extreme protraction six days. Of one-hundred-and-sixty-one rabbits, the natural period of gestation in which is one month, or about thirty days,—the difference between the extremes was eight days (two having littered on the twenty-seventh day); and the greatest protraction was five days.

With regard to incubation, he found that there was, not unfrequently, a difference of five days between the extremes, in the same brood; and, in the case of the eggs of the common hen, some of the chicks came out three days after the ordinary period of twenty-one days*;—an excess in the period amounting to one-seventh of the whole; and greater than that which facts appear to show may be *reasonably* contended for, as affecting the period of human gestation.

The writer† has made several inquiries on this subject, with regard to cows and mares; and has invariably received the same answer from persons well qualified to judge;—namely, that it is a common occurrence for the cow to go two, three, or four weeks beyond nine calendar months‡; and that, with regard to mares, some go eleven months, and some twelve. Tessier ascertained, beyond a doubt,—contrary to the generally received opinion on the subject,—that the protraction of gestation is not influenced by the age, constitution, or food of the animal.

The late Sir Everard Home mentions a very curious fact; which, if strictly correct, would go a great length in strengthening the argument from analogy. He says, that "where the female of one species of animals breeds from the male of another, the utero-gestation of whose species is different in its period, there appears to be no approximation in the time in which the hybrid is brought forth; but the longest term of the two, is the time of such utero-gestation. Thus the mare covered by the ass goes eleven months,—her usual period; and the ass covered by the horse also goes *eleven* months; though *ten* is her usual period"§.

But if we relinquish the less certain support of analogy, and resort to facts alone,—as observed by ourselves, or others worthy of belief,—I† am quite satisfied that we are in possession of more than enough to prove the point; and let it not be forgotten, that the combined testimony of all who have maintained the unvarying fixedness of the natural term,—merely because they had known no instance to the contrary (and they could have no other grounds for their belief),—is, after all, only negative evidence; and must fall before a single well-established instance, in which that term was exceeded.

* Willer observed an excess of four days. ("Journal de Médecine"; 1776; Page 35.)—*Dr. Montgomery.*

† Dr. Montgomery.

‡ See also Dr. Hamilton's "Practical Observations"; Part 1; Pages 177 and 178.

§ "Philosophical Transactions"; 1822.

Before proceeding, however, to a detail of facts, I propose to notice one or two subjects of consideration; which (as it appears to me) ought to have some weight in the determination of this question.

In the first place, then, it is proved (by the experiments of De Graaf, Mr. Cruikshank, M. Saumarez, and others) that impregnation of the ovum does not take place immediately on coition; but that an uncertain interval of time elapses between the act of intercourse, and the communication of the vivifying influence to the germ in the ovary; and it is probable (almost to certainty) that a variety of physical (and also, perhaps, moral) causes, may interfere with the propagation of the required influence. Some of these causes may accelerate, while others may retard it.

Even if we suppose the period required for the complete maturation of the ovum in utero, to be invariably fixed, another circumstance connected with it must be taken into account, as likely to affect materially the question under consideration;—namely, the time occupied, in different instances, in the transfer of the ovum from its seat in the ovary, along the fallopian tube, into the cavity of the uterus; for, when we come to reflect on the successive steps of that process, we find that there is not one of them free from a liability to be interrupted, or retarded, in permitting or assisting the transmission of the germ. Thus, the ovulum my lie at a greater than usual depth in the substance of the ovary; which may, also, have had its texture thickened and indurated by the effect of previous inflammation; or the same change may have taken place in the proper coat of that body, or in its peritoneal investment; which, in that case, will still further delay the escape of the ovum, by resisting the natural tendency to burst under the increasing distension, and by rendering a still longer time necessary for the accomplishment of the requisite absorption.

Again: the same morbid alteration, thus affecting the ovary, constantly produces changes in the condition of the fallopian tube; which,—by having formed adhesions with the ovary, or with other parts in its course to the uterus, or by having its natural diameter contracted,—may be incapable of transmitting the ovum, without considerable delay. Such causes have been found sufficient to arrest its passage altogether; and to produce death by causing extra-uterine pregnancy.*

The weight of authority is altogether on the side of those who believe in the occasional protraction of gestation. In favour of this opinion, we find the following have recorded their opinions:—Blundell†, Buffon, Burns, Capuron, Denman‡, Desormeaux, Dewees, Foderé,

* See cases by Dr. Gordon Jackson, in the "Dublin Medical Journal", Volume 2, Page 196; and by Dr. Armour in the "Glasgow Medical Journal", Volume 3, Page 158.

† In his evidence on the "Gardner-Peerage Cause". See Page 1105.

‡ I think myself justified in adding the name of Denman, on the strength of the following passage in his "Introduction to Midwifery" (Seventh Edition, Page 176):—"At the expiration of forty weeks, the process of labour commenceth; unless it be hastened, or *retarded*, by some particular circumstance".—*Dr. Montgomery.*

Gardien, Haller, Hamilton, Harvey, W. Hunter, La Motte, Lebas, Leroy, Levret, Mauriceau, Merriman, Murat, Petit, Richerand, Roussell, Smellie, Velpeau, and Zacchias; together with many others, of less (though by no means inconsiderable) authority. Many of these have, in confirmation of their opinions, related the cases on which their conviction was grounded; and which, of course, had fully satisfied their minds; and I* cannot believe it possible, that all of these writers could have been mistaken, in a mere matter of fact or observation; and that none of the cases which they have put on record, were really instances of gestation prolonged beyond forty weeks. At the same time, I must add, that the cases which appear to me to carry with them the fullest demonstration of their truth, are those in which the ordinary term was not exceeded by more than three or four weeks.

In summing up my observations on this important subject, I* beg to observe, that I am very far from wishing to maintain a frequent deviation from the assigned, or ordinary period of gestation, in the human female. I am quite ready to confess, that many of the arguments brought forward in support of it, have been vague and nugatory in the extreme; and that several of the cases adduced, have been totally unworthy of credit. I believe it to be observed with great, but not invariable regularity; and having had an opportunity of observing very many cases, in which mature delivery took place at, or about the termination of, the fortieth week, I have,—after several years of attentive observation,—met with only two or three cases (within my own knowledge), in which the protraction appeared to be satisfactorily proved; and, in these, the extension did not go beyond the fourth week, at farthest. Few, however, as these instances have been, I hold their occurrence to be decisive of the fact. Calculations founded on the suppression of the menses alone, are not sufficiently satisfactory; and I have therefore, as much as possible, confined my selection of the cases adduced, to those in which, from peculiar circumstances, the time of conception was supposed to be exactly known. I wish also to observe, that conclusions drawn from the size of the child, ought to have very little weight on either side of this question; for although, in some cases of protracted gestation, the child was of enormous size, it by no means follows that it should be so in all such instances; and, in point of fact, we find it expressly mentioned in some of them, that the child was smaller than usual. This happened in one of Dr. Hamilton's cases†; and Fodere‡ says, that in three instances in which gestation was evidently prolonged, the children were undersized and ill-thriven; while, on the other hand, the largest children are often produced where no extension of the term could have taken place. In Tessier's observations, it is particularly noticed,—especially with regard to

* Dr. Montgomery.

† "Practical Observations"; Part 1; Page 179.

‡ "Dictionnaire des Sciences Médicales"; Volume 35; Page 167.

cows and mares,—that there was no fixed relation observable between the size, strength, or sex of the offspring, and the protraction or abbreviation of the period of gestation. Of this fact he gives several forcible instances*.

In conclusion, I† beg to observe, that I should be very sorry to see, or to advocate, the indiscriminate admission of the protraction of gestation, as a matter of course, or even of common occurrence. From such an admission, I feel assured great evils might, and would arise. I shall, therefore, avail myself of the sentiments of the reviewer of the evidence on the "Gardner-Peerage Cause"‡;—as perfectly coinciding with my own. He observes§, that "it does not need a detail of cases to convince every man, that, in by far the greater number of cases, the ordinary term of pregnancy is adhered to. Consequently, if the possibility or the probability of its being prolonged is conceded, it does not follow that, in actual practice, judgment should go upon *the general probability* of the event, as a fact in physiology. On the contrary, since, in the abstract, more disorder would be occasioned in society by admitting the *general principle*, as adequate to decide *special cases*, than by rejecting it altogether, we conceive that, if a definite period is not to be fixed by law, proof of the special probability, or improbability, should be required in each case"‖.]

I obtained my diploma about twelve or thirteen years ago¶; and have been in practice in London from that time till the present**. My practice is confined, in a great measure (though not wholly) to the diseases of women; and I have had considerable experience in cases of difficult parturition. I have personally known but one case, in which pregnancy was protracted beyond nine calendar months. It was a case in which the lady became pregnant upon the night of the ninth of November, and was delivered upon the night of the twenty-third of August. The proof that she became pregnant at the time mentioned, was that the catamenia failed to make their appearance; although she had previously been perfectly "regular",—to use the female expression. I saw her on the day subsequent to the sexual intercourse; and there were symptoms of considerable irritation about the bladder and parts adjacent. Such symptoms might certainly arise from other causes; but I have no doubt they arose from impregnation. I drew this inference after inquiring into all the symptoms and circumstances;—as it was my duty, as a physician, to do. This lady required but little attendance, up to the time of delivery; but what attendance she required, I gave. The symptoms were so slight, that I saw her but once or twice. The child was born under my own care. The lady is not now alive. My physiological

* "Memoires de l'Academie Royale des Sciences"; 1817; Page 18.
† Dr. Montgomery. ‡ See Page 1095.
§ "Edinburgh Medical and Surgical Journal"; Volume 27; Page 114.
‖ Dr. W. F. Montgomery's "Signs and Symptoms of Pregnancy". Pages 258 to 283.
¶ In 1812 or 1813. ** A.D. 1825.

opinions,—and my opinion on protracted gestation among the rest,—are drawn from facts, from observations on the human subject, and from experiments on brutes resembling man in their organization, and in the laws that regulate their vital actions. I specifically examine and think for myself. In this country, but few experiments on the subject have been instituted; but in France, Tessier has bestowed (I believe) from thirty to forty years of his life in collecting facts from different observations made on different genera of the mammalia (or womb-animals); in order to show that, in them, prolongation of pregnancy does occur *. I have myself met with no such facts, on which I should place reliance; for I have not experimented professedly that point. The judgment I have arrived at is formed from observations on the human female; from facts ascertained by the observations of others on whom I could rely; and on that single fact just mentioned;—a fact ascertained by myself, and decisive to my own mind.†

[I ‡ presume the majority of cases are completed with the termination of the ninth calendar month; but I have met with some cases which far exceeded that period. I have met with not fewer than twenty cases (I should think) where there has been a very confident assertion on the part of the woman, that they exceeded the ninth month; but with two or three cases I have taken pains sufficient to justify my speaking with the greatest confidence. One woman was certainly pregnant for at least ten months. She is a woman possessing an unusual share of good common sense. She engaged me to attend her during her second confinement; and so confident did she feel of that event's taking place at the anticipated time, that she had the nurse in her house; and it was not till the expiration of nearly five weeks from the time at which she expected to be confined, that she was delivered. The child was of unusual size. On the most minute investigation of this case, I was compelled to admit the accuracy of the woman's statement. The same thing occurred at her next confinement; when she certainly exceeded the proper time by four weeks. She has since borne three children at the expiration of the ninth month; and these children were considerably smaller than the two previous ones. This woman is excessively irritable, physically and mentally; and she affirms most confidently, that she invariably suffers much constitutional disturbance within one week after impregnation; and the acts of intercourse with her husband are so far apart, that she has always been able to date with correctness, except in the two cases which I have mentioned; although she then took the same ground for her opinion as at other times.

Another is the case of a lady who has borne nine children; and

* See Pages 1101 and 1102.

† This paragraph is condensed from Dr. Blundell's Evidence, as contained in Dr. Lyall's "Medical Evidence relative to the Duration of Human Pregnancy: given in the 'Gardner-Peerage Cause', before the Committee for Privileges of the House of Lords"; Pages 77 to 80.

‡ Dr. Conquest.

who has been able (five times) to determine exactly the day on which she should be confined. Her predictions were verified in those cases; but in another confinement she exceeded the predicted time by a month and two days. She then brought forth by far the largest child I had ever seen.*]

SECTION 3.—LAWS OF VARIOUS COUNTRIES ON THE SUBJECT OF LEGITIMACY.

[*Roman Law.*—The Roman law did not consider an infant legitimate if it was born later than ten months after the death of the father, or the dissolution of the marriage†. Such was also the French law prior to the Revolution.

Law of Friesland.—In 1634, a case was decided by a majority of the judges of the supreme court of Friesland, by which a child was admitted to the succession, though not born till three-hundred-and-thirty-three days from the husband's death; and what increases the latitude of the decision is, that the husband was for some time a valetudinarian; and for fourteen days before his death was confined to his bed ‡.

Law of Prussia.—The Prussian Civil Code declares that an infant born three-hundred-and-two days after the death of the husband, shall be considered legitimate; and a case has occurred, where one born three-hundred-and-forty-three days after the death of the husband, was adjudged by the "legislative commission" of that country, to be a bastard §.

Law of France.—The Civil Code now in force in France, contains the following provisions. The child born in wedlock has the husband for its father. The latter may disavow it, however, if he can prove that, from the three-hundredth to the one-hundred-and-eightieth day before its birth, he was prevented, either by absence or some physical impossibility, from cohabiting with his wife. An infant born before one-hundred-and-eighty days after marriage, cannot be disavowed by him in the following cases:—1. When he had knowledge of his wife's pregnancy before marriage. 2. When he assisted at the act of birth, and signed a declaration of it. 3. When the infant is declared not capable of living. Lastly: the legitimacy of an infant born three-hundred days after the dissolution of the marriage may be contested‖. It will be here observed, that the child born after three-hundred days, is not positively declared a bastard, but "its legitimacy may be contested". Capuron, in

* Condensed from Dr. Conquest's Evidence before the Parliamentary Committee of Inquiry on the "Gardner-Peerage Cause."

† Foderé; Volume 2; Page 111.

‡ Hargrave. This case is quoted from Johannes a Sandes's "Collection of Adjudications made by the Court"; of which he was himself a senator. In Paris and Fonblanque (Volume 3, Page 216), the original case,—including the arguments and authorities adduced even at that time in favour of protracted gestation,—is given in the original Latin.—*Dr. Beck's "Medical Jurisprudence"*.

§ Metzger; Pages 427 to 429.

‖ "Code Civil"; Sections 312, 314, and 315; quoted by Capuron and Foderé.

remarking on this, observes, that it would probably be deemed legitimate, if no legal investigation should take place.*

Law of Scotland.—The Scotch law is concise and decisive:—"To fix bastardy on a child, the husband's absence must continue till within six lunar months of the birth; and a child born after the tenth month is accounted a bastard"†.

Law of England.—The English law, on which our own‡ is founded, does not prescribe a precise time. There are, however, some decisions, which will show the ordinary course of adjudication. In the eighteenth year of Edward the First, Beatrice, the wife of Robert Radwell, was delivered of a son, eleven days after forty weeks. The husband had been seriously ill; and had no access to his wife for one month before his death. The child was *presumed* to be a bastard, and judgment was given accordingly. Gilbert De Clare, Earl of Gloucester, died on the thirtieth of June, of the seventh year of Edward the Second; and on the twenty-ninth of January of the ninth year (within one day of a year and seven months), his sisters and co-heirs prayed "livery"§. The countess pleaded that she was "big with the Earl"; which was accordingly found "per inquisitionem"‖. The question hung in deliberation; nor did they obtain "livery" till the tenth year of Edward the Second. In another case, during the eighteenth year of Richard the Second, a man named Andrews died of the plague. His wife, who was a lewd woman, was delivered of a child forty-weeks-and-ten-days after the death of the husband. Yet the child was adjudged legitimate, and heir to Andrews; because it was thought that parturition might be accidentally protracted for ten days¶.

Law of the United States.—Like the English, we** have no express law on this subject; and I can find no American cases that have been adjudicated, except one; which, probably, belongs more properly to another part of our subject. In a former edition, I†† stated that cases of protracted gestation are rarely heard of in England and America; and that they appear to have occurred most frequently in countries where the administration of justice is arbitrary, or at least fickle and unsteady. I observe that Dr. Graves contradicts

* Capuron; Page 231.

† Erskine's "Institutes of the Laws of Scotland": quoted in the "Edinburgh Medical and Surgical Journal", Volume 1, Page 334. Dr. Campbell ("Midwifery", Page 71) disapproves of the first part of the law:—"The latter period I conceive to be no more than just; but the former certainly affords too great a latitude. There is not a well-authenticated case on record of a child being reared, when born in the middle of the seventh month; far less at the conclusion of the sixth. I think six months and three weeks, is the earliest period that ought to be admitted".—*Dr. Beck's "Medical Jurisprudence".*

‡ The American.

§ The fact of giving or taking possession.—*Walker.*

‖ "On examination".

¶ These cases are taken from Hargrave and Butler's "Notes on Coke upon Littleton"; Note 190, on Section 188.—*Dr. Beck's "Medical Jurisprudence."*

** The Americans.

†† Dr. Beck.

this * so far as it relates to this country †. It may be so; but I was not aware of it.

Messrs. Hargrave and Butler, in commenting on the early English cases, observe, that "these precedents, so far from corroborating Lord Coke's limitation of the "ultimum tempus pariendi"‡ (forty weeks), do (upon the whole) rather tend to show, that it hath been the practice in our Courts, to consider forty weeks merely as the more *usual* time; and, consequently, not to decline exercising a discretion of allowing a longer space, where the opinion of physicians, or the circumstances of the case, may have so required"§. If, then, a contested case should ever arise in our Courts ‖, the opinion of medical men must be brought forward to decide it. A majority of writers are believers in protracted gestation ¶.

And now I ** may be permitted to inquire, whether it is intended to give this belief its full force and application? Is it intended that, in a case tainted with the suspicion of adultery,—nay, its certainty, —a child shall be legitimated, although born eleven months after absence or sudden death? Will physicians, like Dr. Granville, in the "Gardner-Cause", tell the court, that they see nothing impossible in this ††? If so, and the knowledge of this opinion extends among the community, where will be the security of succession? Or even waiving this, what must be its effects (when generally understood) on public morals? ‡‡]

Law of Egypt.—[M. Hammont, Director of the School of Veterinary Medicine, at Abou-Zabel, in Egypt, says—"A man is absent one, two, three, or four years; and, on his return, finds his wife pregnant, or children born to him during that time. He accuses her of infidelity; which she denies. The cause is brought before the tribunals. The judges, after hearing both sides, and weighing the merits of the case, gravely decide, that children may continue four years in the womb of the mother. *Après cinq ans, il n'en est plus ainsi*"§§. ‖‖]

SECTION 4.—QUESTIONS RELATING TO PATERNITY AND FILIATION.

[It might be supposed that common decency, as well as a proper respect for the opinions of mankind, would prevent those sudden

* "New York Medical Journal"; Volume 2; Page 135.

† America.

‡ "Most protracted period of gestation".

§ Blackstone, however, intimates, that a child born after forty weeks, is illegitimate. He cites Britton for this; but the co-editors [Messrs. Hargrave and Butler] remark, that even this writer seems to extend it in some degree beyond forty weeks.—*Dr. Beck's "Medical Jurisprudence"*.

‖ The Courts of the United States.

¶ See a List of them at Pages 1103 and 1104. ** Dr. Beck.

†† See Page 31 of Dr. Lyall's Edition of the Evidence.

‡‡ "Elements of Medical Jurisprudence"; by Theodoric Romeyn Beck, M.D.; and John B. Beck, M.D.; Sixth Edition; Pages 348 to 351.

§§ "After five years, it can no longer be the case".—N. R.

‖‖ "Annales d'Hygiène"; Volume 10; Page 204.

marriages, which sometimes take place immediately after the death of a former husband. There have, however, been, in all countries females who have disregarded these restraints, and have united themselves to a second partner before the "first brief week of mourning is expired"*. Besides the injury that such cases produce on the public manners, there is a difficulty which may arise in a legal view. The female may be delivered of a child at the expiration of ten months from the death of the first husband; and the question then occurs as to the paternity of the infant. The Romans endeavoured to prevent this, by forbidding the widow to marry until after the expiration of ten months; and this term was prolonged, by the emperors Gratian and Valentinian, to twelve. This law has been imitated in the present French Code; which also forbids the marriage, before ten full months have elapsed since the dissolution of the previous one†. But if these laws are transgressed, or if there be no laws (as in England and our own country‡) against such precipitate connexions, whom shall we declare to be the father of the child? I§ will answer this question, by citing some cases; and then mentioning the laws in force respecting it.

About the period when the plague broke out in Naples, a man named Antoine, aged forty, married a young lady, named Jeronime; and, on the second day afterward, died of that fatal disease. Aniello, a relative and intimate friend of the widow, having obtained the necessary dispensation, married her immediately afterwards. She was delivered of a child two-hundred-and-seventy-three days after the consummation of the marriage with Antoine; and two-hundred-and-sixty-eight after her union with Aniello;—being in the one case thirty-nine weeks, and in the other thirty-eight. The question—"Who was the father of this child?"—was put to Zacchias. In order to solve the difficulty, he canvassed the condition of the two husbands, the mother, and the child. Antoine, he observes, was of a feeble constitution; and his marriage was a forced one, and contrary to the wishes of the female, who was attached to Aniello. The latter was strong and robust. The wife stated that the consummation of the first marriage was attended with a discharge of blood, which she attributed to menstruation; that, in the interval of her widowhood, it had slightly returned; but never after the second marriage. From this, it might be supposed, that as menstruation had not returned regularly since the first marriage, the pregnancy was caused by Antoine. Zacchias, however, supposes that the sanguineous discharge

* Every one remembers the cutting sarcasm, in reference to this point, which Shakspere puts into the mouth of Hamlet (Act 1, Scene 2):—"The funeral baked meats did coldly [or "when cold"] furnish forth the marriage-tables". The bridal followed so closely on the burial, that the meats baked for the funeral, were in time to be produced (cold) at the wedding.—N. R.

† Foderé; Volume 2; Page 205. "The same constitution", says Blackstone, "was probably handed down to our early ancestors from the Romans, during their stay in this island; for we find it established under the Saxon and Danish governments". (Blackstone; Volume 1; Page 457.) It was the law before the Conquest.—*Dr. Beck's "Medical Jurisprudence"*.

‡ The United States of America. § Dr. Beck.

was the consequence of defloration; and that, as she received the advances of her first husband with disgust, the suppression might arise from mental uneasiness. He attaches no importance to the fact, that if the child was the son of the second husband, the period of pregnancy would fall short of nine months; and thinks it sufficiently counterbalanced by the youth of the parties. He, therefore, decided that it was the child of Aniello*.

There are also some English cases on record. In the eighteenth year of Richard the Second, a woman, immediately after the death of the first husband, took a second; and had issue born forty-weeks-and-eleven-days after the death of the first husband. It was held to be the issue of the second husband. In another instance,—"Thecar marries a lewd woman; but she doth not cohabit with him, and is suspected of incontinency with Duncomb. Thecar dies; Duncomb, within three weeks of his death, marries her; and two-hundred-and-eighty-one-days-and-sixteen-hours after his death, she is delivered of a son. Here it was agreed:—1. If she had not married Duncomb, without question the issue should not be a bastard, but should be adjudged the son of Thecar. 2. No averment shall be received that Thecar did not cohabit with his wife. 3. Though it is possible that the son might be begotten after the husband's death, yet, being a question of fact, it was tried by a jury; and the son was found to be the issue of Thecar"†.

The English law, on this subject, is thus explained by Blackstone and Coke:—"If a man dies, and his widow soon after marries again, and a child is born within such a time as that, by the course of nature, it might have been the child of either husband,—in this case, he is said to be more than ordinarily legitimate; for he may, when he arrives at years of discretion, choose which of the fathers he pleases"‡.

It has also been suggested, that the resemblance of the child to the supposed father, might aid in deciding these doubtful cases§. This, however, is a very uncertain source of reliance. We daily observe the most striking difference, in physical traits, between the parent and child; while individuals born in different quarters of the globe, have been mistaken for each other. Even as to malconformations, although some most remarkable resemblances in this respect have been noticed between father and child, yet we should act unwisely in relying too much on them. There is, however, a circumstance connected with this point, which (when present) should certainly defeat the presumption that the husband (or the paramour) is the father of the child. That is, "when the appearance of the child evidently proves that its father must have been of a different

* Zacchias; "Consilium", No. 73. See also No. 75, for a somewhat similar case.

† Hargrave's "Notes".

‡ Blackstone; Volume 1; Page 456. Hargrave intimates a doubt respecting the above doctrine; and suggests that one of the cases quoted would lead to the opinion, that "the circumstances of the case, instead of the choice of the issue, should determine who is the father". This certainly would seem to be the most correct mode of adjudicating —*Dr. Beck's "Medical Jurisprudence"*.

§ See Zacchias, Volume 1, Page 146; and Valentini's "Pandects", Volume 1, Page 148.

race from the husband (or paramour); as when a mulatto is born of a white woman whose husband is also white, or of a black woman whose husband is a negro" *.

It will not do, however, to extend this rule too positively with what may be called "mixed breeds". Parsons gives an account, in the "Philosophical Transactions", of a black man married to an English woman; of whom the offspring was quite black. In a similar case, the child resembled the mother in fairness of features; and, indeed, the whole skin was white, except on the thigh, where some spots were as black as the father. White, in his work on the "Gradation of Man", mentions a negress who had twins by an Englishman. One of these children was perfectly black, and its hair short, woolly, and curled; while the other was white, with hair resembling that of a European. Dr. Winterbottom knew a family of six persons, one half of whom were almost as light-coloured as mulattoes, while the others were jet-black. The father was a deep black; the mother a mulatto †. "The offspring of a black and white", says Lawrence†, "may be either black or white, instead of being mixed; and, in some rare cases, it has been spotted". ‡]

CHAPTER XII.

DISEASES OF PREGNANCY.

By the "diseases of pregnancy", you are to understand those which arise from pregnancy as their cause; or which, from their accidental connexion with gestation, require a modified form of treatment. Some of these diseases I now proceed to treat.

SECTION 1.—NAUSEA AND DIARRHŒA.

Among the diseases which are either referred to pregnancy, or require a modified treatment in consequence of their connexion with it, one (not the least troublesome) is the irritability of the bowels and stomach; producing, in the earlier and middle months,

* "Edinburgh Medical and Surgical Journal"; Volume 1; Page 335.

† "Edinburgh Encyclopædia"; Article "Complexion". Lawrence's "Lectures on Physiology, Zoology, and the Natural History of Man"; Section 12; Chapter 2. (Smith's Third Edition; Page 259.) It may be well also to refer, in this place, to the changes of colour that take place in the new-born black infant. At birth, it sometimes cannot be distinguished from the white; its hair has not yet its peculiar make; and we can only notice the tendency to dark on some parts of the body. In a few days, however, the change commences on the countenance, and gradually extends over the body. Cassan (on Superfœtation, Page 56) has well remarked, that these successive changes may prove very useful, when a dead black child has been found, in deciding how long it has lived.—*Dr. Beck's "Medical Jurisprudence".*

‡ "Elements of Medical Jurisprudence"; by Theodoric Romeyn Beck, M.D.; and John B. Beck, M.D. Sixth Edition. Pages 352 to 356.

both vomiting and purging. Sometimes both those symptoms occur together; but more frequently they alternate. Where there is diarrhœa, there may be less excitement of the stomach; and there may be vomitings where the diarrhœa is suspended. In those cases in which there is much irritability of the stomach and bowels, of course the patient becomes a good deal reduced by it; and she may die, perfectly exhausted, in consequence of the inanition produced by the vomitings and purgings, and the incapability of taking food. Or, again, when much reduced, she may be carried off by hæmorrhage;—occurring, perhaps, during premature delivery.

Treatment.—It is not always in our power to put a stop to this vomiting and purging; but, by resorting to the following measures, I think we may, in many instances, conduct our cases to a favourable termination. In the first place, then, if suspicious that there is any thing offensive and irritating in the stomach and bowels, ascertain whether this is the case or not; and, if it be, purify the stomach and bowels, by some mild evacuants. Chamomile-tea, warm water, ipecacuanha, and so on, may be used, if emetics seem proper; and, of the milder laxatives, you may employ manna, senna, rhubarb, and the like; or if you wish to purge more actively, perhaps senna-and-salts may be preferred.

Diminish the Irritability of the Alimentary Canal.—Again: it is very desirable to diminish the irritability of the stomach and bowels. The irritability of the bowels is sometimes restrained by means of the "mistura cretæ", the "confectio-aromatica", or the preparations of opium, kino, catechu, or logwood;—all in operative doses. Where there is a great deal of irritability of the stomach, an effervescing draught, strong coffee, opium, charcoal-powder,—perhaps, too, that potent agent, hydrocyanic* acid,—may be advantageously tried. An invaluable remedy in gastric irritability, is an effervescing draught. Four scruples of citric-acid, dissolved in five ounces of water, may be put into one bottle; and five scruples of carbonate-of-potass, dissolved in four ounces of distilled water, may be put into another. A table-spoonful of the solution from each of these bottles, when put together, will effervesce smartly; and may be taken in this condition every half-hour, for several times in succession; unless the vomiting previously cease. Often the first two or three quantities will be thrown up; but the medicine must not, on that account, be rejected in a pet. In cases of this kind, opium, when taken into the stomach, is not very effectual. A piece of lint, dipped into the tincture-of-opium, and laid over the scrobiculus cordis, has appeared to me, in some cases, to be of great apparent service. It is recommended by Heberden.

Powdered Charcoal.—It seems, *à priori*, not very probable that powdered charcoal can be of use in these cases; but learning from a friend that, in the hospital at New York, it had been resorted to in vomiting, with advantage, I was induced to give it a trial; and I

* From υδωρ, *water*; κυανος, *blue*; and γινομαι, *to form*.

can at least aver, that I have seen no ill effects from it;—not to add that it has seemed to be of real efficacy. The method of administering it, is in the form of a very fine powder; twenty grains every two or three hours, till it has produced an effect. I ought to observe, that it makes the stools very black. Of hydrocyanic-acid I have had very little experience in these cases. Some of my medical friends think it of much efficacy, in quieting the stomach; and I would, therefore, recommend it to your attention. Recollect, however, that the remedy is not without its dangers; and beware! Five or six minims in the day, I would not rashly exceed*.

Leeches and Venesection.—If there be inflammation about the conjunctiva of the eye, there is an irritability of the other parts of the organ. If there be inflammation of the inner membrane, the bladder and the urethra become irritable. In like manner, the stomach and bowels become irritable, in consequence of inflammation of the membranes which line them. That such is the state of the mucous tunic of these parts, you may suspect, if the tongue is red and swelled; if the evacuations are emitted with impetuosity, and with heat at the anus; or if, lastly, the pulse is at one-hundred or one-hundred-and-five; and the abdomen somewhat tender under the touch. When the irritability of the bowels is caused by inflammation of the mucous membrane, it may, perhaps, be cut short by the antiphlogistic plan; more especially by applying to the abdomen leeches, to be followed by a large blister;—not forgetting venesection. The cases which are best adapted for this sort of treatment, are those in which you have the symptoms here enumerated; and where the patient, though still labouring under the disease, has a moderate share of strength remaining. I was requested by my friend, Mr. Sterry, to see a patient who had a good deal of irritability of the stomach; commencing in the middle period of pregnancy, and continuing till after her delivery. When I saw her, there were about ten or twelve watery evacuations in the course of the day; the tongue was swelled and red; the anus was sore; there was tenderness and heat about the abdomen; and the pulse was about one-hundred in the minute. In this case, ordinary remedies having failed, about twelve leeches were applied to the abdomen; a large vesication was afterwards produced; and the cure, in consequence, was sudden and complete. The evacuations became more solid in a few days; and this woman, who seemed to be in great danger of sinking under the discharges from the alimentary tube, was completely re-established; and afterwards became the mother of another child.

Abstinence.—There is a third method of treatment, from which great advantage has sometimes been derived; and that is abstinence from food. Where the woman throws up every thing she takes, it is not (to her) nourishment, but an emetic. If, in these circumstances, she will remain, for a few days,—two or three, for example,

* This refers, probably, to Scheele's Acid. The "Acidum Hydrocyanicum" of the London Pharmacopœia of 1836, is only a third of the strength of Scheele's.

—without food, the irritability of the stomach may somewhat subside; and food, afterwards given with caution, may be retained. Here it is worth knowing, that when you wish the patient to abstain from taking food into the stomach, she may be supported by nutrient injections into the bowels. My friend, Dr. Hull, of Manchester, narrates a case in which a hypochondriac, cutting his throat with a razor, inflicted a wound on the œsophagus; without, however, destroying life. By the advice of this distinguished practitioner, the patient abstained entirely from food to be taken into the stomach; and, during three whole weeks, he was supported entirely by nutrients injected into the bowels. Hildanus has reported the case of a woman who, from irritability of the stomach, rejected all food during a space of five weeks; but she was supported, the whole time, in the way above intimated;—being cured; and becoming, at length, the mother of a vigorous infant. Dr. Friend, in his eloquent letter to Dr. Mead, records another case, in which, from a stricture in the œsophagus, the food was prevented from entering the gastric cavity; and, in this case, for weeks together, the patient (a nobleman) was supported in the manner mentioned by Hildanus. In short, when the bowels are not very irritable, and you wish the stomach to be perfectly quiet, you have it in your power to supersede the operations of this organ,—for days, or even weeks, in succession,—by a judicious administration of intestinal nutrition. Preparations of eggs, strong broth, or (perhaps) the serum of animals, may be found to answer the purpose, as well as most kinds of nourishment; but I have had but small experience here.

Induction of Premature Labour.—Again: should all these remedies fail, you have yet another; and that is the induction of premature delivery*; for, when delivery occurs, there is reason to hope that this vomiting will cease. In determining on the use of this remedy, however, remember (in the first place) that, if the woman be very much reduced, there is always a danger in these cases, lest the patient should sink under accidental flooding. This ought to be mentioned to the friends, before the operation is performed. Secondly: provided the delivery be brought on before the completion of seven-months-and-a-fortnight, the child will frequently die; but if after the seventh-month-and-a-fortnight complete, it may be expected to live; and, therefore, when the remaining strength of the woman permits, it may be better to delay the delivery till this term is completed. Nor (in the third place) is it to be forgotten, that where premature delivery is thus brought on, children often present preternaturally;—the leg, the nates, the arm, or the shoulder, instead of the vertex, being placed over the centre of the pelvis, and the child may perish, under the best management, in consequence of this unfavourable position.

Support the System.—When, from irritability of the stomach and bowels, women are in a high degree of weakness, it becomes of great

* See Page 1118.

importance to nourish the system. If all or the greater part of the food taken by the mouth, be rejected by the stomach, this is by no means a very easy task. In cases of extreme emaciation in consequence of this gastric or intestinal irritability, you will not suppose that I design, rashly, to advise you to nourish the patient by the injection of blood into the vessels *. I cannot, however, forbear remarking, on this occasion, that this mode of treatment is not altogether impracticable. I remember once, many years ago, taking a dog; and nourishing the animal, for three entire weeks, merely by means of blood, which was injected into the external jugular vein†. Every day, or every other day, several ounces were injected; and, in this manner,—without the help of any food,—the system was sustained. Water only was allowed this dog; and though repeated observations were made, it is remarkable, that no voracity of appetite could be observed, during his three weeks' abstinence.

Support by Intestinal Injections.—I have observed already‡, that where the stomach fails altogether, the system may (to appearance) be supported by intestinal injections. Nor must we ever lose sight of this. Every four or five hours, in cases of this kind, the injections may be thrown up;—say to the measure of six or eight ounces; and, in those cases in which the rectum is irritable, perhaps its retentive power may be assisted by opiates, by the small measure of the injection, and by the cautious manner in which it is infused. Reid's excellent syringe, answers admirably for these purposes.

But wherever the stomach is not totally disabled from acting, gastric nourishment is, I think, to be decidedly preferred; and the following hints may not be without their use. Throughout the whole four-and-twenty-hours, the stomach may not be equally irritable; and thus some may bear nourishment in the *earlier*, some in the *middle*, and some in the *latter* period of the day. The tendency to morning-vomiting, during pregnancy, is notorious to all. In patients labouring under the disease which we are now considering, you ought carefully to inquire into the state of the stomach; and ascertain at what part of the four-and-twenty hours the irritability appears to be the least excited;—in order that the food may be administered at these times. Again: solids may sometimes be retained by the stomach, where fluids (which give rise to more dilatation) may be speedily thrown off; and therefore you should ascertain, from observations, which of those two kinds of nourishment best suits the gastric cavity. Solids have the advantage of lying in a smaller compass; within that compass they contain a much larger supply of nourishment; nor are they so apt to produce gas. To these remarks, as to time and form, you may add a third; which is, that much depends, in cases of irritability of the stomach, upon the mere bulk of the food taken. A woman may, perhaps, be able to bear two or three table-spoonfuls of some fluid (milk, for example), where she would not be able to bear half-a-pint. Now it is to be recollected,

* See Page 209. † See Page 970. ‡ See Page 1115.

that if your patient be lying quiet in bed, a very small quantity of nourishment, either solid or fluid, will be amply sufficient to support the system. Accordingly, patients lying in bed, and who could not bear larger quantities of food without rejecting them, have done very well when they have merely taken two or three table-spoonfuls of milk, every three or four hours. In their state of quiescence, this nourishment was enough.

Causes.—Upon the more immediate causes of irritability of the stomach and bowels, in these cases, it is not my design to enlarge; for, on the subject of proximate causes,—though important,—we are all apt to talk nonsense; but the following hints may not be misplaced. A principal disposing cause to the disease, seems to be pregnancy; insomuch that, though we sometimes find the disease continuing after delivery, yet it is generally relieved by it. Pregnancy may be supposed to operate by a sort of sympathy existing between the stomach and bowels upon the one hand, and the gravid uterus, and its appendages, upon the other. By "sympathy" here, as well as on all occasions when I use this term, I mean a combination of unseen causes; whereby an impression on one part is enabled to operate on another part, with which it has no obvious connexion in the way of cause and effect. These causes may certainly not the less exist and operate, although we are unable to point out distinctly in what they consist. Like the principle of gravity, their existence and operations may be demonstrated by facts and observations.

In some cases of gastric and intestinal irritability, the disease certainly seems to be kept up by mere irritability of the surface of the bowels, and of the stomach, independently of any inflammatory excitement; but though this may be true, I am persuaded that what I stated before *, will in many cases be found correct; namely, that the irritability of the stomach and bowels, is itself sometimes referrible to a certain inflammatory state, which exists in the mucous membrane. Of this I am the more persuaded, because in the dissection of children labouring under a similar affection, I have found the marks of inflammation, or of incipient ulceration, on the intestinal surface. Redness of the tongue, soreness and heat of the anus, sub-obscure tenderness of the abdomen, and a pulse of one-hundred-and-five, or one-hundred-and-ten in the minute,—all of which symptoms are sometimes observed,—strongly tend to confirm our suspicions of an inflammatory irritation.

SECTION 2.—EFFUSIONS OF WATER DURING PREGNANCY.

Effusions of dropsical fluid during pregnancy, are not uncommon in women, even when in high health. Of these effusions, the most frequent is œdema of the limbs;—sometimes of the right leg, sometimes of the left, occasionally of both; and more or less extensively;—for the disease may be confined to the ancles, or it may reach the knees. But besides this œdema,—which is frequent, and unattended

* See Page 1114.

with any danger,—there is a dropsical affection which is noticed by others, and which I have myself seen in two cases;—where the woman, during pregnancy, has a tendency to a general effusion. Water exudes in all the principal parts of the body;—the legs, the arms, the peritoneal sac, the chest, and the head. The disease sometimes predominates in one part of the body, and sometimes in another; but all the principal parts are affected at once. I am not speaking here of general dropsies, arising from shattered health, and combined with pregnancy by mere coincidence; but of those general dropsies which may assail the woman in the course of her gestation, though, in all other respects, she appears to be healthy enough, and not, in any way, the probable subject of such an attack. Where the patient labours under ordinary œdema of the legs, the disease is of no importance; but where, which seldom happens, the effusion is general,—as in the case under consideration,—there is much to be apprehended; for the water may accumulate so largely, as to interrupt the great functions of the body, and in that manner destroy life.

Treatment.— If a patient labour under one of these general effusions,—dangerous in their consequences,—of course your treatment should not be inactive. You are justified in using the most powerful hydropic remedies*,—including elaterium. You will find this drug to have a varying effect in different patients;—eight, ten, twelve, or fourteen watery evacuations being sometimes produced by one-sixth-of-a-grain; and absorption of the dropsical fluid being powerfully promoted. But besides the ordinary remedies proper in dropsical affections, I should, in these cases, feel strongly disposed to make trial of blood-letting;—first, because (as a matter of observation) I think I have seen it useful; and, secondly, because I strongly suspect that these effusions are not produced by debility of the woman, but rather by an increased action of the exhalent vessels, approaching to inflammation. If, indeed, a woman is very pale, and thin, and weak, and apparently of a dropsical diathesis, the dropsy may be considered as accidental, rather than the result of pregnancy; and I should not be inclined to recommend the lancet here; but if a patient previously in the full vigour of health, becomes impregnated; and is afterwards,—in the early, or middle, or even in the latter period of gestation,—suddenly seized with effusion, I should consider the use of the lancet proper enough. Burns, who has written so well on midwifery, has I think, made the same observation†.

Premature Delivery.—There is yet another remedy peculiar to this form of dropsy, and not to be lost sight of. I refer to the delivery of the woman; for,—the disease being connected with pregnancy, and evidently dangerous, in the more pressing cases,—we are justified in bringing the gestation to a close, as soon as possible. In the middle and latter months, this acceleration of delivery may be accomplished,—without any greater risk than would be justifiable in the given circumstances,—by introducing a proper instrument along the neck and

* See a List of them at Page 817.

† Burns's "Midwifery"; Ninth Edition; Page 269.

mouth of the womb, puncturing these membranes, and discharging the water;—all which might be done without the introduction of more than one or two fingers. As to forcing a delivery, in these cases,—by turning, or instruments,—in the present state of knowledge, it is quite out of the question. I will relate one or two illustrative instances.

Case 1.—A woman, of vigorous constitution, was seized, during pregnancy, with general effusion. Parturition, however, came on; and the complaint ceased. Becoming pregnant again, she was a second time seized with an effusion; which took place in the legs, the chest, and the abdomen. A very eminent practitioner met me in consultation on this case. Nothing very active was attempted; we did not see our way clearly to blood-letting; the water continued to accumulate; and the woman ultimately died;—apparently from hydrothorax. Here is a case, then, which illustrates the danger of those effusions which occur in the earlier or middle months of pregnancy; even in women, to appearance, of very vigorous constitution.

Case 2.—I was called to another patient,—also of a constitution tolerably sound. In this case, effusion of water had taken place into the legs, the abdomen, and (probably) the head; for at the time when I saw her she was insensible, and had occasionally convulsive fits. This woman was very freely bled,—to the amount of forty or fifty ounces at least,—in the course of two or three hours. Premature delivery was intended; but parturition came on, of itself, in the course of four-and-twenty hours. The next day I found the patient a great deal better; the day afterwards she was so much improved, that she appeared to be in a state of speedy convalescence. Unfortunately, however, she was seized with puerperal fever;—a complaint very prevalent and fatal at the time; and though she was in the hands of a very excellent practitioner, she sunk under the disease. Her improvement under the dropsical attack had been so great, that I had taken my leave of her; nor did I see her under the puerperal fever till some three or four hours before she expired. Here is a second case, in which you have a patient on the whole tolerably healthy, seized during pregnancy with general effusion, productive of the most alarming symptoms. In this case, too, you have an example of the effectual relief derived from the active use of the lancet, and the evacuation of the uterus; it seems, therefore, that,—in addition to the ordinary remedies of dropsy,—the abstraction of blood, and the induction of premature delivery, are, in these cases, the principal remedies; and on them,—without neglecting other measures,—I should feel strongly disposed to rely.

But what is to be done in those slighter atacks of sickness, or of dropsy, of more ordinary occurrence during pregnancy?—for the more active practices cannot be required here. In œdema of the legs, a bandage, a laced stocking, a little purging, the horizontal posture, patience, time, and delivery, will be of service; and in œdema of the labia, pressure with a T bandage, and a compress. In both cases, puncture of the skin might be serviceable; but I never yet found it necessary. In morning-sickness, time, patience, and the

advance of the pregnancy beyond the fourth month, will usually cure the disease. Bleeding from the arm may be useful to the plethoric; and the horizontal posture is proper to prevent the bearing-down of the uterus. If any offensive smell, or other obvious cause, excite the stomach, this should be intercepted. Dr. Lowder had a patient who was effectually relieved, by removing from the factory of her husband,—a coach-maker; for when she became pregnant, the smell of the paint continually excited the stomach.

SECTION 3.—SYPHILIS IN CONNEXION WITH PREGNANCY.

Syphilis, in connexion with pregnancy, is (so far as I know), not to be found among the upper and middle ranks of our countrywomen; but in the lower orders,—who are numerous, and (in this town*, at least) not wholly averse to debauchery,—these syphilitic pregnancies are of occasional occurrence; though still, perhaps, on the whole, not very common.

Mercury tends to Premature Delivery.—I have not ascertained, by my own observations, that the administration of mercury, in cases of pregnancy, has a tendency to bring on the premature expulsion of the ovum; but such is the opinion which has been held by men who are very competent to decide on the point; and I have heard our surgical Coryphæus† (Sir Astley Cooper) assert, that in the wards of this Hospital‡, in former days, the adminstration of mercury in large doses,—agreeably to the ancient practice,—has been observed by the sisters§ to induce miscarriage;—at least, where aptitude existed. The administration of mercury, therefore, in cases of pregnancy in the earlier or middle months, must be used with corresponding caution.

Three Modes of Treating Syphilis.—In modern surgery, there are three principal modes in which syphilis is treated;—by the *full* action of mercury; by its *milder* action; and by remedies of which mercury forms no part. If the latter remedies are really as efficacious as is contended, and as all who wish well to mankind have reason to desire, these remedies would be peculiarly fitting in gestation. In syphilitic pregnancy, if not in syphilis generally, the milder mercurial action is surely to be preferred to the violent; and instead of salivating the patient, you ought to content yourselves with producing merely a soreness of the mouth.

Two Modes of Employing Mercury.—There are two ways in which the mercurial action may be managed, in the syphilis of pregnancy;—either in such manner as may completely cure the disease, by extinguishing or destroying the poison; or in such manner, as may effectually check any pressing symptoms under which the patient may labour, so as to suspend and mitigate their violence;—the remedy being laid aside, when this purpose has been obtained; to be resumed

* London.

† From χορυφη, *the vertex* or *crown of the head.* It is also used by Cicero to indicate the leader or head of a party. In this sense Dr. Blundell makes use of it in reference to Sir A. Cooper, as the head of his profession.—A. L.

‡ Guy's. § Nurses.

afterwards, should the symptoms require it. If a woman were in health, and not prone to miscarriage, I should be inclined to give the mercury,—if I began it at all,—in such quantities as to destroy the poison altogether; but in women more weakly, and who have repeatedly aborted before,—the best indication of an aptitude to these expulsions,—I should incline to try the administration of mercury in smaller quantities, and in suspensive doses; for it is our duty to save the child, if circumstances will permit;—always, however, recollecting the maxim in British midwifery, that the life and health of the woman, are paramount to every other consideration. This suspensory practice, however, it must be owned, is both difficult and delicate.

Delay Mercurial Action.—If delivery occur after seven months and a fortnight, should the child be duly taken care of, it may live. If, on the other hand, parturition should occur before this term is completed, it may be no easy task to rear the child; and, certainly, the earlier and the younger the fœtus, the smaller the chance of its surviving. This is a principle of which you ought to avail yourselves, in treating syphilitic affections by mercury; and if you have an option, you certainly ought to delay (I do not say the mercury, but) the ptyalism, till the seventh month and a fortnight are completed; so that, if the child be expelled, it may still live. The longer you delay your mercurial action on the system, the greater will be the chance of survival, should premature expulsion occur. Nor can I accede to the opinions of those, who think that, if mercury is to be given at all, it should rather be given in the earlier period of gestation;—under the fear that, if delivery should occur while the patient is in a state of salivation, ill consequences may be produced by it. You will remember that, in the present mode of administering mercury for syphilis, the remedy is much less violent in its operation, than when given according to former maxims. In general, I believe,—but you, as surgeons, must decide this,—it is quite sufficient to produce, and to keep up for six or eight weeks, or a little longer, a decided soreness of the mouth;—produced, for example, by the "hydrargyrum cum cretâ". I will not say that a high state of salivation, concurrent with delivery, might not give rise to some danger; though I do not know any ill consequences that have ensued in such cases (for opportunities of observing are not frequent); but I am satisfied that there is no immediate danger resulting from a slight soreness of the mouth;—which is all that may be requisite, in order to subdue the syphilitic affection.

With respect, therefore, to the use of mercury in cases of syphilis, the following is a summary of my opinions:—as mercury is liable to produce miscarriage, use it with caution; and soreness of the mouth is, in all cases, to be preferred to an active ptyalism. In all cases, mercury ought to be used sparingly; but caution is more especially necessary, if the aptitude to miscarriage be manifest. If a disposition to miscarriage be known to exist, it is desirable not to induce the soreness before the seven months and a fortnight are accomplished; as the child, if expelled prematurely, can scarcely be expected

to survive; but should the security of the mother demand an earlier administration of the remedy, her safety must be made paramount to every other consideration.

Nitric Acid.—When we meet with syphilis in conjunction with pregnancy, we are, of course, led to inquire, whether much benefit might not be derived from some other anti-syphilitic; and nitric acid has been so much recommended, that it ought not to be overlooked. Of the efficacy of this remedy, I forbear to pass a personal opinion; but I will give you the sentiments of a man of large opportunities, and very capable of judging;—I mean, the late Mr. Pearson. He says that, in using nitric acid, he has found that the primary symptoms were not unfrequently cured;—rarely, however, permanently; for they were apt to return. Sometimes, however, they were cured permanently. He says, further, that where patients have been labouring under the secondary symptoms of the disease, the primary symptoms have sometimes been cured altogether; and the secondary have sometimes been cured also, but only for a time. He adds, respecting the acid, that it seems to improve the strength; and that it may be given in conjunction with the mercury; but that this combination does not diminish the quantity of the mercury which may be necessary for the cure. These are properties which may, very reasonably, recommend the acid to your attention, in the cases under consideration. If it will sometimes cure the primary symptoms;—if it will, in many cases, really suspend the symptoms (both primary and secondary), even for a few weeks only,—cases of syphilitic pregnancy may now and then occur, in which it may do effective service; in the place of a less desirable, though more certain, remedy.

Guaiacum, Sarsaparilla, &c.—In cases of syphilis, we have been advised to make use of the woods;—guaiacum, mezereon, sassafras, and particularly sarsaparilla, in the form of the compound decoction*. In this country, the woods have (I believe) been very generally rejected by the regular practitioner, as cures for the affection; though an opinion is gaining ground, that syphilis may be cured without mercury;—certainly good news for the human race. In warm climates, the woods (it has been surmised) may be of greater effect; while, owing to a greater virulence in the disease, they may lose their effect in colder climates;—for there is a lurking suspicion, that the venereal poison becomes more violent in our colder latitudes, than in those regions which lie nearer the equinoctial line. If it really be the case, that the woods possess a greater power in warmer countries, then, if any of you should be practising in the East Indies (for instance),—as many of our countrymen † do,—it might, perhaps, be worth your while to give a full trial to the woods there; though I deem it right to add, that I am informed by Mr. Mansell,—who has practised much in the Indian Peninsula,—that, in syphilis, mercury is the remedy on which the European practitioners rely.

Nitrate of Silver.—In the syphilis of pregnancy, there is another

* The "Decoctum Sarzæ Compositum" of the London Pharmacopœia.
† The English.

palliative which deserves our attention; and that is caustic. It is a curious fact, that the malignity of the local poison of a chancre is so great, that if left to itself, it will go on committing its ravages; till, at length, it has destroyed the genitals to a great extent; and yet the whole of this malignant topical power, resides in a mere film of structure, probably not thicker than the finger-nail; so that if you can but get down, through this structure, upon a healthy organization*, you may obtain a complete cure of the disease. The constitution remains affected still; but topically the disease may be cured. For this purpose,—the destruction of the morbid organization,—the stronger caustics may be employed; but by means of lunar caustic† (applied ten or fifteen times), I have seen such a complete destruction of these morbid films, as occasioned a complete cicatrization. In a woman labouring under a small and manageable chancre, it would be for your consideration, whether you had better heal by caustic, and refrain from the use of mercury till the latter months, or till delivery was effected; when you might have recourse to such an administration of the mercury, as would completely destroy the disease in the constitution. A friend of my own was telling me, some two or three years ago, that in the early period of his life,—being seized with a chancre,—he thought to heal it by the application of caustic. He attacked the disease very early; indeed, on its very first appearance; and he had persuaded himself that it was completely subdued by this treatment; but, though the ulcer healed, in nine months afterwards he was seized by a regular attack of constitutional symptoms. The disease appeared in his skin, throat, and nose; and he was obliged to use mercury very largely,—not without fumigation,—in order to get rid of this troublesome affection. This case proves,—what, probably, you all knew before,—that though you may heal a chancre by caustic, even when the first speck of ulceration is manifested, still you cannot prevent the constitution from being affected. But observe what is here to our point; namely, that where a chancre is healed in this manner, the disease may lie, to all appearance, quiet in the system for nine months;—perhaps, in some cases, for a longer time. In the syphilis of pregnancy, to gain time is a point of primary importance; for, by this means, we may be enabled to procrastinate the use of mercury, till after delivery is accomplished; or, at all events, beyond the term of seven-months-and-a-fortnight;—that critical period of gestation, which gives to the fœtus strength sufficient to enable it to support an independent existence. When the mother is infected with syphilis, the fœtus may be affected also. It is not to gonorrhœa, but to the chancrous form of the venereal disease, that the preceding remarks are designed to refer.

* According to Dr. Fletcher, "*organism*" would be a preferable term here;—"organization" being the act of forming, and "organism" the structure formed.—N. R.

† The "Argenti Nitras" of the London Pharmacopœia. "Luna" (the moon) was the name given by the alchemists to silver ("argentum").—N. R.

SECTION 4.—DYSPEPSIA.

During pregnancy, patients are sometimes affected with dyspepsia; which is to be treated on the same general principles as dyspepsia apart from gestation; though the following remarks may be worth your consideration:—In dyspepsia, purgatives are not unfrequently advised; nor ought we to forget, that it is the milder kinds which should be used in the cases to which we are here referring; especially in women known to be prone to miscarriage. I have seen miscarriage induced, apparently, in consequence of a moderate dose of calomel; to which, on one occasion, I gave assent;—the symptoms seeming to demand it. Emetics, too, may be required in these cases: but they should never be used unless a clear necessity can be established; and the milder ones are to be preferred. I am not sure that there is so much danger from the use of emetics which are active, as from active purgatives; for it is certain that women, during gestation, sometimes bear vomiting and retching surprisingly well;—as in those spontaneous morning-attacks, of which I was recently treating*. In dyspepsia, you may deem it necessary to have recourse to the blue-pill†, and other similar remedies; and, in these cases, you must be very careful that it do not give rise to any high degree of salivation; because, as I have just been observing to you‡, the higher degrees of mercurial excitement are supposed to occasion miscarriage;—more especially when there is a proneness to it. Nor let it be forgotten, that this remedy varies much in its effect on different persons. A lady told me, that she knew (from experience) that if she were to take but two or three grains of calomel, she would be completely under the mercurial influence; and, on a more minute inquiry into all circumstances, I found this to be correct. On the other hand, now and then you meet with patients that you can scarce bring under the mercurial action, from any administration of the blue-pill; and, consequently, as the influence of mercury is produced in some constitutions with such surprising facility, and as there are some refractory constitutions which so powerfully resist its operation, you ought to proceed with no little caution; unless you are acquainted with the constitution of your patient.

SECTION 5.—HEART-BURN.

Women, when pregnant, are sometimes affected with very severe heart-burn. There is great heat of the stomach, and a great deal of pain; accompanied by a drawing, which seems to approximate the pit of the stomach to the spine; together with pain shooting through the body, from the sternum to the points of the blade-bones. Vomitings are apt to occur; and very acrid eructations;—so acrid, indeed, as, in some cases, to produce heat and excoriation in the back part of the mouth. When you have symptoms of this kind, concurring

* See Pages 1112 to 1117. † The "Pilulæ Hydrargyri". ‡ See also Page 1120.

with much acidity, there can be no doubt as to the nature of the disease; and, after clearing the bowels,—which may be necessary,—antacids may be (properly enough) administered. Lime, chalk, soda, magnesia, may all be employed in their turns;—chalk, if you wish to shut up the intestinal tube;—magnesia, if you wish to open it. Among our various antacid compositions, there is one form which has been recommended by Simms, Denman, and others; and, using it on their authority, I have tried it with considerable advantage:—Take one drachm of the burnt-magnesia*, one drachm of the "aqua ammoniæ puræ"†, three ounces of the "aqua cinnamomi", and five-and-a-half of simple water. These ingredients are to be mixed; and the patient may take two table-spoonfuls of the mixture, whenever the symptoms are most distressing.

SECTION 6.—FASTIDIOUS TASTE.

Your patients are occasionally assailed with fastidious tastes. Women, sometimes, have a longing for certain kinds of food; and, more frequently, they become the subject of antipathies. The latter, indeed, are more common than the former. Some, when gravid, cannot bear sugar; some, butter; some, tea; some, wine;—and so on. Of these fastidious tastes I have to remark, that when they can be gratified, I think we ought by all means to concede; more especially with respect to antipathies. I do not think a woman ought to be ridiculed, or urged to the use of those things to which she feels a strong and insurmountable repugnance. I cannot approve of such experiments. Why should we make them? Even in the lower animals,—which (to do them justice) are free from affectation,—conspicuous changes of taste are observed during gestation. This change becomes manifest, in a high degree, in the rabbit; than which no animal can be more clearly herbivorous in its nature‡. In all cases, after delivery, the rabbit devours the after-birth; that is, it becomes carnivorous§: and this, I suppose, is the reason why she so often destroys her young also; for, finding the placenta a very delicious morsel, she is afterwards impelled to attack and devour her young too. Now, in the same manner as animals become the subject of these extraordinary appetites, women also may have their appetites;—influenced by certain changes of the nervous system, resulting from gestation; and these being the work of nature, ought never to be unreasonably opposed.

SECTION 7.—CONSTIPATION.

In the earlier and middle periods of pregnancy, constipation is by no means uncommon; and, by some, this state of the body

* *Calcined* Magnesia;—called simply "Magnesia", in the present London Pharmacopœia.

† The "Liquor Ammoniæ" of the London Pharmacopœia.

‡ From *herba*, "a herb"; and *voro*, to "devour".

§ From *caro, carnis*, "flesh": and "*voro*", to "devour".

has been asserted to be natural to gestation. If the bowels are opened with regularity once in the day, or three times in the two days, this is probably all that is necessary to secure the patient's health. Generally, however, I recommend that, about a fortnight before delivery is expected to take place, the bowels should be opened more frequently; because, the bowels being thoroughly cleared, the delivery may be rendered more easy, and freed of some inconveniences. If a proneness to constipation exist, some laxative should be at hand, to regulate the intestinal tube. If the form be pilular, rhubarb may be prescribed, with a small quantity of calomel; if a mixture, castor-oil may be preferred. Salts are cold and flatulent.

SECTION 8.—PROLAPSUS UTERI.

Patients are sometimes affected with prolapsus uteri, in the earlier and middle parts of gestation; but more commonly in the earlier. They have a feeling as if something would issue from the body; with bearing-down and aching across the sacrum, and sometimes over the front of the abdomen. In the greater number of cases, where the patient labours under a descent of the womb in the earlier period of gestation, if she lie on a sofa she is relieved; and at the end of three or four months,—when the womb, acquiring a larger bulk, finds rest upon the brim,—a complete cure may be obtained. In rarer cases, however, the pelvis being of very large size, the womb continues to descend; and then the horizontal posture, and perhaps a pessary, may be resorted to; though I believe it is very seldom that a pessary becomes necessary; and caution must accompany its use. In some cases, too, the womb, being down in the pelvis, remains and grows there; and makes a strong impression on the surrounding and contiguous viscera;—becoming incarcerated in the cavity of the pelvis. Retention of urine concurs. In such cases, a small and flat catheter may, with proper caution, be introduced into the bladder; and the urine being drawn away, to the amount of two or three pints, sufficient room may be made for the ascent of the uterus; after which, by a little well-directed pressure upon the os uteri, the womb may be pushed above the brim. When once replaced, the womb is not likely to descend afresh; for the very conditions of the case imply, that the uterus is grown too large to admit of easy lodgment in the pelvis; so that if the patient be confined, for a week or two, to the horizontal posture,—the womb meantime growing,—she becomes secured against any further attack.

SECTION 9.—VESICAL AFFECTIONS.

Micturition.—Micturition is very common in the earlier or middle periods of gestation;—dysuria *, perhaps, accompanying. This arises from three causes:—1. A certain irritability about the neck of the bladder; derived, perhaps, from the uterus; and producing a

* From δυς *difficulty*; and ὀυρον, *urine*.

tendency to spasm. 2. A bearing of the uterus upon the neck of this organ. 3. A descent of the uterus, though but a little way; under which descent it brings down the vagina, together with the urethra (which is in connexion with the vagina), so as to di-tort and obstruct. These I believe to be the more immediate causes of the disease; and bleeding from the arm, leeches above the symphysis pubis, fomentations of the genitals and the parts above, confinement to the horizontal posture, and drinking very freely of diluents,—so as to dilute the urine; these may, I think, be looked upon as principal remedies. Soda and uva ursi may be tried.

Calculus.—Calculus in the bladder, during pregnancy, is exceedingly rare; but it does occur occasionally. A calculus even larger than a pullet's egg may form in the bladder; and such a one I was shown by a very excellent practitioner, Mr. Tipple, of Mitcham. This stone was removed from a woman supposed, at the time, to labour under cancer;—the symptoms being produced by this great calculus. A calculus of very small size would, most probably, not occasion any material inconvenience during delivery; but if larger, it might obstruct parturition; and,—the bladder being compressed and bruised between the calculus on the one hand, and the head of the fœtus on the other,—a slough of the vagina and cervix vesicæ might ensue. In all cases where the calculus is large, it is very desirable that it should be taken away before delivery occurs. It may be removed by the operation of lithotomy; or more safely, perhaps, by dilatation of the urethra;—an operation which has, for the last twenty years, been recommended from this chair*; and which has, of late, been admitted into more general practice.

SECTION 10.—JAUNDICE.

In the middle or latter period of pregnancy, your patients are sometimes affected with jaundice: and a sort of jaundice which is to be referred to gestation as its cause. Where it merely arises from gestation, it is to be ascribed, I presume, to the pressure of the uterus; which, though it does not itself come in contact with the biliary ducts, may, nevertheless, press other parts (the intestines, for example) against them. At delivery, the patients are cured; for the pressure is then taken off the biliary ducts; and even before delivery, this sort of jaundice may cease about the eighth or ninth month; for the womb,—enlarging in size, and altering perhaps in shape,—gets a bearing on other parts than the biliary ducts; and, these canals becoming pervious, the gall escapes into the intestines, and the yellowness disappears.

SECTION 11.—DYSPNŒA.

In pregnancy, where the stomach is diseased, or where your patient is highly hysterical, she may become affected with dyspnœa; and the attacks may be sudden, and alarm her so much, as to give her an

* The Obstetric Chair at Guy's Hospital.

impression that she is going to die. Nor is palpitation unfrequent; and, indeed, this is (most probably) the more immediate cause of the disease. This disease is more alarming than dangerous. It scarcely ever destroys life; though, owing to a disorderly action of the heart, it may produce sensations of fainting and death. Opium, ether, and other remedies of that sort, are calculated to moderate the violence of the symptoms; and attention must be paid to the diet.

Our patient may be affected with cough, during pregnancy. Here I do not mean the ordinary catarrh, which cures itself, and passes off in the course of two or three days; but I mean severe coughs, accompanied with a great afflux of blood to the head, and attended with a great deal of pain. In those cases where the abdomen is much shaken, the best remedies I know of are bleeding from the arm, leechings, opium, hyoscyamus, or other anodynes. Laxatives may be taken to keep the bowels regular; but not to disturb the digestive organs and nerves. In dry cough, paregoric-elixir*, to the amount of a drachm, will give immediate relief. Hydrocyanic acid, in my opinion, deserves a trial; though I have had but little experience in that medicine.

SECTION 12.—CONVULSIONS.

During pregnancy, women are sometimes affected with convulsions;—a disease which I considered very largely, at a former period†; and I forbear, therefore, to enter into that topic again. Where convulsions do not actually occur, there is sometimes a very obvious tendency to the attack;—flushing of the face, throbbing of the carotids, severe pains in the head, and sensations of the brain, as if it were too large for its receptacle; which, indeed, in a certain sense, it is;—in consequence of the blood flowing into it too copiously. The best remedies for symptoms of this kind, are bleeding from the arm, or the nape of the neck, or the temples; by cupping-glasses, or by leeches; and then the warm-bath‡, with purgatives, perhaps emetics, and ultimately, when the skin is open, anodynes. I should not use the warm-bath till bleeding had been premised. The whole of this important subject we considered before†.

SECTION 13.—ODONTALGIA.

Women may suffer severely from odontalgia, in the course of pregnancy; and though the teeth are apparently all sound, yet, night after night, there may be severe attacks of the aching;—so that, while all the rest of the family are enjoying their repose, our luckless patient is obliged to get up, and pace the chamber; in order to cool the system, and quiet the irritability under which she

* The "Tinctura Camphoræ Composita", of the London Pharmacopœia.

† See Pages 416 to 434.

‡ A bath is "cold" up to sixty-five degrees; "temperate" from sixty-five to eighty-five; "tepid" from eighty-five to ninety-five; and "hot" above ninety-five. The greatest heat that can be borne in a bath, is about a-hundred-and-ten degrees.—*Dr. Fletcher's unpublished Examinations.*

labours. From this pain, the whole jaw may suffer severely. The extraction of the teeth, in cases of this kind, is out of the question, if there are none of them obviously affected; and even if a tooth were carious, I should hesitate before I had recourse to this operation;—believing, as I do, that it is ascribable to a certain state of the nerves which pregnancy produces, rather than to the condition of the tooth. Burns says, that miscarriage is reported to have followed extraction*. The volatile-tincture-of-valerian†, bark, and carbonate-of-iron, are the principal remedies here. Would the arsenical solution‡ be of service? I was once called to a young Greek lady, a Smyrniote, at the other end of the town§, suffering violently with this disease, night after night; so that she could get no rest. All the ordinary remedies had been tried, in ordinary doses, but in vain. I gave her bark, and the volatile-tincture-of-valerian†, as largely as the stomach would bear; and with the effect of arresting the disease; so that, throughout the remainder of her gestation, she continued tolerably free.

SECTION 14.—SALIVATION.

Very copious salivation will sometimes occur during gestation, and where the patient has not taken one grain of mercury. I saw a case of this sort, which strongly resembled mercurial ptyalism; but the fœtor was wanting, and the gums were not ulcerated. There was merely the high action of the salivary apparatus. If the quantity of saliva is not very great, the patient may swallow it; and in that manner, perhaps, she may somewhat moderate the exhaustion, which would otherwise occur. My patient, however, secreted the saliva so plentifully, that when she swallowed it, the stomach was offended, and vomiting ensued. Should the saliva be formed in very large quantities, and should the system suffer considerably in consequence, I should recommend the induction of delivery; which, in all probability, would cure the disease; but where the secretion is smaller, a remedy of this kind would not be justifiable. Meddlesome midwifery is bad. The patient to whom I have just alluded, did well without interference.

SECTION 15.—MASTODYNIA.

In the first pregnancy, women may suffer a great deal of pain about the breast. This is called "mastodynia" ‖; sometimes referrible to a sort of tendency to inflammation; for, in the first pregnancy, a large and rapid development of the breast may occur;—the mamma becoming two or three times as large as before marriage. When the woman suffers severely from this, I would recommend

* Burns's "Midwifery"; Ninth Edition; Page 267.
† The "Tinctura Valerianæ Composita" of the London Pharmacopœia.
‡ The "Liquor Potassæ Arsenitis" of the London Pharmacopœia.
§ The West End of London.
‖ From μαστος, *a breast*; and οδυνη, *pain*.

leeching, bleeding from the arm sparingly, fomenting, and the ordinary remedies for slight inflammatory action. If the disease were inconsiderable, I should use friction with oil, or perhaps with a little olive-oil-and-camphor. In general, employ poultices, fomentations, and friction with tincture-of-opium and oil (mixed together); but, for such cases, patience is the best remedy.

SECTION 16.—DROPSY OF THE OVUM.

It was observed at a former period*, that women are sometimes affected with dropsy of the ovum;—a disease which I have now seen repeatedly. Perhaps a pailful of water may collect in the cavity of the uterus; and, under this disease, sudden and alarming symptoms may occur. The abdomen may fluctuate, as if from ascites;—so that the first impression on your mind is, that the dropsy is of the peritoneum. There is sometimes, too, a great deal of pain and tenderness of the abdomen. Perhaps, when you touch it, there is an outcry; and, independently of the pressure, the suffering may be great; and there are pains as of parturition. Suspecting what is the nature of the disease,—from the sudden enlargement of the abdomen, from the reputed pregnancy of the uterus, and from the pains and the forcings,—you make your examination; when you may, in general, clearly feel the membrane lying in the os uteri, already beginning to dilate. If the dropsy of the ovum be not considerable, you are not justified in rupturing the membrane, and discharging the water; because,—in the later period of gestation, especially,—a woman in this situation may still carry the child the full time; and may be otherwise in a healthy condition. If, however, the dropsy occasion much pain and inconvenience,—so that something must be done,—the most effectual remedy that I know, is to discharge the fluid; and this may be done by opening the membranes,—either extensively, so as to permit the discharge of the whole at once; or by making one or two small punctures, so as to discharge it by degrees;—the latter being the safer, though the more tedious mode. A bandage should be prepared, and tightened as the water is discharged; otherwise syncope and collapse may be produced. That of my friend Mr. Gaitskell will answer very well†.

SECTION 17.—RIGIDITY OR LAXITY OF THE ABDOMEN.

Your patient may suffer a good deal during gestation, in consequence of rigidity of the abdomen; particularly in the first pregnancy. The uterus growing very fast, the abdominal coverings do not grow in proportion; and this produces a distention and uneasiness, felt particularly about the edge of the ribs. It may be supposed to arise from the state of the bladder; or, if you are thoroughly imbued with the hepatic doctrine, the liver (of course) becomes the scape-goat; and blue-pill is the medicine prescribed. If you can clearly refer the pain to this over-distention of the abdomen, and the

* See Pages 956 and 957. † See Pages 488 to 490.

rigidity of its coverings, leeches over the abdomen, poultices, and abstractions of blood from the arm, will be found the best remedies; —if, indeed, remedies be required.

Some women labour under an affection just the reverse of the preceding;—I mean, an exceeding laxity of the abdominal coverings; so much so, that sometimes when they are pregnant, the womb, not being duly supported, falls to the one side or other, or forwards. Much relief is obtained from lying on the sofa; but, independently of this, you may sometimes help the patient by means of a well-contrived corset or bandage, which the corset-maker may be directed to contrive. In general, women will make things of this sort better than the surgeon's instrument-maker. In short, any thing that will give a general support to the abdomen, and throw the bearing upon the spine, may be found to answer very well. Sometimes, besides the support which is given by the bandage with the corset, a very broad busk (as it is called by women),—that is, a broad leaf (or lamella) of steel,—placed in the stays over the yielding part of the abdomen, may be found more or less effectual in keeping the uterus in its place.

SECTION 18.—FALSE PAINS.

You will now and then be called to women, in the course of pregnancy, labouring under what are called "false pains";—that is, pains simulating the parturient, but not arising from delivery. Those false pains are commonly produced from three causes:—1. They may be pains seated in the nerves; but this is rare. 2. They may be produced by spasm of the biliary ducts, of the ureters, of the intestines, or of the womb itself. 3. These pains may result from inflammation, and be accompanied with fever. This is the most frequent cause. These pains are known not to be the pains of labour, by their seat; by their character; by their mode of return; sometimes, and in some measure, by their being permanent; and, above all, by an examination. If the pains are those of labour, we find that the os uteri opens and widens; and,—the membranes protruding, and being broken,—the head bears down. On the other hand, if they are not the pains of parturition, the os uteri is probably shut, and there is no bearing down; or should the os uteri be open a little, we do not find an increase of the dilatation. This I treated of more largely, when speaking of natural labour*; and to former remarks I must now refer you. Of course, the treatment of false pains must vary with their nature; but, of general means, the most effectual are bleeding, opium, and (now and then perhaps) the warm-bath; though, very often, this is not required. Inflammation may require very active remedies; but this was considered before†.

SECTION 19.—FŒTAL TURBULENCY.

Lastly: a woman may suffer severely from a turbulent fœtus; which kicks, and cuffs, and plunges with violence (perhaps in con-

* See Page 100. † See Pages 506 to 558.

sequence of convulsions); until the woman feels as if it would make its way through her body. A lady, the wife of one of my medical friends, was attacked severely with this disease. Bleeding may be tried, in these cases, to the amount of a few ounces;—in order somewhat to relieve and diminish the excessive agitation which the pain and alarm produce. Opium may be given, according to the effect produced, with a view of quieting both the mother and the fœtus; and I have no doubt, from my own experiments, that when the narcotics are taken, they often get into the blood, and mingle with it. This may explain to us how the opium, taken by the mother, may operate on the child; for being taken into the maternal blood, it may pass into the placenta, and get absorbed (through the placentar pores) into the vessels of the fœtus. In the worst cases, discharge the liquor amnii; for this, in the course of a day or two, will rid the patient of her troublesome inmate. In the case just referred to, manual restraint of the fœtus afforded much relief. An attendant, at the bed-side, compressed the uterus, and compelled the fœtus to lie quiet; and thus, under a very severe paroxysm of this kind, very effectual relief was obtained. The restraint of the child; the effective use of opium; the discharge of the liquor amnii; the abstraction of blood to the amount of ten or fifteen ounces;—these are the remedies to which I look, in cases of this sort. Probably the child, when born, will prove weakly; and may die within a few hours afterwards.

CONCLUSION.

My work is now completed. Of the defects in style*, no one can be more sensible than myself. Allow me to observe, however, in the way of explanation and apology, that it has been my object throughout to choose that kind of information which avails at the bed-side; and to communicate that information in a manner which, though sometimes quaint (no doubt), is still, perhaps, not altogether ill-calculated to strike the attention and fix upon the memory. To oratory I make no pretensions! Indeed, I am free to confess, that I cannot conquer my dislike to an art, which practices on the infirmities of the mind; and which, provided it can persuade the mob of all ranks, seems to be equally well contented with truth and falsehood. The folly of the auditor is the strength of the orator; while the strength of the philosopher is his good sense. It is difficult to sustain, at once, two opposite characters.

* These defects,—consisting chiefly in inversions of language, and in saying common things in an uncommon manner,—have been removed in the present edition.—N. R.

INDEX.

A.

Abdominal Auscultation in Pregnancy, 1061
Abortion and Premature Delivery, Difference between, 690
" Abortive", Etymology of, 369
" Absorbent", Etymology of, 50
" Accoucheur", Etymology of, 7
Accoucheur, Duties of the, 99
" Acephalocyst", Etymology of, 620
" Acetabulum", Etymology of, 8
Acetate of Lead, Composition of, 658
Achilles and the Duke of Wellington, 923
Acids, List of, 589
" Acini", Etymology of, 613
" Acupuncture", Etymology of, 369, 630
Acupuncture, Dr. Fletcher on, 630
Adam's Ruinous Gallantry, 926
Adhesion of Mucous Surfaces, 713
" Adipose", Etymology of, 357
" Adynamic", Etymology of, 543
" Æther", Etymology of, 487
" Afflux", Etymology of, 417
After-Floodings, 267
....., Varieties of, 268
....., Treatment of, 270
After-Pains, 607
..... Diagnosis of, 608
....., Ordinary, 607
....., Spasmodic, 608
....., Sub-Inflammatory, 607
Ainsworth's Explanation of the Gordian Knot, 979
" Albicantes", Etymology of, 493
" Aliment", Etymology of, 180
Alkalies, List of, 736
" Alkaloid", Etymology of, 186
" Allantois", Etymology of, 978
Allantois, The, 984
" Alvine", Etymology of, 525
Amand's Instrument for delivering the Head, 147
Ambidexterity, Necessity of, in Obstetrical Operations, 83
Ambrose Paré, on the Cæsarian Operation, 354
..... Plurality of Children, 466
Ambulatory Party, Dante's, 458
" Amenorrhœa", Etymology of, 649
Amenorrhœa in the Adult, 649
....., Definition of, 649
....., Effects of, 650
....., Causes of, 650
....., Treatment of, 652
Amnion, The, 982
" Anastomosis", Etymology of, 419
" Amputation", Etymology of, 246
Analysis of Mucus, 688
" Anasarca", Etymology of, 561
" Anchylosis", Etymology of, 10, 304
" Anemone", Etymology of, 1010
Anemone, The, 1010
" Aneurism", Etymology of, 748
" Animalcule", Etymology of, 250
" Anodyne", Etymology of, 252
" Anteversion", Etymology of, 683
Anteversion of the Uterus, 683
" Antiphlogistic", Etymology of, 176
" Antiseptic", Etymology of, 399
" Anus", Etymology of, 49
Aperients in Floodings, 177
" Aphthous", Etymology of, 206
Appearances resembling Rape, 940
Apple of Discord, 1016
Aqueous Effusions after Floodings, 207
" Arachnoides", Etymology of, 584
Arbor Vitæ Morgagni, 45
" Areola", Etymology of, 493
Areolar Sign, Periods for observing the, during Pregnancy, 1049
..... Progressive Character of the, 1049
Aristotle, on Epigenesis, 1011
Aristotle's Theory of Conception, 903
Arnott, Mr., on the Consequences of Venous Inflammation, 567
" Aromatic", Etymology of, 206
" Arsenic", Etymology of, 666
" Arteries", Etymology of, 49
" Articulatory", Etymology of, 3
" Ascaris", Etymology of, 620
Ascarides in the Rectum, 882
..... Symptoms of, 882
..... Diagnosis of, 882
..... Treatment of, 882
" Ascites", Etymology of, 675
" Asphyxia", Etymology of, 154
" Astringent", Etymology of, 177
Astringents, Dr. Fletcher on, 695
..... List of, 446
Astruc's Case of Rupture of the Uterus, 455
" Atheromatous", Etymology of, 566
" Atmosphere", Etymology of, 539
" Atonic", Etymology of, 206
" Atramentous", Etymology of, 1070
" Atropa Belladonna", Etymology of, 165
" Auscultation", Etymology of, 1061
Auscultation, Liability of, to Error, 1066
" Axilla", Etymology of, 70
" Axunge", Etymology of, 619
Ayesha, 34

B.

Baillie, Dr., on Puerperal Mania, 578
..... the Pathology of Scirrhus, 728
Bandage, Gaitskell's, 488
....., Maker of, 490
Banner's Case of Extirpation of the Uterus, 765
Barlow's Case of Cæsarian Section, 152, 359, 362, 455
Barnes Mr., on the Treatment of Rupture of the Bladder, 868
Baudeloeque's Classification of Labours, 86
..... Case of Anteversion of the Uterus, 684
Bauhin's Case of the Cæsarian Operation, 353
Baxter's Cases of Extirpation of the Uterus, 445
Bayles's Case of Rupture of the Uterus, 455
Bearing-Pains, 95, 97
Beccaria's Test of Pregnancy, 1055
Beck, Dr., on Concealed Delivery, 493
..... Pretended Delivery, 495
..... Medico-Legal Questions connected with Delivery, 499
..... the Existence of a Hymen, 935
..... Impotence and Sterility, 928
..... Medico-Legal Questions connected with Pregnancy, 1079
..... the Laws relating to Legitimacy, 1107
..... Questions relating to Paternity, 1109
..... Questions relating to Filiation, 1109
..... Rape, 934
Bell, Sir C., on the Mode of Performing the Cæsarean Operation, 363
"Bimestral", Etymology of, 445
Binder, Application of a, 491
Birkbeck's Case of Rupture of the Uterus, 455
Birth of Children in Eggs, 713
Bladder, Structure of the, 47, 853
....., Descent of the, 694
....., Diagnosis of, 696
....., Symptoms of, 694
....., Treatment of, 696
....., Diseases of the, 854
....., Rupture of the, 862
....., Prognosis and Treatment of, 862
Bloodletting, Fatal Cases of, 523
Bloomfield's Case of Rupture of the Uterus, 455
Blowing of the Nose, Physiology of, 689
Blundell's Cases of Extirpation of the Uterus, 769
..... Case of Ruptured Uterus during Delivery, 148
..... Case of Delivery after the Death of the Mother, 473
..... Researches on the Corpus Luteum, 911
..... Case of Protracted Gestation, 1105
Boivin and Duges, on the Causes of Anteversion of the Uterus, 684
..... Caustic Applications in Malignant Diseases of the Uterus, 786
..... Recto-Vaginal Tumours, 440
Bonnet, on the Cæsarian Operation, 355
"Bothriocephalus", Etymology of, 620
"Bougie", Etymology of, 884
"Brachial", Etymology of, 183
Brande's Analysis of the Catamenia, 629
Brenan, Mr., on Turpentine in Puerperal Fever, 529
Breschet, Dr., on Extra-Uterine Pregnancy, 477
Brigg's Case of Long Funis, 977
"Bronchi," Etymology of, 279
Brunswick Theatre, 980
"Bubo," Etymology of, 718
Buffon's Case of Superfœtation, 924
..... Classification of Monsters, 1012
Burdoch on the Decidua, 1019
Burrows on Insanity, 1027
..... Puerperal Mania, 579
Bursting-Pains, 97
Burns, Dr., on Digitalis in Floodings, 178
..... the Induction of Premature Labour, 351
..... Treatment of Inversion of the Uterus, 446
..... Rupture of the Uterus, 451
..... the Employment of Laudanum in Lingering Parturition, 458
..... Ergot of Rye in Lingering Parturition, 460
..... Occurrence of Twins, 466
..... Application of Leeches in Puerperal Fever, 548
..... Ephemeral Fever, 600
..... Milk-Fever, 605
..... Miliary Fever, 605
..... the Structure of the Mammary Gland, 613
..... Inflammation of the Mamma, 614
..... Excoriations of the Nipple, 618
..... the Qualifications of a Nurse, 619
..... Changes occurring at Puberty, 628
..... Symptoms of Menstruation, 631
..... Anteversion of the Uterus, 684
..... Inflammation of the Unimpregnated Uterus, 714
..... Fungous Excrescence, 750
..... Extirpation of the Polypus of the Uterus, 795

C.

"Cachexia", Etymology of, 15
"Caduca Lacerabilis", Etymology of, 981
Cæsarian Operation, The, 353
..... Mode of Superseding the, 368
..... Mr. Barlow's Case of, 152
Cæsarian Operations, List of, 560
"Cæcum", Etymology of, 497
"Calculi", Etymology of, 436
Calculi, Urinary, List of, 436
"Callus", Etymology of, 17
"Calomel", Etymology of, 177
"Calyx", Etymology of, 1069
Camper's Experiments on Symphysotomy, 376
"Cancer", Etymology of, 669

"Canula", Etymology of, 369
"Capillary", Etymology of, 623
"Capsular", Etymology of, 542
Capuron's Cases of Extreme Pelvic Contraction, 338
Capuron, on the Use of the Forceps in Natal Presentations, 77, 140
"Carcinoma", Etymology of, 627
Carcinoma Recti, 883
"Cardiac", Etymology of, 175
Carlisle, Sir Anthony, on the Warm-Bath, 114
..... Men-Midwives, 149
..... Detraction, 327
"Carnal Knowledge", Definition of, 950
"Carnivorous", Etymology of, 1125
"Carotid", Etymology of, 220
"Cartilage", Etymology of, 17
Caruncule Myrtiformes, 53
....., Appearance of the, 937
Case of Mrs. Moulden, 769
Cases of Extra-Uterine Pregnancy, 481
..... Fatal Blood-Letting, 523
..... Deficient Monsters, 1072
Castle, Dr., on the number of Ova, 46
..... Blisters in Convulsions, 430
..... Ergot of Rye in Convulsions, 430
..... Extirpation of the Uterus, 445
Castle's Case of Deficiency of the Cerebellum, 971
"Castor", Etymology of, 487
Catamenia, Offensive, 667
..... Cessation of the, 668
..... Effects of the, 668
"Catamenia", Etymology of, 357
"Cataplasm", Etymology of, 767
"Catechu", Etymology of, 180
Catheter, Introduction of the, 859
"Cato", by Addison, Quotation from, 248
"Cat's-Head Crania", 61
Cauliflower-Excrescence of the Uterus, 746
....., Character of the, 746
....., Causes of the, 747
....., Period at which it occurs, 748
....., Pathology of the, 748
....., Treatment of the, 789
"Caustic", Etymology of, 786
"Cellulosus", Etymology of, 620
Celsus, on the Delivery of the Head, 147
..... Decapitation of the Fœtus, 153
..... Turning, 155
..... Hæmorrhoids, 874
"Cephalalgia", Etymology of, 206, 512
"Cephalic", Etymology of, 235
Cephalic Presentations, 62
Cerberus and his Sop, 948
"Cervix", Etymology of, 44
"Cestoidea", Etymology of, 620
"Chalybeates", Etymology of, 651
Change of Names in the Pharmacopœia, 516
Changes at Puberty, Dr. Fletcher, on the, 901
Chemical Diagrams, by Whitaker, 521
"Chemist", Etymology of, 186
Cheston's Case of Ruptured Uterus, with Ossification of the Fœtus, 148
..... Ossification of the Fœtus, 455
..... Retroversio Uteri, 677
Chevalier's Cases of Extirpation of the Uterus, 152
..... Case of Extirpation of the Uterus, by Ligature, 448
Children, Still-Born, Management of, 112
"Chlorotic", Etymology of, 619
"Cholera", Etymology of, 594
Chlorosis, 640
..... General Appearance in, 640
..... Stages of, 640
..... Symptoms of, 641
..... Pathology of, 643
..... Causes of, 643
..... Diagnosis of, 644
..... Treatment of, 645
Chopart's Case of Anteversion of the Uterus, 684
Chorion, Functions of the, 982
..... Structure of the, 981
"Chronometer", Etymology of, 119
"Chylopoietic", Etymology of, 178
"Cicatricula", Etymology of, 1071
"Cicatrix", Etymology of, 130
"Cicuta", Etymology of, 618
"Circulation", Etymology of, 112
Circulus Membranosus, 52
Clarke, Dr. J., on Presentation of the Face towards the Os Pubis, 65
Clarke, Sir C. M., Reference to his Work, 19
..... on Extirpation of the Uterus, 445
..... the Uterine Secretions, 628
..... Period at which Menstruation Commences, 630
..... Mucous Secretions of the Uterus, 635
..... Nature of Amenorrhœa, 649
..... Causes of Amenorrhœa, 651
..... Treatment of Amenorrhœa, 652
..... Causes of Prolapsus Vaginæ, 690
..... Treatment of Prolapsus Vaginæ, 692
..... Descent of the Bladder, 694
..... Procidentia Uteri, 697
..... Pessary, 711
....., Definition of Scirrhus, 727
....., on the Mucous Discharge in Scirrhus, 734
..... Necessity of Manual Examination in Scirrhus, 736
..... Malignant Ulcerations, 740
..... the Corroding Ulcer of the Os Uteri, 745
..... "Cauliflower-Excrescence", 747
..... Symptoms of Polypus of the Uterus, 793
..... Prognosis of Polypus of the Uterus, 800
..... Secretions from the Vagina, 830
..... Vaginal Discharge, 832
....., Definition of Vaginal Discharge, 835

Clarke, Sir C. M., on the Causes of Gleety Leucorrhœa, 837
..... Causes and Symptoms of Inflammatory Leucorrhœa, 838
..... Inflammation of the Vagina, 848
..... Abscess of the Vagina, 851
..... Hæmorrhoids, 873
..... Ulcerated Hæmorrhoids, 874
..... Ascarides in the Rectum, 882
..... Carcinoma Recti, 883
..... Ulcerated Carcinoma Recti, 888
..... Vascular Tumour of the Urethra, 897
Classification of Labours, by Hippocrates, 86
..... Denman, 86
..... Blundell, 86
..... Hamilton, 86
..... Burns, 86
..... Baudelocque, 86
..... Ryan, 87
..... Dubois, 87
..... Desormeaux, 87
..... Boivin, 87
..... Lachapelle, 87
..... Conquest, 87
..... Dewees, 87
..... Blake, 87
..... Merriman, 87
..... Power, 87
..... Ashwell, 87
..... D. D. Davis, 87
..... Gardien, 87
..... Carpuron, 87
..... Velpeau, 87
"Clavicle", Etymology of, 137
"Climacteric", Etymology of, 671
Cline, Mr., on Extirpation of the Uterus, 760
"Clinical", Etymology of, 370
"Clitoris", Etymology of, 51
Clitoris, Crura of the, 52
..... Enlargement of the, 899
"Clyster", Etymology of, 164
"Coagulum", Etymology of, 171
"Coarctation", Etymology of, 31
Coccyx, The, 26
Coccygeus, The, 149
"Cochleariform", Etymology of, 786
Cold, Application of, in Copious Floodings, 184
Cold Applications in Floodings with Asphyxia, 192
"Colica Pictonum", Etymology of, 183
"Collapse", Etymology of, 180
Collier, Dr., on "Confectio Opii", 435
..... "Extractum Papaveris", 575
"Colocynth", Etymology of, 183
"Coma", Etymology of, 347
Commissures, Superior and Inferior, 51
"Compages", Etymology of, 144
Complicated Labours, 415
Concealed Delivery, 493
Conception, Different Theories of, 902
"Conception", Etymology of, 902
"Concussion", Etymology of, 296
"Confection", Etymology of, 206
"Conglobates", Etymology of, 50
"Conjunctiva", Etymology of, 541
Conquest, Dr., on the Term "Puerperal Fever", 506
..... "Protracted Gestation", 1106
"Constipation", Etymology of, 534
"Constriction", Etymology of, 167
Convulsions after Delivery, Cases of, 417
..... during Gestation, Case of, 418
..... in Delivery, Treatment of, 423
....., Prevention of, 431
"Convulsive", Etymology of, 175
"Copaiba", Etymology of, 661
Copland, Dr., on the Treatment of Convulsions, 426
..... Dilatation of the Os Uteri, 428
..... Opium in Convulsions, 430
..... the Warm Bath in Convulsions, 430
Cordials and Stimulants in Lingering Parturition, 458
"Coriaceous", Etymology of, 1069
"Cornea", Etymology of, 542
"Coronal", Etymology of, 298
Corpora Lutea, Plurality of the, 1003
Corpus Luteum, 46
"Corpus Luteum", Etymology of, 46
"Corpuscule", Etymology of, 1012
Correct Nomenclature, Dr. Rogers on, 516
"Corrugated", Etymology of, 347
"Coryphæus", Etymology of, 1120
"Cotyledons", Etymology of, 815
Coughing, Physiology of, 689
Coutouli's Pelvimeter, 38
"Coxal", Etymology of, 604
Cramps during Parturition, 98
Craniotomy in Cases of Slight Contraction, 329
..... Considerable Contraction, 334
....., Signs indicating the Necessity of, 336
"Crassamentum", Etymology of, 634
"Crepitus", Etymology of, 279
Cretins, Dr. Elliotson on, 1026
"Ceribriated", Etymology of, 53
"Cribriform", Etymology of, 53
"Crucial", Etymology of, 638
"Crural", Etymology of, 22, 50
Crural Forceps, 168
Crying, Physiology of, 699
Cullen, Dr., on Leucorrhœa, 834
....., Menorrhagia, 662
Cupid and the Graces, 926
"Cuticle", Etymology of, 141
Cutting-Pains, 94, 97
"Cyst", Etymology of, 95
"Cystica", Etymology of, 620
"Cysticercus", Etymology of, 620

D.

Dante on Charybdis, 196
Dante's Ambulatory Party, 458

Davis, on the Classification of Labours, 87
..... Craniotomy-Forceps, 327
..... Craniotomy-Instruments, 370
..... Osteotomist, 383
Daniel and the Lions, 927
Death, Horace on, 748
Decapitation of the Fœtus, 153
" Decidua", Etymology of, 96
Decidua, The, 961
..... ., Use of the, 961
..... Reflexa, The, 983
....., Structure of the, 986
" Decoction", Etymology of, 186
De Delmas's Case of Superfœtation, 924
Defloration, Signs of, 939
De Graaf on the Fallopian Fimbriæ, 1003
" Deliquium", Etymology of, 164
" Delirious", Etymology of, 285
Delivery occurring without Previous Knowledge, 36
Delivery, Definition of, 85
..... after the Death of the Mother, 472
..... complicated with Fever and Inflammation, 474
..... of the Child after the Death of the Mother, Case of, 473
....., Recent Signs of, 493
....., Concealed, 493
....., Pretended, 495
....., Medico-Legal Questions connected with the Subject of, 499
Demulcents, List of, 390
Denman, on the Number of Ova, 46
..... Management of Crural Presentations, 73
..... Spontaneous Evolution, 78
..... the Classification of Labours, 86
..... Removal of the Placenta, 118
..... Manual Interference, 132
..... Spontaneous Evolution, 149
..... Turning, 155
..... Turpentine in Floodings, 178
..... Turpentine in Copious Floodings, 181
..... Swelling of the Labia, 288
..... the Fillet, 300
..... Necessity of Craniotomy, 337
..... Maternal Signs of the Death of the Fœtus, 342
..... Want of Motion in the Child, 344
..... Fœtor, as a Sign of the Death of the Fœtus, 344
..... Fœtor of the Uterine Discharges, 345
..... Peculiar States of the Fœtus, 347
..... the Causes of the Death of the Fœtus, 348
..... Cæsarian Operation, 353
..... Symphysotomy, 376
..... Rupture of the Funis, 405
..... Scirrhous Adhesion of the Placenta, 411
..... Labours with Monstrosity, 416
..... the Causes of Convulsions, 420
..... Warm Bath in Convulsions, 430
..... Morbid Appearances in Convulsions, 433
..... Apoplexy and Sudden Death, 434
Denman, on Spontaneous Inversion of the Uterus, 448
..... Position in Lingering Parturition, 457
..... the Delivery of Twins, 470
..... State of the Pulse in Puerperal Fever, 511
..... Vomiting, &c. in Puerperal Fever, 512
..... Purging in Puerperal Fever, 512
..... the Progress of the Disease, 513
..... "James's Powder" in Puerperal Fever, 526, 527
..... the Nature of Phlegmasia Dolens, 559
..... Cessation of the Catamenia during Pregnancy, 633
..... Menorrhagia, 656
..... the Causes of Retroversio Uteri, 674
..... Fluor Albus, 834
..... the different Theories of Conception, 902
" Dentiform", Etymology of, 328
" Deobstruents", Etymology of, 185
Deobstruents in copious Floodings, 185
" Depletion", Etymology of, 186
Descent of the Pelvic Viscera, 688
..... Vagina, 690
..... Bladder, 694
..... Uterus, 697
" Deciduous", Etymology of, 789
Desormeaux, on Blunt Hooks, 328
" Desquamation", Etymology of, 141
Dewees, Dr., on Various Positions of the Os Uteri, 261
..... Rigidity in Parturition, 383
..... Bleeding in Convulsions, 425
..... the Causes of Inversion of the Uterus, 447
..... Superfœtation, 925
" Diagnostic", Etymology of, 257
Diana on Mount Latmos, 1018
..... and Endymion, 1018
" Diaphoresis", Etymology of, 106
Diaphoretics, List of, 292
" Diaphragm", Etymology of, 113
" Diarrhœa", Etymology of, 94
..... after Floodings, 206
" Diathesis", Etymology of, 207
" Digitalis", Etymology of, 178
..... in Floodings, 178
" Dilator", Etymology of, 254
" Diluent", Etymology of, 389
Dimensions of the Uterus, 497
Diuretics, List of, 317
Dinah, Seduction of, 927
Diseases resembling Pregnancy, 1083
Dislocating Pains, 97
Disorder of the General Health, Effect of, upon the Puerperal State, 621
" Dispar", Etymology of, 626
Displacement of the Uterus, 671
Doulcet, M., on Emetics in Puerperal Fever, 527
Dover's Powder, 521
" Dracunculus", Etymology of, 620
" Drastic", Etymology of, 177
Drew's Cases of Pelvic Tumours, 437
" Dropsy", Etymology of, 142

Dropsy of the Ovarium, 814
Dupuytren's Operation for Extirpation of the Uterus, 785
Durant's "Memoirs of an only Son", 1033
"Dysmenorrhœa", Etymology of, 165
Dysmenorrhœa, Symptoms of, 664
....., Treatment of, 665
....., Causes of, 666
"Dyspepsia", Etymology of, 669
"Dyspnœa", Etymology of, 218
"Dystoma", Etymology of, 620
"Dysuria", Etymology of, 1126

E.

"Echinococcus", Etymology of, 620
"Effervescing", Etymology of, 179
Egg-Pessaries, 713
Elliotson, Dr., on Cretins, 1026
Embrace without Connexion, 926
"Embrocation", Etymology of, 603
Embryo, Ambiguous Traces of the, 251
"Embryospastic", Etymology of, 33
Embryospastic Instruments, 296
....., Rules for determining the use of, 320
"Embryotomy", Etymology of, 29
....., Instruments employed in, 326
Embryotomic Instruments, 326
Emetics, List of, 401
Emission of Semen, 948
....., Mode of proving the, 950
..... Ova, 1001
"Emmenagogue", Etymology of, 640
Emmenagogues, List of, 655
"Emollient", Etymology of, 389
Emollients, List of, 390
Empedocles's Theory of Conception, 903
"Emphysema", Etymology of, 279
"Emulgent", Etymology of, 47
"Encephalon", Etymology of, 645
"Endemic", Etymology of, 549
"Enema", Etymology of, 522
"Enteric", Etymology of, 252
"Epidemic", Etymology of, 511
Epidemic at the Millbank Penitentiary, 584
Ephemeral Fever or Weid, 600
"Epigastric", Etymology of, 359
"Epigenesis", Etymology of, 1004
Epigenesis and Evolution, 1006
....., Hippocrates on, 1011
Epispastics, List of, 429
"Epistaxis", Etymology of, 643
Erect Posture, Danger of, in Copious Floodings, 190
"Ergot", Etymology of, 184
Ergot of Rye in Convulsions, 430
....., Dr. Burns on, 460
"Errhines", Etymology of, 114
Errhines, Use of, in resuscitating the Infant, 114
"Eruption", Etymology of, 164
"Erysipelas" Etymology of, 279
"Erythism" Etymology of, 206
"Erythematous", Etymology of, 279
"Erythroides", Etymology of, 978
"Escharotics", Etymology of, 616
Escharotics, List of, 219
Esquirol's Cases of Puerperal Mania, 579
Esquirol on Insanity, 1029
"Ensiform", Etymology of, 153
Evacuation of the Uterus in Copious Floodings 187
..... Floodings with Asphyxia, 191
....., Rules for the, 199
"Eversion", Etymology of, 450
Evolution and Epigenesis, 1006
....., Spontaneous, in Transverse Presentations, 78
....., Haller on, 1011
Examination per Vaginam, Mode of making an, 103
Excision of the Uterus, 752
..... Lower Half of the Uterus, 784
"Excoriation", Etymology of, 196
"Exfoliation", Etymology of, 597
"Exostosis", Etymology of, 338
"Experiments", Etymology of, 217
"Expiratory", Etymology of, 121
External Organs of Generation, Diseases of the, 891
Extirpation of the Uterus, Case of, by Mr. Chevalier, 152
....., Mr. Newnham, 152,
....., Dr. Hull, of Manchester, 152
....., Dr. Castle on, 445
....., Mr. Banner on, 769
"Extract", Etymology of, 165
Extra-Uterine Pregnancy, List of Cases of, 431
....., Dr. Castle on, 431
..... Conception, Dr. Fletcher on, 916
Extreme Distortion, Case of, by Dr. Osborn, 370

F.

"Fabiform", Etymology of, 1770
Fagg, Mr., on the Treatment of Retained Placenta, 400
Faintness, as a Remedy in Floodings, 180
False Names, Dr. Mackintosh on, 656
Fallopian Tubes, Division of the, 30
....., Structure of the, 45
"Fallopian", Etymology of, 1002
"Farinaceous", Etymology of, 693
"Fascia", Etymology of, 49
"Fasciola", Etymology of, 620
"Febricula", Etymology of, 177
Febrile Affections, Slight, from Mixed Causes, 600
"Fenestra", Etymology of, 311
Female Emission, 1001
..... Semen, Hippocrates on, 1011
..... Testicles, 1001
..... Youth in general, Disorders incident to, 623
"Fimbriated", Etymology of, 768
"Fenner", Etymology of, 8
"Filaria", Etymology of, 620
Filiation, Questions relative to, 1109
"Filix", Etymology of, 1010
Fillet, Various Opinions on the Use of the, 300

"Flatulent", Etymology of, 130
Fletcher, Dr. on Intestinal Worms, 620
..... Chlorosis, 649
..... Menorrhagia, 662
..... Tapping the Uterus, 680
..... Displacement of the Uterus, 685
..... Mucous Secretions, 688
..... Scirrhus, 689
..... Coughing, 689
..... Miscarriages, 690
..... Hæmorrhoids, 691
..... Purgatives, 693
..... Infusions, 693
..... Astringents, 694
..... Hiccup, Gaping, &c,, 699
..... Prolapsus Uteri, 702
..... Hysteritis, 719
..... the Lochia, 721
..... Malignant Disorganization of the Uterus, 792
..... the Separation of the Placenta, 806
..... Inversion of the Uterus, 808
..... Preternatural Labour, 866
..... the Causes of Preternatural Labour, 866
..... the Changes at Puberty, 901
..... Extra-Uterine Pregnancy, 916
..... Conception, 917
..... the Entrance of the Semen into the Uterus, 918
..... Erection of the Penis, 948
..... Emission, 948
..... the Muscular Structure of the Uterus, 959
..... Quickening, 964
..... the Nourishment of the Fœtus, 970
..... Shrivelling of the Umbilical Cord, 972
..... Decidua, 981
..... Uterine Membranes, 984
..... Secretion of Milk, 998
..... Composition of Milk, 998
..... Emission of Ova, 1001
..... Uterine Ligaments, 1001
..... Shape of the Uterus, 1001
..... Generation, 1011
..... Monsters, 1015
..... the Round Ligaments, 1021
"Flocculi", Etymology of, 555
Floodings, 169
....., Source of the Hæmorrhage in, 169
....., Causes of Variation in the Quantity in, 170
....., Causes of the Cessations of the Hæmorrhage in, 171
....., Sometimes rapidly fatal, 174
....., Less Alarming Symptoms of, 175
....., Immediate Precursors of Dissolution in, 175
..... May occur in Gushes or Drainings, 176
....., Sparing, Treatment of, 176
....., Regimen and Position in, 176
Floodings, Mild Aperients in, 177
....., Refrigerants in, 177
....., Sparing, Digitalis in, 178
....., Turpentine in, 178
....., Venesection in, 179
....., Proper Nourishment in, 180
....., Gastric Astringents in, 180
....., Faintness in, 180
....., Copious, *In the Earlier Months*, Treatment of, 181
....., Rest in, 181
....., Nourishment in, 181
....., Turpentine in, 181
....., Acetate of Lead in, 182
....., Stimulants in, 183
....., Application of Cold in, 184
....., Plugging of the Vagina in, 184
....., Doebstruents in, 185
....., Discharge of the Liquor Amnii in, 186
....., Manually emptying the Uterus in, 187
....., Copious, *In the Latter Months*, Treatment of, 188
....., Removal of the Child in, 188
....., Circumstances under which they occur, 188
....., Indications of Rallying in, 189
..... with Asphyxia, Treatment of, 191
....., Emptying the Uterus in, 191
....., Cold Applications in, 192
....., Plugging the Vagina not always Necessary in, 193
....., Nourishment in, 193
....., Employment of Opium in, 193
....., Stimulants in, 195
....., Death after the Cessation of, 196
..... with Asphyxia, Transfusion in, 197
....., Evacuation of the Uterus in, 199
....., Rules for Manual Interference in, 202
....., After-Management of, 203
....., Not to Leave the Patient in, 203
...., Make the Patient Comfortable in, 203
....., Secret, 204
....., Napkin to the Genitals in, 205
....., Nourishment in, 205
....., Headach in, 206
...., Diarrhœa in, 206
....., Weakness in, 207
....., Aqueous Effusions in, 207
....., Errors to be avoided in, 208
... . in the Earlier Months, 248
....., Varieties of, 252
....., Treatment of, 255
..... in the Latter Months, 257
...., where the Placenta is over the Os Uteri, 257
....., where the Placenta is not over the Os Uteri, 264
Fœtal Circulation in the Ovum, 995
....., Peculiarities of the, 996
Fœtal Cranium, Peculiarities of the, 965
Fœtal Face, How Known, 81
..... Forehead, How Known, 81
..... Breech, How Known, 81
..... Head, Obstetric Properties of the, 55

Fœtal-Head, Standard, 56
....., Derivations from the Standard, 59
....., Measurement of the, 56
....., Features of the, 58
....., Sutures of the, 58
....., Fontenels of the, 59
....., Hydrocephalus of the, 60
....., Means of ascertaining the Vertex of the, 80
Fœtal Heart, Pulsation of, 161
....., Dr. Moir, on the Pulsation of the, 161
....., Dr. Mackintosh, on the Pulsation of the, 161
....., Dr. Hamilton, on the Pulsation of the, 161
Fœtal Life, Many of the Viscera, not necessary for, 970
Fœtal Shoulder, how Known, 82
"Fœtus", Etymology of, 138
Fœtus, Abnormal Anatomy of the, 1012
....., Changes which occur at the Birth of the, 997
....., Decapitation of the, 153
....., Escape into the Abdominal Cavity, Cases of, 455
....., Expulsion of the, 93
....., Indications of the Death of the, 340
....., Causes of the Death of the, 348
....., Means of Ascertaining the Position of the, 80
....., Membrana Pupillaris in the, 965
....., Large Size of the Nervous System in the, 965
....., Peculiarities of the Lungs in the, 965
....., Heart in the, 966
..... Blood in the, 967
..... Liver in the, 968
....., Capsulæ Renales and Kidneys in the, 968
....., Clitoris in the, 968
....., Descent of the Testes in the, 968
....., Thyroid Gland in the, 969
....., Thymus Gland in the, 969
....., Nourishment of the, 970
....., the, Obstetrically Considered, 55
....., Peculiarities of the, 965
....., Presentation and Situation of the, 61
....., Sensibility in the, 971
....., Average Weight of the, 972
....., Position of the Different Parts of the, in Utero, 972
....., Sounds produced by the Motion of the, 1044
....., Transmission of the through the Pelvis, 62
"Fontanels", Etymology of, 59
Fontanels, of the Fœtal Head, 59
....., Larger, how Known, 80
....., Lesser, how Known, 81
"Forceps", Etymology of, 140
Forceps, Crural, 168
....., Long, 303
....., Short, 315
Ford, Dr., on the Cæsarian Operation, 355
Formative Process, Duration of the, 1006
Formative Power exerted in Gestation, 1008
"Formula", Etymology of, 136
"Frankenstein", Mrs. Shelley's, 1011
"Frontal", Etymology of, 298
"Fugacious", Etymology of, 597
Fungous Excrescence of the Uterus, 750
....., Characters of 750
Funis Umbilicalis, Division of the in Parturition, 108
....., Presentation of the, 154

G.

Gaitskell's Bandage, 110, 488
..... in After-Floodings, 276
..... Rules for the Use of the Lever, 309,312
..... Case of Convulsions after Delivery, 417
..... Obstetric Bandage, Rules for the Application of, 488
....., Remarks on, 490
Galen's Theory of Conception, 903
"Galvanism", Etymology of, 905
"Ganglions", Etymology of, 50
"Gangrene", Etymology of, 537
Gaping, Physiology of, 699
"Gas", Etymology of, 142
"Gastric", Etymology of, 180
Gastric Astringents in Floodings, 180
"Gastrocnemii" Etymology of, 98
"Gastroraphy", Etymology of, 357
Gastrotomy, Ryan on, 480
....., Capuron on, 480
....., Desormeaux on, 480
....., Gardien on, 480
....., Velpeau on, 480
Geiss's Case of Double Uterus, 925
"Gemelli", Etymology of, 49
"Generation", Etymology of, 51
Generation, External Organs of, 51
..... Physiology of, 901
..... Two Substances are necessary for, 905
..... Contact of the two Substances necessary for, 905
..... without Contact, 916
..... and Sexual Instinct, General Remarks on, 918
..... Formative Power exerted in, 1008
..... Hippocrates on, 1011
..... Aristotle on, 1011
..... Harvey on, 1011
..... Buffon on, 1011
..... Haller on, 1011
..... Fletcher on, 1011
Genital Fissure, 51
"Genitals", Etymology of, 138
"Genus", Etymology of, 217
"Gestation", Etymology of, 170
"Gigas", Etymology of, 620
Glands in the Cervix Uteri, Secretion from, 635
Glandular Nabothi, 960
"Globules", Etymology of, 542
Goddess of Discord, 1016
Goddess of Hunting 1018

Goddess of Magic, 1018
Goddesses on Mount Ida, 793
" Gonorrhœa", Etymology of, 837
Gooch, Dr., on Spontaneous Evolution, 78, 149
..... the Presentation of the Funis, 154
..... Symphysotomy, 378
..... Retention of the Placenta, 413
..... the Occurrence of Convulsions, 423
..... Puerperal Mania, 578
..... the Effects of Amenorrhœa, 650
..... Retroversio Uteri, 672
..... Irritable Uterus, 719
..... Polypus of the Os Uteri, 801
..... Cervix Uteri, 801
..... Fundus Uteri, 802
..... the Diagnosis of Polypus Uteri, 803
..... Extirpation of Polypus Uteri, 804
..... Diseases resembling Pregnancy, 1033
..... Tympanites Uteri, 1036
..... Dropsy of the Uterus, 1037
Good, Dr. Mason, on Dysmenorrhœa, 660
Goodridge's Experiments on Transfusion, 223
Gordian Knot, 979
Graafian Vesicle, Montgomery on the, 1073
" Gravid", Etymology of, 45
Gravid Uterus, the, 955
..... Summary Remarks on the, 1001
Green's Case of Cæsarian Section, 115
Gregoire on the Delivery of the Head, 147
..... Retroversio Uteri, 672
Grinding Pains, 94
Groaning, Physiology of, 699

H.

" Hæmatoxylum", Etymology of, 180
" Hæmorrhage", Etymology of, 123
Hæmorrhoidal Affections of the Labia and Nymphæ, 875
" Hæmorrhoids", Etymology of, 658
Hæmorrhoids, Dr. Fletcher on, 691
....., Varieties of, 872
....., Causes of, 872
....., Effects of, 873
....., Mistakes respecting, 874
....., Ulceration of, 874
....., Diagnosis of, 875
....., General Treatment of, 876
....., Treatment of, by Ligature, 877
....., Reduction of, 877
....., Specific Remedies for, 878
Haighton on the Warm-Bath, 114
..... Digitalis in Floodings, 178
..... Acetate-of-Lead in Copious Floodings, 182
..... the Straight Short Forceps, 316
Haighton on Craniotomy-Forceps, 327
..... the Treatment of Uterine Hæmorrby Astringents, 256
..... After-Floodings with Vomiting, 268
..... the Absorption of Air by Serous Surfaces, 365
..... Shortness of the Umbilical Cord, 393
..... Scirrhous Adhesions of the Placenta, 409
..... Corpus Luteum, 916
..... Brevity of the Funis, 977
Haller on the Number of Ova, 46
Hamilton, Dr., on the Pulsation of the Fœtal Heart, 161
..... Digitalis in Floodings, 178
..... Malposition of the Placenta, 259
..... the Fillet, 303
..... Short Forceps, 315
..... Treatment of Inversion of the Uterus, 445
..... Symptoms of Plurality of Children, 469
..... Treatment of Chlorosis, 646
" Hamularia", Etymology of, 620
" Harmonia" Etymology of, 965
Harrison's Case of Laceration of the Uterus and Vagina, 151
Harvey's Theory of Conception, 903
Haslam's Cases of Puerperal Mania, 580
Haunch-Bone, The, 8
Head, Mal-position of the, above the brim, 68
....., below the brim, 69
Headach after Floodings, 206
" Hebdomadal", Etymology of, 632
Hecate, 1018
" Hectic", Etymology of, 289
Heister on Decapitation of the Fœtus, 153
..... the Cæsarian Operation, 354
Helen, Birth of, 713
..... and the Trojan War, 793
Hemming, Dr., on Recto-Vaginal Tumours, 440
" Hepaticum", Etymology of, 620
" Herbivorous", Etymology of, 1125
Hercules and the Hydra, 1007
" Hermaphrodite", Etymology of, 902
" Hernia", Etymology of, 246
Hiccup, Physiology of, 699
" Hidrosis", Etymology of, 590
Hidrosis, or Hidrotic Fever, 590
....., Symptoms of, 591
....., Varieties of, 593
....., Causes of, 598
....., Diagnosis of, 599
....., Prognosis of, 600
Highmore's Case of Anomalous Impregnation, 922
Hippocrates, on Leucorrhœa, 831
..... Epigenesis, 1011
..... Conception, 903
Holmes's Craniotomy-Forceps, 327
" Homogeneous", Etymology of, 614

Horace and the Wolf, 142
..... on Detraction, 101
..... on the Siren, Idleness, 465
..... Philosophers' Beards, 515
..... Great Undertakings, 612
..... Death, 743
..... Hebrus, of Lipara, 841
..... Moderation, 843
..... Menius and Novius, 881
..... Detraction and Self-Knowledge, 881
..... Conscious Innocence, 921
..... Helen, 927
..... Mischievous Women, 927
..... Proculeius and Gillo, 969
..... the Triumph of Lust, 969
Home, Sir Everard, on the Corpus Luteum, 1002
Hoorne on Decapitation of the Fœtus, 153
Hooping, Physiology of, 699
"Horripilation", Etymology of, 556
"Horticultural", Etymology of, 362
Hottentot Women, Size of the Nymphæ in, 899
Huckle-Bone, The, 8
Hull on Extirpation of the Uterus by Ligature, 152
..... the Cæsarian Operation, 360
..... Contracted Pelvis, 368
..... Plurality of Children, 468
Human Conception, Period required for, 1003
..... Ovum, Structure of the, 965
"Humerus", Etymology of, 137
"Humoral", Etymology of, 643
Hunter, Dr. W., on the Removal of the Placenta, 119
..... Puerperal Mania, 579
..... the Pathology of Puerperal Mania, 584
..... Retroversio Uteri, 672
..... the Uterus, 1019
Hunter, John, on the Secretion of Air, 699
.....'s Polypus Needle, 796
..... Explanation of Knots on the Cord, 978
..... Uterine Preparations, Examination of, 987
..... at Glasgow, 989
....., Fallacies in, 991
"Hydatids", Etymology of, 250
Hydra, The Lernæan, 1007
"Hydrocephalus", Etymology of, 60
Hydrocephalus of the Fœtal Head, 60
"Hydrophobia", Etymology of, 243
"Hydrocyanic", Etymology of, 1113
"Hydrostatics", Etymology of, 235
"Hydrothorax", Etymology of, 208
"Hymen", Etymology of, 52
Hymen, Existence of the, 935
....., Imperforate, Operation for, 638
"Hyoscyamus", Etymology of, 487
"Hypogastrium," Etymology of, 507
"Hysteralgia", Etymology of, 534
Hysteritis, 714
"Hysterotomy", Etymology of, 353
Hysterotomy, 353

I.

Ice, Refrigeration by, 426
"Ieterode", Etymology of, 621
Idleness, the Siren, 465
"Idiopathic", Etymology of, 507
"Idiosyncrasy", Etymology of, 255
"Iliacus", Etymology of, 49
Iliacus Internus, 49
"Ilium", Etymology of, 8
Ilium, 8
Impotence and Sterility, 928
....., Incurable Causes of, 929
....., Curable Causes of, 931
Impregnation, Ovarian Changes following, 1002
....., Signs Indicating, 1071
....., Solid Bodies Indicating, 1072
....., Uterine Changes following, 1004
"Inanition", Etymology of, 180
"Incisory", Etymology of, 353
Incontinence of Urine from Obstetric Violence, Case of, 130
"Incubation", Etymology of 1014
"Infanticide", Etymology of, 497
"Infusion", Etymology of, 186
Infusions and Decoctions, Dr. Fletcher on, 693
"Inguinal", Etymology of, 563
"Injection", Etymology of, 185
Injections into the Rectum in Lingering Parturition, 458
Inspiration while the Placenta is Retained, 121
Instruments, Embryospastic, 296
Intestinal Inflammation, 567
....., Symptoms of, 567
....., Varieties of, 567
....., Diagnosis of, 568
....., Prognosis of, 569
....., Post-Mortem Appearances in, 569
....., Causes of, 569
....., Treatment of, 570
..... Worms, Table of, 620
"Intestines", Etymology of, 142
"Inversion", Etymology of, 116
Inversion of the Uterus, Case of, by Denman, 272
....., Cases of, 445, 446
....., Spontaneous, 448, 449
....., Chronic, 806
....., Symptoms of, 806
....., Treatment of, 807
....., Dr. Fletcher on, 809
"Involucra", Etymology of, 122
"Irremeable", Etymology of, 788
"Iritis", Etymology of, 523
Irritable Uterus, 719
"Ischium", Etymology of, 8
Ischium, 8
"Isochronism", Etymology of, 1065

J.

"Jactitation", Etymology of, 175
James's Powder, 521

Jewel, Dr., on the Two Kinds of Uterine Rigidity, 389
..... Treatment of Leucorrhœa, 840
..... Nitrate of Silver in Leucorrhœa, 841
Job, on Milk and Cheese, 904
Jones, Dr., on Hæmorrhage, 172
Judgment of Paris, 793, 1016
" Jugular", Etymology of, 220
Jupiter and Leda, 713
..... Mars, 922

K.

Kelly, Dr., on the Pathology of Puerperal Mania, 584
Knot, the Gordian, 979

L.

Labia Pudendi, 51
....., Inflammation of the, 893
....., Progress of, 894
....., Early Treatment of, 894
....., Treatment of Abscess in the, 894
... ..., Extravasation of Blood into the, 895
....., Diagnosis of, 895
....., Treatment of, 895
Labours with Contracted Pelvis, Management of, 32
....., Classification of, 85
....., Stages of, 85
....., State of the Room in, 91
....., Position of the Patient during, 91
....., Guarding the Bed during, 92
....., Natural Symptoms of, 94
....., Pains of, 97
....., Morbid Symptoms of, 98
....., Symptoms of, during the Early Stage, 100
..... Natural, Situation of the Different parts in, 104
....., Protection of the Perinæum in, 106
....., Birth of the Shoulders in, 107
....., The Funis round the Child's Neck in, 107
....., Division of the Funis in, 108
....., Recapitulation of Remarks on, 110
....., Incontinence of Urine resulting from, 130
....., Preternatural, 132
....., Premature, Induction of, 350
....., with Monstrosity, 415
..... Convulsions, 416
..... Pelvic Tumours, 436
..... Plurality of Children, 466
..... Apoplexy and Sudden Death, 434
" Labia", Etymology of, 852
Laborious Parturition, 279
" Lacrymal", Etymology of, 698
" Lactea", Etymology of, 583
" Lacteum", Etymology of, 558
" Lactiferous", Etymology of, 613
Lactometer, The, 998
" Lacunæ", Etymology of, 52
La Motte on Inversion of the Uterus, 446
..... " Les Fleurs Blanches", 835
" Lancet", Etymology of, 89
Langstaff's Case of Extra-Uterine Pregnancy, 478
Latham's Account of the Epidemic at the Milbank Penitentiary, 584
Laughing, Physiology of, 699
Laws of England on Rape, 947
..... France on Rape, 948
..... Scotland on Rape, 948
..... the United States on Rape, 949
..... Rome on Legitimacy, 1107
..... Friesland on Legitimacy, 1107
..... Prussia on Legitimacy, 1107
..... France on Legitimacy, 1107
..... Scotland on Legitimacy, 1108
..... England on Legitimacy, 1108
..... the United States on Legitimacy, 1108
..... Egypt on Legitimacy, 1109
..... Rome on Pregnancy, 1039
..... England on Pregnancy, 1039
..... Scotland on Pregnancy, 1041
..... France on Pregnancy, 1041
..... America on Pregnancy, 1041
Lawrence's Lectures on Man, 935
" Laxatives", Etymology of, 177, 285
Lead, Acetate of, in Copious Floodings, 182
Le Dran's Case of Rupture of the Uterus, 455
Lee, Mr., on Urinary Calculi, 436
.... the Varieties of Puerperal Fever, 547
..... Causes of the different Varieties of Puerperal Fever, 549
Lee, Dr. A., on Menstruation during Suckling, 623
..... Ovarian Dropsy, 827
..... Monstrosity, 1012
Lee, Dr. Robert, on the Pathology of Puerperal Fever, 507
..... Treatment of Puerperal Fever, 516
..... Blood-Letting in Puerperal Fever, 516
..... a Second Venesection in Puerperal Fever, 518
..... a Third Venesection in Puerperal Fever, 520
..... the Use of Calomel in Puerperal Fever, 521, 523
..... Employment of Leeches in Puerperal Fever, 522
.... Tonics in Puerperal Fever, 526
..... Emetics in Puerperal Fever, 527
..... the Varieties of Puerperal Fever, 531, 550
..... Puerperal Peritonitis, 532
..... Inflammation of the Uterine Appendages, 535
..... Metritis, 536
..... Uterine Phlebitis, 540

Lee, Dr. Robert, on the Warm-Bath in Puerperal Fever, 547
..... Prevention of Puerperal Fever, 552
..... Nature of Phlegmasia Dolens, 559
..... Chronic Phlegmasia Dolens, 563
..... Inflammation of the Left Spermatic Vein, 564
..... the Structure of the Placenta, 985
Le Gallois's Experiments on Artificial Respiration, 112
Legitimacy, various Laws on, 1107
Leek, Dr., on Leucorrhœa, 832
Leucophlegmatic Chlorosis, 640
" Leucophlegmatic", Etymology of, 645
" Leucorrhœa", Etymology of, 388
Leucorrhœa, 830
....., Treatment of the Inflammatory Variety of, 846
....., Varieties of, 837
....., Causes of, 837
....., Symptoms of, 837
....., Inflammatory Variety, Causes of the, 838
....., Symptoms of, 838
....., General Treatment of, 839
....., Diagnosis between the two Varieties of, 839
....., Treatment of the Gleety Variety of, 840
Levator Ani, 49
Lever or Tractor, 308
Levret's Instruments for the Delivery of the Head, 147
..... Extirpation of Polypus of the Uterus, 795
" Ligament", Etymology of, 8
Ligaments of the Uterus, 1001
" Ligature", Etymology of, 125
" Limbus", Etymology of, 311
Liquor Amnii, Discharge of the, in Copious Floodings, 186
....., The, 993
....., Use of the, 993
....., Supposed Nourishment of the Fœtus by the, 994
Lisfranc's Operation for Extirpation of the Uterus, 785
List of Cases of Transfusion, 244
..... Purgatives, 296
..... Cæsarian Operations, 360
..... Cases of Extra-Uterine Pregnancy, 481
..... Phrenological Organs, 557
..... Acids, 582
..... Stimuli, 291
..... Refrigerants, 291
..... Diaphoretics, 292
..... Narcotics, 297
..... Emollients, 390
..... Demulcents, 390
..... Emetics, 401
List of Rubefacients, 429
..... Escharotics, 429
..... Epispastics, 429
..... Urinary Calculi, 436
..... Astringents, 446
..... Tonics, 525
..... Intestinal Worms, 623
..... Emmenagogues, 655
..... Mineral Waters, 655
..... Alkalies, 736
..... Diuretics, 817
Lizars, Mr., on Abdominal Operations, 365
..... Abdominal Surgery, 357
..... the Removal of an Ovarian Cyst, 821
Lobstein, on the Gravid Uterus, 1020
" Lochia", Etymology of, 485
Lochia, Dr. Fletcher on the, 721
....., Disturbance of the, 609
....., Excessive, 609
....., Suppression of the, 609
Locock, Dr., on Convulsions after Delivery, 429
Loss of Blood, Effects of, in the Puerperal State, 572
....., Signs of the Remote Effects of, 572
....., Treatment of, 575
Louis the Fifteenth and Cabriolets, 596
Lowdell's Perforator, 326
Lowder's Case of Large Pelvis, 35
..... Natal Presentation, 75
..... Lever, 309
..... Remarks on Retention of Urine in Pregnancy, 1095
Loyd's Case of Long Funis, 977
" Lumbar", Etymology of, 7
" Lumbricoides", Etymology of, 620
" Lumbricus", Etymology of, 620

M.

Macbeth, on Medicine for the Mind, 10
" Maceration", Etymology of, 537
Mackintosh, Dr., on Distorted Pelvis, 30
..... the Pelvic Viscera, 53
..... Pelvic Diameters, 43
..... Cranial Pre-sentations, 68
..... Natural Parturition, 87, 90
..... the Necessity of Quietness in the Lying-in Room, 91
..... Position of the Patient during Delivery, 92
..... Preparation of the Bed, 92
..... Vaginal Examinations, 103
..... the Duties of an Accoucheur, 111
..... Pulsation of the Fœtal Heart, 161
..... Turning, 162
..... the Means of ascertaining the Presentation, 299
..... Application of Instruments, 300, 339

Mackintosh, Dr., on the Signs of the Death of the Fœtus, 346
..... Induction of Premature Labour, 352
..... Expulsion of the Placenta, 403
..... " Hour-Glass Contraction", 407
..... the Management of " Hour-Glass Contraction", 409
..... Inversion of the Uterus, 450
..... Rupture of the Uterus, 456
..... the Causes of Lingering Parturition, 464
..... Treatment of Lingering Parturition, 464
..... Ergot of Rye in Lingering Parturition, 464
..... Fever and Inflammation during Parturition, 476
..... the After-Management of the Puerperal State, 490
..... Puerperal Fever, 554
..... Phlegmasia Dolens, 563
..... Menstruation, 634, 654
..... Menorrhagia, 662
..... Profuse Menstruation, 662
..... Dysmenorrhœa, 666
..... Cessation of the Menses, 669
..... Displacement of the Uterus, 684
..... Retention of Urine, 859
..... Laceration of the Bladder, 870
Male and Female Emission, 948
Malignant Disorganization of the Uterus, 739, 765
....., Nature of, 740
....., Varieties of, 742
....., Causes of, 742
....., Caustic Applications in, 786
....., Palliative Treatment in, 787
..... Ulcer of the Womb, Characters of, 744
....., Diagnosis of, 745
..... Uterus in its Inflammatory Stage, 751
Mammary Gland, Structure of the, 613
....., Inflammation of the, 614
" Mammiferous", Etymology of, 688
Mangles's Dissection of the Mole, 19
" Mania", Etymology of, 285
" Manna", Etymology of, 177
" Manual", Etymology of, 191
Manual Examination, Signs afforded by, 1057
Mars and Jupiter, 922
Marshall Hall, Dr., on Puerperal Diseases in general, 503
..... the term " Puerperal Fever", 506
..... Time when Puerperal Fever commences, 510
Marshall Hall, Dr., on Rigor in Puerperal Fever, 510
..... Heat of the Skin in Puerperal Fever, 510
..... Abdominal Tension in Puerperal Fever, 511
..... the Countenance and Manner in Puerperal Fever, 513
..... Breathing in Puerperal Fever, 513
..... Blood-Letting in Puerperal Fever, 517
..... the Use of Opium in Puerperal Fever, 521
..... Purging in Puerperal Fever, 522
..... Fatal Blood-Letting, 523
..... Ptyalism in Puerperal Fever, 529
..... Emetics in Puerperal Fever, 531
..... Intestinal Inflammation, 567
..... the Loss of Blood in the Puerperal State, 572
..... Mixed Cases, 577
..... Puerperal Mania, 577
..... the Causes of Puerperal Mania, 581
..... State of the General Health in Puerperal Women, 621
..... Disorders of Female Youth, 623
..... Chlorosis, 640
..... Cessation of the Menses, 670
Mason's Case of Superfœtation, 924
Masterman's Case of Convulsions after Delivery, 417
" Mastodynia", Etymology of, 1129
Maternal Circulation in the Ovum, 995
Mauriceau, on the Employment of Senna in Lingering Parturition, 458
..... Dropsy with Pregnancy, 1065
Maygrier's Classification of Presentations, 68
Mead, Dr., on Fluor Albus, 833
..... Leucorrhœa, 834
Meatus Urinarius, 52
....., Vascular Tumour of the, 897
....., Characters of, 897
....., Symptoms of, 898
....., Treatment of, 898
Meckel, on the Decidua, 981
" Meconium", Etymology of, 138
" Melæna", Etymology of, 642
" Melancholia", Etymology of, 578
" Membrane", Etymology of, 95
Membranes, Rupture of the, 101
....., Discharge of, from the Uterus, 663
....., Diagnosis of, 664
....., The, 979
Menses, Obstructed Flow of the, from Organic Causes, 636
" Mediinensis", Etymology of, 626

"Menorrhagia", Etymology of, 656
Menorrhagia, Active, 657
....., Treatment of, 657
....., Passive, Treatment of, 658
Menstrual Discharge, Analysis of the, 629
Menstruation, Physiology of, 628
....., Period of Commencement of, 630
....., Source of, 630
....., Symptoms attending the Appearance of, 631
....., Interruption of, attended by Vicarious Discharges, 632
....., attended by Enlargement of the Uterus, 632
....., during Pregnancy and Suckling, 632
....., Mr. Roberton on, 634
....., Influence of Climate on, 634
....., Mr. Lee, on, 649
....., Case of, during Suckling, 628
Merriman on the Classification of Labours, 87
..... Discharge of the Liquor Amnii, 196
..... Malposition of the Placenta, 258
..... the Mode of Turning, 261
..... Discharge of the Liquor Amnii in Flooding, 266
..... Convulsions during Delivery, 297
..... Use of the Fillet, 302
..... Improper Use of Instruments, 324
..... Use of the Perforator, 338
..... Maternal Signs of the Death of the Fœtus, 341
..... Cæsarian Operation, 360
..... Recto-Vaginal Tumours, 440
..... Spontaneous Inversion of the Uterus, 448
..... the Treatment of Lingering Parturition, 458
..... Retroversion of the Uterus, 681
..... the Growth of the Fœtus, 1025
"Mercury", Etymology of, 256
"Mesenteric", Etymology of, 885
"Mesocolic Plexus", Etymology of, 50
"Mesometric", Etymology of, 907
"Metastatically", Etymology of, 561
"Metritis", Etymology of, 538
"Micturition", Etymology of, 98
Midwifery, Definition of, 1
....., Dr. Blundell's Division of, 1
"Miliary", Etymology of, 605
Miliary Fever, 605
....., Causes of, 606
....., Symptoms of, 605
....., Treatment of, 606
Milk, Analysis of, 998
Milk-Fever, 605
Millard's Dissection of the Gravid Uterus, 992
Milton, on Adam's Transgression, 936
Mineral Waters, List of, 655
"Minims", Etymology of, 235
Mixed Cases, 577, 590
Moir, Dr., on the Pulsation of the Fœtal Heart, 161
Mons Veneris, 51
"Monster", Etymology of, 415
Monsters with Redundancy, 1013
....., Misshapen, 1014
....., Classification of, 1012
..... with Deficiency, 1012
....., Dr. Fletcher, on, 1015
Monstrosity, Causes of, 1014
....., Influence of Imagination on, 1015
Montgomery, Dr., on the Signs of Delivery, 502
..... State of the Female System during Pregnancy, 1019
..... Salivation in Pregnancy, 1043
..... the Abdominal Enlargement in Pregnancy, 1046
..... Areolar Sign in Pregnancy, 1048
..... Follicles, 1049
..... State of the Urine in Pregnancy, 1055
..... Beccaria's Test, 1055
..... Varicose Veins in Pregnancy, 1054
..... the State of the Umbilicus 1058
..... Signs of Pregnancy after Death, 1067
..... Structure of the Ovary, 1074
..... Corpus Luteum, 1075
..... Cervix Uteri in Pregnancy, 1091
..... Period of Human Gestation, 1093
..... Premature Births, 1096
..... Protracted Gestation, 1100
Moral Influence of Coition, 1031
Morgagni's "Arbor Vitæ", 45
"Mortification", Etymology of, 284
Mucous Membrane of the Uterus, Secretion from, 635
..... Surfaces, Adhesion of, 713
"Mucus", Etymology of, 113
"Muscular", Etymology of, 116
Muscularity of the Uterus, Dr. Fletcher on, 959

N.

Naegele, Dr., on Sounds produced by the Motion of the Fœtus, 1044
..... Abdominal Auscultation, 1061
Narcotics, List of, 297
Natural Parturition, Stages of, 93
Nature's Tourniquet, 125
"Nates", Etymology of, 139
"Nausea", Etymology of, 528
Needham's Theory of Conception, 904

"Nematoidea," Etymology of, 620
Newnham, on Extirpation of the Uterus by Ligature, 152
..... the Treatment of Inversion of the Uterus, 445
..... Plurality of Children, 470
Nipple, Excoriations of the, 618
"Nosological", Etymology of, 508
Nosology, Synoptical Chart of, 662
"Nostalgia", Etymology of, 649
Nourishment in Floodings, 180
..... in Copious Floodings, 181
..... in Floodings with Asphyxia, 193
..... of the Fœtus, Dr. Fletcher on the, 968
Nursing, Circumstances disqualifying for, 619
"Nymphæ", Etymology of, 52
Nymphæ, or Labia Minora, 52
....., Enlargement of the, 899
"Nymphomania", Etymology of, 893

O.

Obliteration of the Sexual Organs, Cases of, 929
Obstetric Moloch, 118
..... Violence, Danger of, in Turning, 162
..... Instruments, Dr. Merriman on, 324
"Obturator Foramen" Etymology of, 8
Obturator Foramen, 8
..... Ligaments, 8
..... Internus, 49
"Obstetrician", Etymology of, 7
"Occiput", Etymology of, 22
"Œdematous", Etymology of, 435
"Œsophagus", Etymology of, 112
"Omentum", Etymology of, 507
"Omphalo", Etymology of, 984
"Opium", Etymology of, 165
Opium in Floodings with Asphyxia, 193
Oracle of Apollo, 979
Organizing Power possessed by Living Parts, 1007
Orme's Straight Short Forceps, 316
Orme, on Rigidity of the Membranes, 392
..... Desquamation of the Cuticle in the Fœtus, 341
"Os Coccygis" Etymology of, 6
"Os Femoris", Etymology of, 48
Os Innominatum, 7
.... Internum, 45
"Os Pubis", Etymology of, 8
Os Tincæ, 45
.... Uteri, 45
....., State of the, in the First Stage of Labour, 95
....., Varieties in the Form of the, 727
Osborn's Case of Extreme Distortion, 370
"Oscula", Etymology of, 620
"Ossa Innominata", Etymology of, 7
"Ossa Triquetra", Etymology of, 59
"Osteotomist", Etymology of, 384
Osteotomist, The, or Bone-Pliers, 384
Ova, Plurality of, 249
Ovaria, Structure of the, 46
Ovarian Dropsy, 814
....., Characters of, 814
Ovarian Dropsy, Morbid Anatomy of, 814
....., Symptoms of, 816
....., Palliative Treatment of, 817
....., Radical Cure of, 820
....., Diagnosis before the Operation for, 822
....., Spontaneous Cure of, 825
....., Concluding Remarks on, 826
Ovarian Changes following Impregnation, 1002
Ovaries, Absence of the, 636
....., Scirrhus of the, 809
....., Form and Surface of the, 1068
....., Internal Structure of the, 1068
....., Corpuscula Serosa of the, 1069
....., Corpuscula Livida of the, 1069
....., Corpuscula Lutea of the, 1070, 1071
....., Corpora Lutea of the, 1070
....., Wrinkled Cicatrix on the, 1071
....., Fabiform Bodies of the, 1070
....., Structure of the, 1074
Ovary, Laceration of the. Three Cases of, 152
"Oviducts", Etymology of, 1002
"Oviform", Etymology of, 701
"Oviparous", Etymology of, 905
"Ovum", Etymology of, 169
Ovum, Manner of Expulsion of the, 248
....., Physiology of the Human, 995
....., Maternal Circulation in the, 995
....., Fœtal Circulation in the, 995
Owen, Mr., on the Connexion of the Uterus and the Placenta, 983
"Oxygen", Etymology of, 365
"Oxyuris", Etymology of, 620
Oziander's Operation for Extirpation of the Uterus, 785

P.

Pains, the, 97
"Panada", Etymology of, 571
"Papillæ", Etymology of, 641
"Paracentesis", Etymology of, 353
"Paralytic", Etymology of, 183
"Paraphrenitis", Etymology of, 579
"Parenchyma", Etymology of, 477
"Parietal", Etymology of, 40
Parke, Mr., on Recto-Vaginal Tumours, 440
"Paroxysms", Etymology of, 617
Parturition, Introduction to, 85
....., Classification of, 85
...., Necessity of Prompt Attendance in, 89
....., Natural, 93
....., Laborious, Accidents occurring during, 279
....., Effects of, 283
....., Employment of Instruments in, 295
....., Unfavourable Position of the Head in, 379
....., Deficiency of Room in the Pelvic Cavities in, 382
....., from Rigidity, 388
....., from Various Causes, 392
Paternity, Questions relating to, 1109

"Pathognomonic", Etymology of, 512
"Pathological", Etymology of, 509
"Patulous" Etymology of, 174
Peculiarities of the Fœtus, Dr. Fletcher on the, 972
Peleus and Thespis, 1016
Pelvic Bones, Vernacular Terms for the, 3
Pelvic Joints, Relaxation of the, 19
....., Mr. Mangles on, 19
..... Harvey on, 20
Pelvic Viscera, 44
....., Descent of the, 688
....., Different Degrees of Descent of the, 688
....., Principal Causes of Descent of the, 688
....., Remote Causes of Descent of the, 690
....., Peritoneal Covering of the, 50
..... Distortions, Dr. M. Hall on, 29
....., Dr. Burns on, 29
....., Mr. Barlow's Case of, 29
....., Dr. Mackintosh on, 30
Pelvimeter, Coutouli's, 38
"Pelvis", Etymology of, 6
Pelvis, Bones of the, 6
....., Ligaments of the, 6, 8
....., Articulations of the, 9
....., Obstetric Properties of the, 20
....., Standard, 21
....., False, 21
....., True, 21
....., Brim of the, 22
....., Inferior Aperture of the, 23
....., Cavity of the, 25
....., Incurvation of the, 27
....., Distorted, 28
....., Varieties of, 28
....., Treatment of, 29
....., Contracted, 31
....., Contractions of the True, 31
....., Causes of Contracted, 33
....., Small, 34
....., Large, 35
....., Means of ascertaining the Kinds of, 37
....., Male and Female, Comparison between, 41
....., Bearing of, on the Spine 41
....., Internal Muscles of the, 48
....., Cellular Web of the, 50
....., Viscera, Peritoneal Covering of the, 50
....., Soft Parts Lining the, 48
....., Blood-Vessels of the, 49
....., Absorbents and Glands of the, 50
..... Nerves of the, 50
"Peptic", Etymology of, 647
"Perforator", Etymology of, 143
"Pericardium", Etymology of, 208
"Perinæum", Etymology of, 53
Perinæum, The, 53
....., Protection of the, in Parturition, 166
....., Lacerations of the, 610
....., Different Degrees of, 610
Perinæum, Lacerations of the, General Treatment of, 610
....., Chronic Rents of the, 612
"Peripneumonies", Etymology of, 566
"Peristaltic", Etymology of, 625
"Peritoneum", Etymology of, 50
"Pessary", Etymology of, 446
Pessary, Varieties of the, 708
...., Remarks on the Use of the, 712
"Petechial", Etymology of, 541
"Phagedenic", Etymology of, 616
Phamacopœial Change of Names, 516
Philosophers' Beards, Horace on, 515
Phineas's Wife, Death of, in Childbed, 3
"Phlebitis", Etymology of, 176
"Phlegmasia Dolens", Etymology of, 485
Phlegmasia Dolens, 558
....., Acute, 559
....., Chronic, 562
"Phlegmon", Etymology of, 614
"Phlogistic" Etymology of, 172
"Phrenitic", Etymology of, 292
Phrenitis, 577
....., Problematical Occurrence of, 585
Phrenological Organs, List of, 557
"Phthisical", Etymology of, 619
Physiological Researches, Extract from, on Abdominal Surgery, 151
"Physiology", Etymology of, 176
"Pica", Etymology of, 649
Piles, 872
"Pinguicola," Etymology of, 620
"Placebo", Etymology of, 177
"Placenta", Etymology of, 45
Placenta, Birth and Management of the, 115
....., Injudicious Removal of the, 118
....., Mode of Removing the, 119
....., Necessary Cautions in the Removal of the, 122
....., Retention of the, 397
....., Retained, Effects of, 397
..... Treatment of, 400
....., Causes of, 404
....., Structure of the, 973, 976, 985
....., Ruminating, 974
....., Zoniform, 974
..... Two Parts of the, 975
....., Plurality of the, 976
....., Position of the, 976
....., Formation of the, 984
....., Functions of the, 998
..... Nourishment of the Fœtus by the, 998
....., Pulmonary Function, the, 999
"Plethoric", Etymology of, 179
"Plexus Retiformis", Etymology of, 52
Plexus Retiformis, 52
Pliny's Record of the Cæsarian Operation, 353
Plugging of the Vagina in Copious Floodings, 184
..... not always Necessary in Asphyxia, 193
Plurality of Children, Cases of, 466, 468
Pointer's Balloon-Pessary, 710
"Pollen", Etymology of, 905
"Polypus", Etymology of, 272
Polypus of the Uterus, Characters of, 792

Polypus of the Uterus, Symptoms of, 793
....., Diagnosis of, 794, 803
....., Treatment of, 794
....., Prognosis of, 800
....., Varieties of, 800
" Polystoma" Etymology of, 620
" Portæ", Etymology of, 995
" Præcordia", Etymology of, 641
Pregnancy, Extra-Uterine, 477
..... of Abraham's Wife, 668
..... Zaccharia's Wife, 668
....., Physiology, Signs, and Diseases of, 901
....., State of the Female System during, 1019
....., Increased Action of the Uterine System in, 1019
....., Changes in the Uterine System in, 1020
....., Effects of, on the Bladder, 1021
..... Nervous System, 1021
..... Vascular System, 1022
....., Obliquity of the Uterus in, 1022
....., Tendency to Plethora in, 1024
....., Dangers of Repletion in, 1025
....., Effects of Mental Emotions in, 1026
....., Changes induced in the Moral Temperament by, 1031
....., Disorder of the Intellect in, 1032
....., Unusual Susceptibility of the System in, 1034
....., Simulation of Disease in, 1036
....., Laws and Customs relating to, 1037
....., Signs of, 1038
....., Laws of various Countries on, 1039
....., Common Signs of, during Life, 1041
....., Classification of the Signs of, 1042
....., Bearing-Down in, 1042
....., Vesical Irritation in, 1042
....., Œdema of the Lower Limbs in, 1042
....., Nausea and Vomiting in, 1042
....., Salivation in, 1043
....., Movements of the Fœtus in, 1043
....., Enlargement of the Abdomen in, 1045
....., Mammary Symptoms in, 1046
....., Appearance of the Areola in, 1048
....., State of the Nipple in, 1049
....., Suspension of the Menses in, 1052
....., Anomalous Signs of, 1053
....., Expression of the Countenance in, 1053
....., Capricious Taste in, 1054
....., Emaciation in, 1054
....., Change of Temper in, 1054
....., Frightful Dreams in, 1054
....., Various Pains in, 1054
....., Varicose Veins in, 1054
....., Beccaria's Test in, 1055
....., Sizy Blood in, 1055
....., State of the Urine in, 1055
....., Failure of the Milk in, 1057
....., Manual Examination in, 1057
Pregnancy, Examination in the Latter Periods of, 1057
....., External Examination in, 1057
....., State of the Umbilicus in, 1058
....., Internal Examination in, 1058
....., Examination in the Earlier Months, 1060
....., Mode of Examination in, 1060
....., Auscultation in, 1061
....., Abdominal Auscultation in, 1062
....., Audible Movements of the Fœtus in, 1063
....., Pulsation of the Uterine Arteries in, 1063
....., Pulsation of the Fœtal Heart in, 1063
....., Diagnosis of Compound, 1064
....., Signs after Death, 1067
....., Medico-Legal Questions connected with, 1079
....., Diseases resembling, 1083
....., Irregular Menstruation simulating, 1083
....., Hæmorrhage simulating, 1083
....., Torpidity of the Uterus simulating, 1083
....., Flatulence simulating, 1083
....., Ovarian Tumours simulating, 1084
....., Dropsy confounded with, 1084
....., Tympanites Uteri simulating, 1086
....., Dropsy of the Uterus simulating, 1087
....., Friable Matter simulating, 1087
....., Fleshy Substances simulating, 1088
....., Moles simulating, 1088
....., Hydatids simulating, 1088
....., Hydatids in the Ovum simulating, 1089
....., Progress and Duration of, 1090
....., Indications of, afforded by Manual Examination, 1090
....., Variations in the length of the Cervix Uteri, 1091
....., Position of the Fundus in, 1093
....., The Reckoning in, 1093
....., Period of Human, 1093
....., Natural Period of, 1095
....., Shortest Period of, 1096
....., Protracted Term of, 1100
....., Diseases of, 1112
....., Nausea and Diarrhœa in, 1112
..... Treatment of, 1113
....., Effusions of Water during, 1117
..... Treatment of, 1118
....., Syphilis in connection with, 1120
....., Impropriety of Mercury in, 1120
....., Dyspepsia in, 1124
....., Heartburn in, 1124
....., Fastidious Taste in, 1125
....., Constipation in, 1125
....., Prolapsus Uteri in, 1126
....., Vesical Affections in, 1126
....., Jaundice in, 1127
....., Dyspnœa in, 1127
....., Convulsions in, 1128

Pregnancy, Odontal [illegible] in 1128
....., Salivation in, 1129
....., Mastodynia in, 1129
....., Dropsy of the Ovum in, 1130
....., Rigidity of the Abdomen in, 1130
....., Laxity of the Abdomen in, 1130
....., False Pains in, 1131
....., Fœtal Turbulency in, 1131
Premature Birth, 1096
Presentation, Cephalic, 62
....., Vertex, 62
....., Face, 67, 69
....., Forehead, 68, 69
..... of an Arm with the Head, 69
....., Crural, 69
....., Breech, 73
....., Transverse, 78
....., Knowledge of, 80
....., Foot or Crural, 132
....., Mode of giving Assistance in Crural, 134
....., Breech, 137
....., Manual Assistance in Breech, 139
....., Errors in the Management of Breech, 140
....., Mixed, 141
....., Preternatural, 141
....., Extraordinary Difficulties in, 141
....., Abstraction of the Head in, 143
....., Transverse, 148
....., Spontaneous Evolution in Transverse, 149
....., Brachial, 148
....., Ordinary Mode of Delivery in Transverse, 150
....., Cæsarean Section in, 151
....., Embryotomy in, 152
..... of the Funis, 154
Preston, Mr., on Ligatures in Vesical Perforations, 869
Pretended Delivery, 495
Preternatural Labour, Dr. Fletcher on, 866
"Probe", Etymology of, 233
"Procidentia", Etymology of, 689
Procidentia Uteri, 697
....., Causes of, 697
....., Frequent after Delivery, 697
....., Symptoms of, 698
....., Diagnosis of, 700
....., Treatment of, 701
Profluvium Vaginale, 832
....., Cause of, 835
"Prognostic", Etymology of, 197
"Prolapsus", Etymology of, 35
Prolapsus Uteri, 703
..... Symptoms of, 703
....., Diagnosis of, 703
....., Treatment of, 703
..... Ani, 878
....., Causes of, 878
....., Nature of, 878
....., Palliative Treatment of, 878
Prolapsus Ani, Treatment of the Severer Forms of, 879
"Pronation", Etymology of, 158
"Pruritis", Etymology of, 882
"Pseudo", Etymology of, 735
"Psoas", Etymology of, 48
Psoas Magnus, 48
..... Parvus, 48
Puberty in the Male, Changes at, 901
..... Female, Changes at, 901
Pubic Symphysis, 12
....., Inflammation of the, 13
....., Suppuration of the, 13
....., Collection of Pus in the, 13
....., Chronic Inflammation of the, 14
....., Disorganization of the, 14
....., Relaxation of the, 16
Pubes, Arch of the, 26
Pudendal Fissure, 51
"Pudic", Etymology of, 54
"Puerperal", Etymology of, 285
Puerperal Diseases in General, 503
..... Fever, Pathology of, 507
....., Symptoms of, 510
....., Treatment of, by Venesection, Calomel, and Opium, 515
..... Various Plans Recommended by other Authors, 525
....., Varieties and Causes of, 531
..... of, 546
...., Causes of, 550
....., Epidemic Nature of, 550
....., Contagious Nature of, 551
....., Prophylactic Treatment of, 552
....., Morbid Appearances in, 553
....., Nature of, 553
....., Diagnosis of, 553
..... Mania, 577
....., Symptoms of, 578
....., Prognosis of, 578
....., Varieties of, 579
....., Cases of, 579
....., Duration of, 580
....., Liability to Recurrence of, 580
....., Causes of, 581
....., Pathology of, 582
....., Treatment of, 586
..... Metritis, 536
..... Peritonitis, 532
..... State, After-Management of the, 482
"Pulmonary", Etymology of, 112
Pulsation of the Fœtal Heart, 161
Purcell's Case of Double Uterus, 925
Purgatives, List of, 286
....., Dr. Fletcher on, 693
"Purpura", Etymology of, 643
"Putrescence", Etymology of, 141, 538
"Pylorus", Etymology of, 215
"Pyrethrum", Etymology of, 652
"Pyrexia", Etymology of, 99, 508
"Pyriformis", Etymology of, 49
Pyriformis, The, 49
"Pyrolignous", Etymology of, 799
Pythagoras's Theory of Conception, 902

Q.

Quickening, 1055
....., Dr. Fletcher on, 964
" Quinine", Etymology of, 186
" Quotidian", Etymology of, 591

R.

Rachel, Death of, in Childbed, 2
" Radial", Etymology of, 232
Rape, 934
....., Signs of, 939
....., Definition of, 939
....., Morbid Appearances resembling, 940
....., Investigation of, 942
....., Signs to be taken into account in the, 942
....., Laws of Various Countries concerning, 947
....., Medico-Legal Questions connected with, 953.
" Raphe", Etymology of, 47
" Reckoning", The, 1093
Recto-Vaginal Tumours, 685
....., Symptoms of, 686
....., Treatment of, 686
" Rectum", Etymology of, 48
Rectum, Structure of the, 48
....., Diseases of the, 872
....., Fissure of the, Inner Membrane of the, 881
....., Symptoms of, 881
....., Diagnosis of, 881
....., Treatment of, 881
....., Carcinoma of the, 883
....., Symptoms of, 883
....., Diagnosis of, 884
....., Progress of, 884
....., General Treatment of, 885
....., Ulcerated Carcinoma of the, 888
....., Symptoms of, 888
....., Necessity of Early Attention to, 889
....., Progress of, 889
....., Diagnosis of, 890
....., Effects of, 890
....., Treatment of, 891
" Refrigerant", Etymology of, 177
Refrigerants in Floodings, 177
....., List of, 291
Refrigerant Power of Ice, 426
Relaxation of the Uterus, 704
....., Symptoms of, 704
....., Diagnosis of, 704
....., Treatment of, 704
Remittent Fever, 600
....., Causes of, 601
Remittent Fever, Symptoms of, 602
....., Diagnosis of, 603
....., Treatment of, 603
Remittent Fever, coexistent with Local Affections, 604
Removal of the Child in Copious Floodings, 183
" Resilition", Etymology of, 343
" Respiration", Etymology of, 112
Rest in Copious Floodings, 181
" Resuscitation", Etymology of, 112
Retention of the Placenta, Inspiration in, 121
" Retroversion", Etymology of, 35
Retroversio Uteri, 671
....., Symptoms of, 671
....., Causes of, 673
....., Varieties of, 674
....., Diagnosis of, 675
....., Treatment of, 677
....., Prognosis of, 682
" Rhomboidal", Etymology of, 59
" Rhubarb", Etymology of, 177
" Rickets", Etymology of, 33
Rigby, Dr., on the Discharge of the Liquor Amnii, 186
....., Manual Delivery, 200
....., Malposition of the Placenta, 258
....., the Discharge of the Liquor Amnii in Flooding, 266
Rigidity of the Membranes, Dr. Orme on, 392
Rigors during Parturition, 99
" Rima Glottidis", Etymology of, 112.
Ritzius's Report of Cases of Malignant Disorganization of the Uterus, 160
Rogers, Dr., on Correct Nomenclature, 516
..... Dr. Blundell's Style, 1132
..... Refrigeration by Ice, 426
" Rosemary", Etymology of, 603
Rousset's Treatise on the Cæsarian Operation, 353
Rubefaciants, List of, 429
Rudiments of the Fœtus, Descent of the, 1003
" Ruga", Etymology of, 46
Rump, Sinking of the, in Cows, 19
Rump-Bone, The, 8
Rupture of the Uterus, Cases of, 452, 455
Ruysch Dr., on the Removal of the Placenta, 118
Ryan, Dr., on the Number of Ova, 46
..... Classification of Labours, 87
..... Use of Instruments, 324
..... Blunt Hooks, 328
..... the Necessity of Craniotomy, 336
..... Cæsarian Operation, 360
..... Retention of the Placenta, 403
..... Extra-Uterine Pregnancy, 479
..... Gastrotomy in Extra-Uterine Pregnancy, 480
..... Mercury in Puerperal Fever, 529
..... Superfœtation, 924

S.

Sacro-Coccygeal Symphysis, 9
....., Anchylosis of the, 10

Sacro-Coccygeal Symphysis, Disruption of the, 11
....., Inflammation of, the, 11
....., Suppuration of the, 12
Sacro-Iliac Synchondrosis, 13
....., Inflammation of the, 13
....., Relaxation of the, 19
Sacro-Ischiatic Ligaments, 9
" Sacrum", Etymology of, 7
Sacrum, 7
" Sagittal", Etymology of, 298
" Sanative", Etymology of, 231
" Sanguification", Etymology of, 215
" Saponaceous", Etymology of, 653
Sawing-Pains, 94, 97
" Scalpel", Etymology of, 232
" Scalpriform", Etymology of, 328
"Scarlatina", Etymology of, 605
" Sciatic", Etymology of, 50
" Scirrhosity", Etymology of, 215
Scirrhus, Dr. Fletcher on, 689
..... of the Uterus 727
....., Nature and Varieties of, 727
....., Definition of, 727
....., Varieties of, 730
....., Diagnosis of Indolent, 732
....., Treatment of, 734
....., Prognosis of, 735
....., Necessity of Manual Examination in, 736
.... Ovaries, 809
....., Nature of, 809
....., Morbid Anatomy of, 810
....., Characters of, 810
....., Varieties of, 810
....., Prognosis of, 813
....., Treatment of, 813
Scott's Case of Lacerated Uterus and Vagina, 151
Screaming, Physiology of, 699
" Scybalous", Etymology of, 568
" Sebaceous", Etymology of, 829
" Secale Cornutum", Etymology of, 185
Secret Hæmorrhage, Danger of, 204
Secretion of Air, Dr. Fletcher on the, 699
..... during Utero-Gestation, 970
" Secundines", Etymology of, 85
Secundines, Birth and Management of the, 115
Semen transmitted through the Absorbent System, 917
" Seminal", Etymology of, 665
" Senna", Etymology of, 186
Senna, Employment of, in Lingering Parturition, 458
Sennart's Case of Plurality of Children, 466
Sennertus on Fluor Mulichris, 836
" Serrated", Etymology of, 393
" Serum", Etymology of, 634
" Sessile", Etymology of, 105
Sexual Intercourse, Abstinence from, 31
..... Sensibility, Extreme, 993
Sexual Connexion, Unfruitfulness of a First, 954
Shaking a Parturient Woman in a Blanket, 155
Shakspere on Spermaceti, 487
Shear-Bone, The, 8
Shechem, Destruction of, 927
Shortness of the Umbilical Cord, Dr. Haighton on, 393
Show, The, 94
Shrivelling of the Umbilical Cord, 967
Sigault's Operation, 376
" Sigmoid", Etymology of, 48
Signs of Delivery, Dr. Montgomery on the, 502
Simon, M., on the Cæsarian Operation, 354
Sims's Case of Rupture of the Uterus, 455
" Sinapism", Etymology of, 561
Sinking of the Rump in Cows, 19
Sirens, The, 465
Sitting-Bone, The, 8
Snoring, Physiology of, 699
Sobbing, Physiology of, 699
Soft Parts, Effects of the Passage of the Child's Head on the, 126
....., Dilatation of the, during Parturition, 126
....., Lacerations and Contusions of the, 126
....., Inflammations and Suppurations of the, 127
....., Sloughings of the, 128
South's Case of Double Uterus, 925
" Sparks from the Wheel of a Man wot Grinds", 292
"Spasms", Etymology of, 167
Spasms of the Abdominal Viscera, 603
Speaking, Physiology of, 699
"Spermaceti", Etymology of, 487
Spermaceti, Shakspere on, 487
" Spermatic", Etymology of, 174
Spermatic Vein, Case of Inflammation of the, 564
" Sphincter", Etymology of, 48
" Sphacelus", Etymology of, 537
" Spinous Process", Etymology of, 8
Spleen, Removal of the, Two Cases of, 152
Spontaneous Evolution, Case of, 150
" Sporadic", Etymology of, 549
Spongy Chorion, The, 961
Statue of Achilles in Hyde Park, 923
"Stellated", Etymology of, 638
Sterility, Incurable Causes of, 933
....., Curable Causes of, 933
....., Constitutional, 933
" Stertor", Etymology of, 574
Stewart, Mr., on the Use of Opium in Copious Floodings, 194
" Stilet", Etymology of, 213
Stimulants in Copious Floodings, 182
..... Floodings with Asphyxia, 195
" Stimuli", Etymology of, 296
Stimuli, List of, 290
" Stolid", Etymology of, 791
" Stramonium", Etymology of, 788
" Strangury", Etymology of, 655
" Strongylus", Etymology of, 620
" Strumous", Etymology of, 719

" Subcompressa", Etymology of, 620
" Succussion", Etymology of, 185
" Sulphuric", Etymology of, 177
" Superficialibus", Etymology of, 620
" Supination", Etymology of, 158
" Suppository", Etymology of, 665
" Surgery", Etymology of, 246
Sydenham, on Fluor Muliebris, 833
..... Leucorrhœa, 833
..... Hæmorrhoids, 874
..... the Venereal Disease, 874
" Sympathy", Etymology of, 145
" Syphilis", Etymology of, 529
" Symphysis", Etymology of, 12
Symphysis Pubis, Section of the, 376
Symphysotomy, 376
" Synchondrosis", Etymology of, 18
" Syncope", Etymology of, 274
Synoptical Chart of Nosology, 662
" Syringe", Etymology of, 198

T.

Table of Labours, 86
..... Purgatives, 236
..... Stimuli, 290
..... Refrigerants, 291
..... Diaphoretics, 292
..... Narcotics, 297
..... Emollients, 390
..... Demulcents, 390
..... Emetics, 401
..... Rubefacients, 429
..... Escharotics, 429
..... Epispastics, 429
..... Urinary Calculi, 436
..... Astringents, 446
..... Dimensions of the Uterus, 497
..... Tonics, 525
..... Intestinal Worms, 620
..... Emmenagogues, 655
..... Mineral Waters, 655
..... Alkalies, 736
..... Diuretics, 817
..... Acids, 589
" Tænia", Etymology of, 620
Tamar, Death of, in Childbed, 2
Temple of Jupiter, 979
Tessier's Observations on Protracted Pregnancy, 1102
Testes Muliebres, The, 1001
Thackrah on the Cessation of Hæmorrhage, 171
" Thermometer", Etymology of, 114
" Thorax", Etymology of, 70
" Tibial", Etymology of, 232
Tiedemann's Cases of Double Uterus, 925
..... Remarks on the Nerves, 1019
" Tincture", Etymology of, 165
Tomkins's Case of Resuscitation of the Child after the Death of the Mother, 473
Tonics, List of, 525
Tower in Siloam, 980
" Tourniquet", Etymology of, 125
" Trachea", Etymology of, 279
" Tractor", Etymology of, 286
Tractor or Lever, 308
" Transfusion", Etymology of, 175
Transfusion in Floodings with Asphyxia, 197
....., Origin of, 209
....., Cases in which it may be tried, 211
....., Kinds of Blood that are Proper, when performed on the Human Body, 217
....., Blood in, Received into a Cup, and Passed through a Syringe, 225
..... in the Human Subject, 231
....., Dangers attendant on, 239
....., Cases of, 244
Travers, Mr., on the Treatment of Perforation of the Bladder by Actual Cautery, 869
" Trematoda", Etymology of, 620
" Trichuris", Etymology of, 620
" Tricocephalus", Etymology of, 620
Tristram Shandy, 979
" Trocar", Etymology of, 369
" Trochanter", Etymology of, 48
" Tuberous", Etymology of, 752
" Tubule", Etymology of, 211
" Tumefaction", Etymology of, 347
Tumours on the Sacro-Sciatic Ligaments, Two Cases of, 437
" Tunic", Etymology of, 96
Tunica Erythroides, The, 963
Turning, Operation of, described by Celsus, 155
....., The Operation of, 155
....., Different Indications for, 155
....., Position of the Patient in, 157
....., Position of the Operator in, 157
....., Ascertain the Position of the Feet in, 158
....., Errors to be Avoided in, 162
...., Easy, Cases of, 159
....., Steps of the Operation of, 159
....., More difficult Cases of, 163
. ..., Impracticable, 169
Turpentine in Floodings, 175
.... in Copious Floodings, 181
" Tympanitic", Etymology of, 347
" Typhus", Etymology of, 285

U.

" Ulnar", Etymology of, 232
Umbilical Cord, The, 967
... ., Shrivelling of the, 967
....., Average Length of the, 977
...., Risk incurred from Extreme Length of the, 977
....., Blood-Vessels of the, 977
....., Absence of Nerves in the, 978
...., Simple Structure of the, 978
....., Knots on the, 978
....., Origin and Insertion of the, 979
" Uniparous", Etymology of, 923
" Urachus", Etymology of, 978
" Ureters" Etymology of, 47
Ureters, Structure of the, 47
" Urethra", Etymology of, 47
Urethra, Structure of the, 47

Urinary Calculi, List of, 436
Urine, Incapability of Retaining the, 864
....., Causes of, 864
....., Palliative Treatment of, 867
....., Radical Cure of, 868
....., Incontinence of, from Posterior Laceration, 870
....., Retention of, 854
....., Diagnosis of, 856
....., Causes of, 856
....., Suppressed Secretion of, 858
Uterine Appendages, Inflammation of the, 535
..... Phlebitis, 540
..... Absorbents, Inflammation of the, 545
..... Structures, Development of the, in Gestation, 957
..... Membranes, Dr. Fletcher on the, 964
..... Surface of the Placenta, Appearance of the, 967
..... Changes following Impregnation, 1004
" Uterus", Etymology of, 23
Uterus, Structure of the, 44
....., Fundus of the, 44
....., Cervix of the, 44
....., Body of the, 44
....., Muscularity of the, 45
...., Cavity of the, 45
....., Lacunæ of the, 45
....., Round Ligaments of the, 46
....., Nerves of the, 50
..... after Delivery, State of the, 116
....., Five Cases of Laceration of the, 152
....., Inversion of the, 440
....., Rupture of the, 451
....., Case of Rupture of the, 452
....., Dimensions of the, 497
....., Absence of the, 637
....., Displacement of the, 671
....., Descent of the, 697
..... Varieties of, 697
....., Prolapsus of the, 703
....., Procidentia of the, 697
....., Relaxation of the, 704
....., Prolapsus of the, after Delivery, 706
....., in the LatterMonths. 706
..... Earlier Months, 706
....., Treatment of, 707
....., Unimpregnated, Inflammation of the, 714
....., Causes of, 715
..... Symptoms of, 715
..... Treatment of, 715
....., Softening of the Substance of the, 716
....., Chronic Inflammation of the, 716
....., Treatment of 717
....., Irritable, 719
....., Nature of, 719
....., Symptoms of, 720
....., Causes of, 721
Uterus, Irritable, Prognosis of, 722
....., Pathology of, 722
....., Treatment of, 723
...., Scirrhus of the, 727
....., Malignant Disorganization of the, 739
....., Excision of the 752
...., in what Cases Admissible, 762
....., Cautions in, 762
....., Difficulties and Dangers attendant on, 763
...., Mode of Operating in, 764
....., Illustrative Cases of, 765
..... Lower-Half of the, 784
....., Lisfranc's Operation on the, 785
....., Oziander and Dupuytren's Operation on the, 785
....., Polypus of the, 792
....., Inversion of the, 906
....., Changes in the, Effected by Impregnation, 955
....., Situation of the, during Pregnancy, 955
...., Fluctuation of the, not generally Perceptible, 956
....., Substance of the, probably Muscular, 958
....., Thickness of the Parietes of the, 959
..... during Pregnancy, Changes produced in the, 960
....., Situation of the, 962
....., Position of the, at Different Periods, 964
....., Internal Surface of the, 966

V.

" Vagina", Etymology of, 52
Vagina, Structure of the, 46
....., Situation of the, 47
....., Mucous Membrane of the, 46
....., Follicles of the, 47
....., Inferior Opening of the, 46
....., Orifice of the, 52
....., Sphincter of the, 52
....., or Uterus, Obstructed Orifice of the, 637
....., Impervious, 639
....., Diagnosis of, 639
....., Descent of the, 690
...., Causes of, 690
....., Symptoms of, 692
....., Diagnosis of, 692
....., Treatment of, 692
....., Inflammation of the, 848
....., Causes of, 848
....., Symptoms of, 848
....., Diagnosis of, 849
....., Progress of, 849
.. .., Contagious Character of, 850
...., Treatment of, 850
....., Questionable Occurrence of Secondary Symptoms after, 851
....., Abscess of the, 851
...., Symptoms of, 852

Vagina, Abscess of the, Causes of, 852
....., Prognosis of, 853
....., Extreme Shortness of the, 931
..... Narrowness of the, 932
....., Obstructions at the Orifice of the, 932
....., Narrowness of the, 937
Vaginal Tumours, Dr. Hemming on, 440
..... Secretions, Nature of, 830
" Valerian", Etymology of, 487
" Varicose", Etymology of, 840
Villermé, M., on Periodical Impregnation, 924
Velpeau's Classification of Labours, 87
Venereal Disease, Sydenham on the, 874
" Venesection", Etymology of, 164
Venesection in Floodings, 178
" Vermicular", Etymology of, 631
" Verrucous", Etymology of, 897
" Vertigo", Etymology of, 533
" Vesicle", Etymology of, 1073
Vesicula Umbilicalis, The, 964
Vestibulum, 52
" Viability", Etymology of, 1097
Virgin Corpus Luteum, 1002
Virginity, Signs of, 935
....., Less Important Signs of, 938
....., Subordinate Signs of, 938
" Viscous", Etymology of, 629
Vomitings during Parturition, 96
" Vulgaris", Etymology of, 620
" Vulva", Etymology of, 46,
Vulva, The, 46
....., Pruritus of the, 891
....., Symptoms of, 891
....., Causes of, 891
....., complicated with Pregnancy, 892
....., General Treatment of, 892
Vulva, Œdema of the, 896
....., Excrescence of the, 897

W.

Wall's Case of Retroversio Uteri, 672
Waller, Dr., on Transfusion, 244
..... the Fillet, 301
..... Spontaneous Inversion of the Uterus, 449
..... the Ergot of Rye in Lingering Parturition, 461
..... Nitrate of Silver in Leucorrhœa, 842
..... a Case of Double Uterus, 924
..... Auscultation in Pregnancy, 1044
Waters, Mineral, List of, 655
Weakness after Flooding, 207
Webber's Case of Extirpation of the Uterus, 363
..... Inversion of the Uterus, 446
Wellington, Statue to the Duke of, 923
Whispering, Physiology of, 699
Whitaker's Chemical Diagrams, 521
Williams's Case of Spontaneous Inversion of the Uterus, 449
Windsore's Cases of Extirpation of the Uterus, 445
Worms, Intestinal, Table of, 620

X.

" Xiphoid", Etymology of, 44

Z.

" Zoniform", Etymology of, 974
" Zoophyte", Etymology of, 1089

PRINTED BY WILLIAM WILCOCKSON, ROLLS BUILDINGS, FETTER LANE.





