An introduction to the practice of midwifery / by Thomas Denman.

Contributors

Denman, Thomas, 1733-1815.
Royal College of Physicians of Edinburgh

Publication/Creation

London : printed for E. Cox, 1824.

Persistent URL

https://wellcomecollection.org/works/pe2tacsx

Provider

Royal College of Physicians Edinburgh

License and attribution

This material has been provided by This material has been provided by the Royal College of Physicians of Edinburgh. The original may be consulted at the Royal College of Physicians of Edinburgh. where the originals may be consulted.
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

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



H6. 153

R18060

Digitized by the Internet Archive
in 2015

https://archive.org/details/b21916019

INTRODUCTION

TO THE

PRACTICE

OF

MIDWIFERY,

&c.

G. Woodfall, Printer,
Angel Court, Skinner Street, London.

72. R. 38.

AN

INTRODUCTION

Ex Libris Bibliotheca

TO THE

PRACTICE

College Regal. Medic. Edin

OF

MIDWIFERY.

BY THE LATE

THOMAS DENMAN, M.D.

LICENTIATE IN MIDWIFERY OF THE COLLEGE OF PHYSICIANS, LONDON; AND HONORARY MEMBER OF THE ROYAL MEDICAL SOCIETY AT EDINBURGH.

SIXTH EDITION,

WITH A BIOGRAPHICAL SKETCH OF THE AUTHOR.

LONDON:

PRINTED FOR E. COX AND SON, ST. THOMAS' STREET, SOUTHWARK; BURGESS AND HILL, GREAT WINDMILL STREET; AND JOHN COX, BERNERS STREET, OXFORD STREET. SOLD ALSO BY T. AND G. UNDERWOOD, FLEET STREET; SIMPKIN AND MARSHALL, STATIONERS' HALL COURT; W. STEWART, EDINBURGH; AND J. CAMERON, GLASGOW.

1824.

TO

THOMAS DENMAN, Esq. M.P.

COMMON SERJEANT,

&c. &c. &c.

SIR,

It was my intention to have presented this Volume to the Medical World, under the auspices of the Author's late Friend and Relative Dr. Matthew Baillie. The deeply lamented decease of that eminent individual, whose professional and private character will render his name dear to the present and succeeding ages, has, however, necessarily prevented the accomplishment of my wishes. In selecting a substitute, perhaps, I could not fix upon any one more suitable than yourself; as, though not connected with the Medical Profession, your name ranks deservedly high, and your talents are duly appreciated in our Courts of Law, as well as in other public stations which you are called upon to occupy, and where, I trust, your valuable and important services will be long rendered useful to the community.

It must be gratifying to you to witness the republication of the works of your honoured and revered father which, during his life time, passed through several editions, and have been the means of rendering essential benefit both to the medical practitioner and the student, by whose instrumentality also relief has been administered to numerous individuals in the HOUR OF NATURE'S EXTREME DIFFICULTY. It would be altogether superfluous to eulogize on the virtues of the author of the ensuing pages: they are too well known, and justly appreciated, ever to be forgotten. Of him it may be said, with the strictest propriety, in the language of an inspired penman,—"HE, BEING DEAD, YET SPEAKETH."

I am,

SIR,

Your most obedient servant,

THE PUBLISHER.

Southwark,
Nov. 1, 1823.

PREFACE

TO

THE SIXTH EDITION.

It may appear totally unnecessary to introduce a new edition of this Work to the medical world by any recommendatory remarks: it is only requisite to refer to the testimony of public teachers of the obstetric art, and other professional gentlemen, in order to prove the utility and superiority of the present treatise, as well to students, as to medical practitioners. The last edition having been corrected by the author himself, no alterations, have been made in this, except the correction of a few typographical errors. It is presumed, however, that this volume will be received with additional interest on account of the Biographical Sketch which is prefixed to it.

The early part of the memoir was written by the author himself, some years previous to his decease,

and completed by a member of the family, who kindly presented it to the publishers. Its insertion here is intended to accomplish two purposes :—First, to pay a respectful tribute to high professional talent, and departed excellence; and secondly, to stimulate young persons at the commencement of progression in their studies to form habits of industry, frugality and perseverance, as the only certain road to arrive at any degree of eminence in the practice of their profession, and to encourage them, that by these means every difficulty they meet with, may, if a blessing attend their exertions, be easily surmounted, and all adverse circumstances in early life, tend rather to facilitate, than obstruct, their future success in the world.

November 1, 1823.

ADVERTISEMENT

TO THE

FIFTH EDITION.

CONTRARY to the expectations of the Author, another edition of this work has been called for, and it has been thought expedient to compress it into one volume. Some corrections have of course been made, but not many additions, very few practical improvements having come to the knowledge of the Author since the publication of the former editions. It may be doubted whether any part of medicine has been more improved within the last sixty or seventy years than the practice of midwifery, by returning as it were from too much artifice to the simplicity of nature, and by relying on the general efficacy of the powers of the constitution in overcoming the difficulties which occur in child-birth. I must, however, allow, that some improvements have been made in the treatment of women in child-birth after delivery, and perhaps in fixing with more precision the time when the interposition or assistance of art was required.

I hope that at a future time some gentleman competent to the task, by his knowledge and experience will undertake to conduct this work, and preserve the labours of the Author.

THO. DENMAN.

November 1, 1815.

PREFACE.

BEFORE the first appearance of these papers in two volumes, the greater part of them had been separately printed, and of many of them there had been several impressions. By this mode of publication I have had an opportunity of correcting many errors, though, with all that I have been able to do for the amendment of the work in general, I am yet very sensible of its deficiencies and imperfections. But the reader will discover, that pains have been taken to render it less unworthy of his regard; and the hope of being useful to those who are engaged in the study or practice of midwifery, has converted the trouble into pleasure. Very much still remains to be done for the perfection of this branch of the profession, not by the speculative and presuming, who are ever misleading us; but by men of industrious attention and research, capable of reducing into order the observations they will have many opportunities of making, and of converting them to practical use and advantage. In medical writings, strict veracity is above all other things required; and to this I have constantly adhered, to the best of my knowledge and judgement.

Of the medical treatment of the diseases peculiar to women, and of the practice of midwifery in particular, we have no accounts from the earliest writers, but such as are very imperfect, and involved in works which the life of one man would scarcely be sufficient to glean; while after all his labour, though his curiosity might be gratified, he probably would not, at this period of time, gain for himself, or afford to others, much satisfaction. The cultivation of medicine at

large, especially of that branch of which we are about to treat, is of a recent date in our own country. This, to one glance of the eye, exhibits a view of the steps by which human beings, in a course of comparatively a few years, emerge from a state of absolute ignorance and barbarism, become civilized, and arrive at eminence in every art and science.

In what country medical knowledge was first cultivated, and reduced into scientific order, cannot now be traced; for, beyond a certain period, the records we have are crowded with fable, and, being chiefly supported by conjecture, are by no means entitled to unreserved confidence. But long before the establishment of systems, there must have been a time, when means were used for the cure of diseases, and the relief of accidents. There must also have been a time, when the rude but well-meant endeavours of one friend to relieve another in distress ceased, and application was made to those who were supposed to have more information or greater skill. This would properly be the origin of the art. By what steps or means the *Greeks* became sooner and better informed, in all arts and sciences, than many other nations, we cannot now decide; whether it depended upon the force of their own native genius, to which something must be granted (see *Stuart's* Antiquities of *Athens*); or whether this knowledge were communicated by some proceeding or neighbouring people. But it is probable, that the *Greeks* were instructed by the *Egyptians*; and these, as many contend, by the natives of *India*: yet, by whatever means they acquired their information, to the *Greeks* the distinguished glory is due of having conveyed, in their own language, the rudiments not only of medicine, but of almost every art and science, to all the western world. Though the moderns have availed themselves of every advantage they could obtain by the study of the ancient writers, it may be truly said, that they have not always been too liberal in their acknowledgments. But of this posthumous reputation *Hippocrates* has had his full share,

for his very name seems to have inspired with enthusiasm every succeeding writer; as all those, of whom we have been accustomed to think with veneration, or to speak with respect, have mentioned him with admiration, and held him up to our view as an example to be imitated, or as a pattern to be exactly copied, as if he had exhausted all the fountains of medical knowledge and truth. Whether we consider his writings with regard to the strict morality which they inculcate, the liberal conduct which they recommend, the strong and extensive observations with which they abound, or the order and method in which these are conveyed, it is not possible to withhold our esteem*. He had likewise the good fortune of writing in a language, which was not only known, but spoken with classical purity for a longer time than any other; for *Hippocrates* lived near five hundred years before the Christian era, yet the *Grecian* was the popular language at *Constantinople*, even at the time when the city was taken by *Mahomet the Second*, in the fifteenth century. The *Greeks* also maintained an acknowledged superiority in literature and arts, for a long time after their political sovereignty was lost. But if there be any progressive power in the human mind, if any advantage be obtained in the practice of medicine by the knowledge of the circulation of the blood, or of an infinitely more correct anatomy and physiology at large; by the vast discoveries, improvements, and application of chemistry; by a more copious and more efficacious *materia medica*; by the recorded experience of so many ages; or by the several collateral arts, which medicine calls in to its aid; we may surely be permitted to say, that *Hippocrates* ought not to be considered as the guide of physicians at the present time, or as having in any degree limited either the perfection or extent of the art, but as an illustrious specimen of ancient medical knowledge and practice. If this observation hold good with respect to *Hippocrates*, it will have more

* See a short but elegant abstract of the medical observations and practice of *Hippocrates*, in the *Hippocrates Contractus* of Dr. *Burnet*.

force when applied to all his transcribers and commentators, many of whom seem to have lost, in their attachment to him, the use of their own reason and judgement; constantly praising learning at the expense of knowledge, and rejecting every improvement, which could not be explained or justified by his writings. To the *Greeks* we are indebted for the works of *Aristotle* in the time of *Alexander* the Great; and it was the first object of the *Romans*, who subdued them, to acquire a knowledge of their sciences, and to possess themselves of examples of their arts. With information of almost every other kind, the *Greeks* are to be considered as the instructors of the *Romans* in medicine; and allowing for some change in the arrangement, a strong intelligence in his selections, the addition of what he had collected from other writers, a few improvements in surgery, and the local application of principles before known, *Celsus*, who lived at *Rome* in the early part of the first century, may be considered as an instructive and elegant abridger of the writings of *Hippocrates*.

The flourishing state of the *Romans* was comparatively of short duration. In the fourth century the empire was divided into the eastern and western. *Rome*, which was the capital of the latter, was taken by *Odoacer*, king of the *Heruli*, under whose subjection it remained; and the *Romans* ceased to speak the *Latin* language in the beginning of the seventh century. But neither the conquest of *Rome* by *Odoacer*, that of *Alexandria*, under the Caliph *Omar*, nor the permanent subjection of *Constantinople* by *Mahomet the Second* in the fifteenth century, extinguished that knowledge, and those arts, which had been so long and so strenuously cultivated and exercised. From the destruction of the library at *Alexandria*, which had many bad and probably some good consequences, were produced the schools of *Antioch* and *Haran*, or what may be called the *Arabian* schools, the principal medical writers of which were *Rhazes*, *Avicenna*, *Avenzoar*, and *Albucasis*. The sentiments and manners of no people could

be less favourable to learning than those of the *Arabians;* and we accordingly find in every history, that when they spoiled *Alexandria*, the intention of their chiefs was to destroy all kinds of science, by burning the magnificent libraries which had been there collected; and every book which escaped the general havoc was preserved by the care or partiality of private men. The writings of the *Arabian* physicians were chiefly, though imperfectly transcribed from the *Greeks;* yet they prove that the detestation of learning might be more justly attributed to the bigotry of individuals than to the people at large. These it will be allowed are scarcely ever read; but they are said to contain little of importance, except that the first account of the small pox, and of a few other diseases of less consequence, was given by the *Arabians;* and that *Avicenna* was the first, who described the *forceps*, or an instrument contrived for the purpose of delivering women in cases of difficult parturition, preserving at the same time the life of the child.

After the destruction of the library at *Alexandria*, the *Grecian* manuscripts, which were preserved, were translated into the *Syriac*, *Persian*, and *Indian* languages; and the learned were dispersed in different countries. For it appears, that, in the year 767, *Almanzar*, the founder and Caliph of *Bagdat*, sent for a skilful and learned physician from *India;* which I mention, as it seems to explain an observation made by the *Raja* of *Kishinagur*, and reported by the learned Mr. *Halhed* in the preface to his *Persian* Grammar, without any violence to other chronologies. Thus wars and apparent devastation, became, in the hands of Providence, the means of diffusing learning over many countries, which might otherwise have remained in ignorance.

But the first schools, from which the western part of *Europe* immediately derived knowledge, were established in *Italy* in the eighth century; and the most famous of those in which the art of medicine was taught, were at *Padua;* whither all who aimed at excellence resorted, with the view

of pursuing their studies, and of qualifying themselves for practice. From the contiguity of the two countries, from the frequent wars carried on between *France* and *Italy*, or from other causes, the *French* had many and early opportunities of acquiring knowledge. Schools were established among them, encouragement was given to learning, many able men arose, and *France*, by its more convenient situation to *Britain* and the northern nations, succeeded *Italy* in literary reputation; *Paris* and *Montpellier* being the places, to which students in medicine, as well as other arts, resorted for instruction even down to the beginning of the 18th century. But it will now be necessary to direct our attention to a more early period; in order to gain some notion of the progress of learning in this country.

About fifty years before the birth of *Christ*, *Julius Cæsar* made a descent from *Gaul* into *Britain*, a country then but little known, the inhabitants of which were in a very uncivilized state; if we except those who lived on the southern coast of the island, perhaps not one degree more enlightened than the *Indians*, whom their posterity afterwards discovered in *America*. The *Romans* continued long enough in *Britain*, to humble and render more tractable the ferocious spirit of the natives, to prepare them for civilization, and to teach some of those arts, by which the evils of their state might be lessened, and a portion of the comforts of life acquired. On the retreat of the *Romans* from the island, about the year 426, such of the natives, as, after an impotent opposition to their arms, and a rejection of their government, had been driven to the distant parts, poured with irresistible fury on those, who had submitted to the dominion of *Rome*. These called in the *Saxons*, to assist and to protect them, about the middle of the fifth century. Subjection is usually the lot of those, who claim to receive political protection; and the *Saxons* assumed the government of *Britain*. Being but little more civilized than those they came to defend, they could furnish few means of improvement; and the *Danes*, in their subsequent invasions

checked and reduced the small advancement, which the *Britons* had made towards learning, notwithstanding the encouragement afforded by *Alfred*, about the year 900. The *Norman* conquest took place in 1066, and the change, with all its disadvantages, was productive of some general good to the nation: but the great prospect of literary improvement arose towards the conclusion of the twelfth century, when *Richard the First* undertook his crusade to the Holy land. It appears, however, that there was not a single man in his whole army, who understood the *Grecian* or *Syrian* language; so that, without any advantage to balance the loss of his subjects, or the expenditure of his wealth, in all likelihood he and his people returned to *England* almost as ignorant as they departed, there being no school for the *Greek* language before the year 1490. During all this barren and dreary time, that is, for the space of nearly thirteen hundred years, the excellence of the *Britons* seems to have been in the strength of their arms, for they were constantly engaged in wars foreign or domestic, and mention is scarcely made of any man, who had a claim to be considered as learned in any science, before *Roger Bacon*, who lived in the thirteenth century. He was a man endowed with a very superior and excelling genius, who, among other branches of philosophy, applied himself to chemistry, which he carried to a far higher degree of perfection than his predecessors of any age or nation, as well as laid the foundation of many modern improvements. A few other names of medical men are indeed recorded, as *Ricardus Anglicus*, *Nicholas de Ferneham*, *Johannes de Sancto Ægidio* or *Giles*, *Hugh of Evesham*, and *Gilbertus Anglicus* (see *Aikin's* Biographical Memoirs); but *John a Gaddesden* was the first *Englishman*, according to *Dr. Freind*, who acquired sufficient reputation to be appointed Physician to the Court, which *Gaddesden* was in the reign of *Edward the Second*. His work, which he called the "Rosa Anglicana," was never printed in *England*: and if it be compared with those of the *Greeks*, and perhaps of some other physicians of his time, he may deserve

the severity of that censure, which has been unsparingly passed upon him. But surely much allowance is to be made, and some honour must be given, to the first man in any country, who, by distinguishing himself, was preferred to a place of such high trust and importance. About the same time lived *John Ardern*, a Surgeon of great reputation at *Newarke* in *Nottinghamshire*, who is said to have composed many works, none of which have been printed except his treatise on the "Fistula in Ano."

In every country, knowledge must be acquired by the mere industry and genius of the natives; or by communication with other countries, in which it already exists; or the rudiments, derived from some other nation, may be carried to greater perfection by the industry and genius of those, who originally received their instruction from foreigners. If knowledge were conveyed from the *Babylonians* or *Indians* to the *Egyptians*, those would probably afford an example of the first; the *Greeks* of the second; and all Europe of the third. But the progress of knowledge would in the beginning be exceedingly slow in every nation; and even supposing the powers of the mind were not diverted from the pursuit by more favourite objects, it would be long before men thus circumstanced could be put into competition with a people already informed and possessed of knowledge. The abilities of particular men would very often be lost by their death; and, if they were disposed to convey their knowledge by writing, the number of copies would be comparatively small, full of the errors of transcribers, and difficult to be understood, from unavoidable changes in the meaning of words, and the construction of the language in which they might be written. Nor would a people deserve the name of skilful and learned, because there were a few men of distinguished abilities among them, but because the generality were so well informed, as to be able to execute with aptitude and intelligence what was required of them for the good of society.

All or the greater part of the impediments to the acquisi-

tion and diffusion of knowledge in general were happily removed in the fifteenth century, by the discovery of the art of printing, by *John Faust*, or *Fust*, a *German*, about the year 1432. This art was introduced into *Britain* in the year 1470, by *William Caxton*, who is reported to have hired himself as a servant at *Cologn*, for the purpose of qualifying himself as a working printer. There are two books, which, it is said, were printed by him before his return, of one of which we shall have occasion to take notice. Another event extremely favourable to the improvement of medicine took place early in the next century, that is, in the year 1518. This was the establishment of the College of Physicians in *London*, by the charter of King *Henry the Eighth*. The words of the charter of the college denote its view: *Improborum hominum qui medicinam*, &c. *audaciam compescere;* the kind of institution, *institutarum civitatum in Italia exemplum imitati;* and the persons to whom it was granted, *gravium virorum doctorum*, &c. *precibus inclinati*. For certain purposes, intending or promoting the good of society, these men were directed to form a college, with powers for their internal regulation, as forcible as those ever granted to any other university or college; provided such regulations, and such only, were made and executed, as preserved and promoted those interests of society, which were committed to their trust. I mention these circumstances, because the selecting power of the Fellows of this College, though allowed to all others, has been disputed by some very able and worthy men, who, perhaps, did not reflect, that before its establishment no school, or even lectureship for medicine, had been founded in this country, nor had a single book of any estimation been written by a native of it; but that the art was then practised without restraint, by men as bold as they were ignorant; nor foresee, that, if the college were to be suppressed, or the exercise of its powers perpetually checked and contested, the art would, in all probability, decline into its primitive state of ignorance and confusion. It would, moreover, be easily proved, that since the year 1518

there have been, at every period of time, physicians of distinguished abilities and eminence, and that the general literature of this country has been in many instances very effectually assisted by the members of this college, of which notice is taken by Lord *Bacon*. There can scarcely be a doubt, but that very important benefits have accrued to society from the establishment of the College of Physicians, and that the rank and dignity of the profession have been raised and supported by it. As early proofs of the first, I may mention, the discovery of the circulation of the blood, by *Harvey*; the doctrine of irritability, first cultivated by *Glisson*; the reduction into order, and more accurate anatomical knowledge of the brain and nervous system, by *Willis*; the discovery, or at least the great improvement of our knowledge of the glandular and lymphatic system, by *Jolliffe*, *Wharton*, *Needham*, *Willis*, and many other very able men of their time; and the discoveries of *Mayow*, whom I am proud of having contributed to rescue from oblivion. The second position is self evident. Even those who are not members, eventually partaking of its advantages, and profiting by its eminence, are interested in its support. In the course of time the rules of this, like those of many other foundations of a similar kind, may require alterations according to the general progress and improvement of science; but the powers already granted might be effectually exerted, to prevent the frauds, hinder the impositions, and curb the audaciousness of ignorant and unprincipled men; and the exercise of this authority was never more necessary, than at the present time. It is probable, that this important purpose would be answered if no patent for any medicine were to be granted, or any nostrum allowed to be sold, without a testimonial of its efficacy and safety from the college of Physicians; and by compelling every person practising medicine in any form, to become a member of the college of Physicians, of the college of Surgeons, or the company of Apothecaries; all of which might be intrusted with a power of expelling any member who should act unworthily. Nor does

it seem difficult, to make regulations, so strict that they should resist any claims to the privileges of the college by the presumptuous, yet so liberal as not to withhold them from the deserving, and thus improve both its public and professional benefits.

As a matter of curiosity, the following papers, which relate to the delivery of Lady Jane Seymour, Queen to Henry VIII. were extracted from the *Cotton Manuscripts* in the British Museum, by my learned friend Dr. Combe, who kindly gave them to me.

BY THE QUEEN.

'Right trustie and right well beloued, we grete you well 'and for as muche as by th'inestimable goodnes & grace of 'Almighty god we be deliuered and brought in child bed of 'a Prince conceiued in moost lawfull matrimony betwene my 'lord the Kings Majestie and us, doubting not but that for 'the loue and affection which ye beare unto us, and to the 'comyn wealth of this Realme the knoweledge thereof shulde 'be joyous & glad tydinge unto youe We haue thought good 'to certifie youe of the same to th'intent ye might render 'unto god condigne thanke and praise for so grete a benifit 'but also continually pray for the long continuance of the 'same here in this life to th'on^r. of god joye and pleasure of 'my lord the King and us and th'uneversall weale quiet and 'tranquillitie of this hole Realme gevyn under our Sygnet 'at my Lord's manour of Hampton cõte the xij day of Oc-'tobre (1537.)'

Report of the Physicians respecting the State of the Queen.

'These shall be to aduertise yor. lordship of the Queene's estate yesterdaie afternoone she had a naturall laxe by reason whereof she beganne somewhat to lyghten and (as it appeared) to amende and soo contynued till towarde nyghte all this nyght shee hath beene very sicke, and doth rather appare

then amend her confessour hath been with her grace this morninge and hath done that to his office apperteyneth, and now is preparing to ministerr to her Grace the sacrament of unction at hampton court this Wednesday morninge at viij of the clocke.

Your Lordships atte commandement
THOMAS RUTLAND.
ROBERT KARHOLE.
EDWARD BAYNTUN.
JOHN CHAMBRE.
WILLIAM BUTT.
GEORGE OWEN.'

One of the first books printed by *Caxton* was "Bartholomeus de Proprietatibus Rerum." The name of the author was *Bartholomew Glanville.* He was a Franciscan Friar and lived in the time of Edward the 3d. He also wrote a history *de Sanctis.* The first translation was made under the protection of one of the earls of *Berkeley;* but the title of the copy of this book which I have (probably *Caxton's*), is this—"Incipit prohemium de proprietatibus rerum Fatris Bartholomei, Anglici, de Ordine Fratrum Minorum." This is in the nature of a *Cyclopœdia;* and being a book not much known, I allow myself the liberty of making an extract from it, which will show the nature of the work. His observations on fire, which will exhibit his philosophy, are in this order—*De forma—De elemento—De igne—De flamma—De fumo—De carbone—De scintilla—De favilla—De cinere.*—That following from his chapter *de infirmitatibus* will show his medicine.—*De febre—De febre effymera—De ethica—De febre putrida—De signis putridæ febris—De febre cotidiana—De febre tertiana et ejus signis et cura—De quartana et ejus signis et remediis—De febre simplici et composita.* He has a chapter *de obstetrice,* and another *de umbilico,* but they both relate almost wholly to the management of the child. A book like this promised

to be of great service: but, though the circle was comprehensive and regular, it was filled, not with the observations of a man of real knowledge or experience, but with popular opinions; and these collected, without much discrimination, from other writers. A translation of this work, by *John Trevisa*, was printed by *Wynkin de Worde* in 1507, another edition by *Berthelet* in 1535, and I believe several others. Very few medical books seem to have been printed about this time; and from their examples their loss is not to be regretted. The "Judycyall of Vryns," was printed in 1512; "A litel boke for the infirmities and grete sicknesse called Pestilence," which passed through many editions; and "A little treatyse called the Gouernail of Healthe." But in the year 1522, *Linacre*, who was the first or second president of the college, published, when sixty-two years of age, a translation of different parts of *Galen*, which he thought most useful to be known. The ability and elegance, with which this translation was made, are universally acknowledged, and great honour was justly given to *Linacre* on this and many other occasions. But the English practitioner did not reap much advantage from the work; for though there might not have been six men in the nation at that time able to read or translate Greek, and probably some hundreds who understood Latin, yet the bulk of the people were strangers to both the languages; and of this *Linacre* himself seems to have been sensible, for he immediately afterwards published his "*Rudimenta Grammatica Linguæ Latinæ.*" Nor can I here help lamenting two defects even in *Linacre's* plan; one, when the college was established, that he did not encourage the publication of papers on medicine, under the auspices of the college; a defect seen by the establishers of the Royal Society, who published such papers in their transactions, a place not the most proper for them; the other, that he did not print his works in English; in which they would have been generally read, have afforded immediate instruction, stood as good examples, and taught a proper method of writing. It is amongst the most

remarkable things I have met with, that no writer in any other language, than that of the country in which he lives, ever seems to be generally understood by the people of that country of which I could adduce several proofs. But this not being done by *Linacre*, the English medical writers returned to their former style; and for many years little real progress in knowledge was made, or any titles heard of but those of *Urynals*, *Judgment of Urynes*, *Anatomies of Urynes*, *Treasuries of Helth*, *Mirrours of Helth*, *Anthidotaries*, *Breuiaries of Helth*, the *Treasures of poore Men*, *Herbals*, and the like, by medycyners and astronomers. But about the year 1540, some attempts were made to translate books of reputation into the English language; as Sir *Ulrich Hutten* on the wood called Guaiacum that healeth the French Pockes, by *Paynell*, Canon of *Marten Abbey*, who had also translated many other books about 1533; the *Castell of Helthe* by Sir *Thomas Elyot*, who was not a physician; *Albertus Magnus; Prognosticacions out of the books of Ypocras, Auicen*, &c. and the *Questionarie of Cyrurgyens, with the formularie of lytell Guydo in Cyrurgie*. In the year 1540, was also published the first book on the subject of midwifery in England*, called "The Byrth of Mankynde," otherwise named "The Woman's Booke," by *Thomas Raynold*, Physition; the second edition of which was imprinted at *London*, by *Thomas Ray*, whose name is not mentioned either by *Ames* or *Herbert*, in their history of printers. This was also the first medical book which has prints reasonably well executed from neat drawings. As every one of these books went through several editions, we may conclude they were in high estimation. Then (1545) came forth also an abridgment of *Vesalius*, of which the copies are not scarce, under the title of "Compendium totius anatomiæ delineatio ære exarata, per Thomam Ge-

* Dr. *Combe* has in his possession the identical manuscript copy of this work, which was presented to *Catharine*, Queen of *Henry* the VIIIth. This copy is signed with the name of ——— *Jonas*, but it does not appear why the book was afterwards published in the name of *Raynold*.

minum Londini." *Geminie* was an engraver. The knowledge of *Vesalius* was more extensively spread from his book being studied by painters and artists. In the original work of *Vesalius*, a great part of the engravings, it is said, were designed by *Rubens*.

But one of the first English medical books, of any value, properly speaking, I take to be " A short and profitable treatyse touching the cure of the disease called *Morbus Gallicus*; withe ann account of the nature of the Quicksilver, by *G. Baker*, Maister of Chirurgerie, 1579," and the first book in surgery, called, " An Excellent Treatyse of wounds made with Gunshot, &c.; by *Thomas Gale*, Maister in Chirurgerie, (1563.)" The dedication to *Ambrose Parè's* work is dated Feb. 8, 1579, and it was translated into English in 1634 by by *Thomas Johnson*; so that it may be doubted whether *Gale* did not precede *Parè* in the recommendation of a more simple method of treating gunshot wounds. The same *Thomas Gale*, who was a very meritorious and indefatigable man, also printed " An Enchiridion of Chirurgerie," and many other works relating both to surgery and medicine, together with the " Institution of a Chirurgeon." Near the same time *John Halle* published what he calls the " Chirurgia Parva Lanfranci;" and *John Bannister* " a Treatyse of Chirurgerie," and soon afterwards *William Clowes* " A briefe and necessarie treatyse touchynge the cure of the disease called Morbus Gallicus, or Lues Venerea, by unctions and other approved waies of curing." There had been published in the year 1577, " A profytable treatyse of the anatomie of man's bodie, compyled by that excellent Chirurgeon, *M. Thomas Vicary*, Esq. Sarjaunt Chirurgeon to *Edward* the Sixth, Queen *Mary*, and Queen *Elizabeth*, and also chiefe Surgeon of *St. Bartholomew's Hospitall*". In this book was published the first account of the benefits of the juice of lemons in the sea-scurvy. There was also printed in 1597, "The whole course of Chirurgerie," by *Peter Lowe*, a Scotchman, " Aurelian Doctour in the facultie of chirurgerie at *Paris*", which is quoted in the Critical Enquiry

published about one hundred years ago by *Samuel Sharp*, one of the most expert and able surgeons this country ever produced. I find a few books published by physicians about this time—"A short discourse of the most rare and excellent Virtue of Nitre"—"A Greene Forest, or a Natural Historie," by *John Mapler*, M.A. and student at Cambridge—"The Hammer for the Stone," by *Walter Carie*;—and a brief treatyse called "*Carie's* Farewell to Physicke"—"Stirpium Adversaria Nova perfacilis investigatio luculentaque accessio ad priscorum Materiam Medicam"—"The Benefit of the auncient Bathes of Buckstone, and the Bathes of Bathes ayde; by *John Jones*, Physician".—"Hygeina, &c. authore *Timotheo Brighto*, Cantabrigiensi Medicinæ Doctore:" and A Treatyse of Melancholie, by the same author; "Praxis Medicinæ Universalis (1598)", and many others in number, but not of much value, though they show very satisfactorily the pains taken by the English to acquire knowledge by their own industry, and by translating many of the works, which were then held in particular esteem. But it appears also, that the progress made by the English physicians and surgeons, for the improvement of the respective branches of the profession, had not been very rapid, and that much remained to be done at the commencement of the sixteenth century; and particularly that the practice of midwifery had been yet little attended to, unless as a part of surgery.

It is necessary to observe, that this order, in which we are speaking of different writers, is not meant as recommending an order of study: because it seems to be universally agreed, that it is best for learners to begin with acquiring a knowledge of those authors, who have written on the principles and practice of the present time, and thence to proceed to the study of former writers and of the ancients; by which method of proceeding much critical, and some practical knowledge may be obtained.

In the year 1560, *Francis Bacon*, afterwards Lord *Verulam*, was born, a man whose fame will receive no addition from

any applause, which it is in my power to give. He was a meteor, from whose lustre all nature received some light. Though he did not apply himself particularly to the study of medicine, he has left some useful observations relating to it; and he promoted this, and almost every other branch of knowledge, by teaching and practising the only effectual method of acquiring it. The more profound works of this writer are perhaps to be studied with advantage only by men who have a greater share of genius than common, or by those who have been blessed with a learned education; but his tractate *de Augmentis Scientiarum* may be of use to all, as, if read with care, it is not difficult to understand, and abounds with the most acute observation and profitable instruction, though he himself speaks of it in lowly terms.

In the year 1578, *William Harvey* was born at *Folkstone*, in *Kent;* and having completed his studies at *Cambridge*, he went to *Padua*, where he was admitted to the degree of Doctor in unusually flattering terms of approbation, in 1602. In the year 1615, he was appointed by the College of Physicians, to read the lectures on anatomy and surgery; and in these he first promulgated his discovery of the circulation of the blood, a discovery so complete, that no person has ever controverted one position, or amended his explanation. With all the sagacity and perseverance of a truly great man, he applied himself to form an entire history of the generation of animals, with that of the preceding and accompanying changes; but his studies were interrupted, and many of his papers lost, in the time of the civil war. It does not appear that he had determined to publish the rest, though finished with admirable correctness, till he was prevailed upon by the solicitations of his intimate friend Sir *George Ent*, who supervised the printing of them in English, in the year 1653; but I have no other authority for this fact than the preface to that edition written by Sir *George*. By inclination, or the necessity of his affairs, *Harvey* was engaged in the practice of Midwifery, by which means he got that information which

enabled him to write his "*Exercitatio de Partu*," and the many excellent observations upon that subject, with which his works abound. He clearly entertained an opinion, that the knowledge of the circulation, the constituent parts, and properties of the blood, would enable physicians to cure all diseases; but experience has not confirmed its truth. The discoveries which *Harvey* made, the many subjects which he illustrated, and the delicacy and patience which he exercised in his investigations, then unknown in this country, entitle him to the highest honour as an anatomist, and as a man of science. He died at, or more than, eighty years of age, honoured and beloved for the greatness of his abilities, the ingenuousness of his disposition, and the mildness of his manners. His character is strongly marked in a fine picture of him, taken in his old age, now in the museum of the late Dr. *Hunter*.

From the gradual progress of science, from the encouragement it received, and from the example of the two illustrious men just mentioned, *Bacon* and *Harvey*, a happier prospect dawned upon Britain, to which I must beg leave to call your particular attention *.

Thomas Sydenham was born in the year 1624, and graduated at Oxford. He applied himself to the practice of medicine, and first wrote his account of the continued fever of 1661, and the three following years; which fever he probably then supposed, to be the only one in nature. But further experience convinced him, that there were many kinds of fever; and of these he has given an account to the year 1683, together with dissertations on the smallpox, dropsy, gout, hysteric, and many sporadic diseases. Some notice is also taken of the diseases incident to women in childbed, and of many of the complaints of children. His works, originally written in English, afterwards translated into Latin by his friend Dr. *Mapletoft*, were published in distinct parts, and at different times, as the occasions occurred to him. The

* The greater part of this preface was given as an introductory Lecture.

writings of *Sydenham*, whether we consider the sagacity and order with which the observations are made, or the fidelity with which they are recorded, have been held by all succeeding physicians in the highest esteem; and, from the time of *Hippocrates* to the present, he has been deservedly considered as the best example of a faithful observer of diseases, and of a practical physician. Though it must be acknowledged, that he was often wrong in his theory, and in some instances in his practice, his description of diseases is allowed to be excellent; but his omitting to specify the precise times or stages of disease, when his method of treatment was to be applied, very much lessens the value of his work. He died in the year 1689.

Francis Glisson was educated at Cambridge, where he became Regius Professor. He was one of the physicians to Queen Elizabeth, and to James the First. In 1654, he published his "Anatome Hepatis," on the internal structure of which *viscus* he made several new observations; in 1659, his "Tractatus de Rachitide," which disease he was the first who described; and after some years (in 1676) his book "De Ventriculo & intestinis," in which he first took notice of the irritability of the simple fibre; so that he has an undoubted right to the credit of being the father of all the doctrine of irritability, since unjustly attributed to *Haller*, and on which so many volumes have been written without the mention of *Glisson's* name. This could not have happened, if his works had been printed in the English language. He also published a treatise "*De Natura Vitæ, vel substantiæ energeticæ*," which he calls the *prodromus* of his Treatise *de ventriculo & intestinis*, but of this I have never seen a copy. *Glisson* lived to be upwards of one hundred years of age *, and died at *Stratham*, to which place he had retired.

Thomas Willis, Sedleian Professor at Oxford, was born in the year 1621, and published, as the foundation of a large

* See the general Biographical Dictionary; or the Annual Register for the year 1767.

design, his "Cerebri Anatome, cui accessit Nervorum Descriptio & Usus," in 1663. In this work he was much assisted by Dr. *Lower*, who was in fact his dissector and demonstrator, and the drawings were taken by the famous Sir *Christopher Wren*. The terms in which *Willis* speaks of *Lower* seem descriptive of both their characters—*cujus cultelli & ingenii aciem, lubens agnosco—emicuit viri solertia plane admiranda, nec non indefatigabilis industria, nulloque obice sistendus labor.*

In 1672, he published his work "De Anima Brutorum," which is to be considered as a sequel to the former. It is a work of infinite labour, reflection, and ingenuity, in which he describes the immediate causes and effects of the diseases arising from nervous influence. There are in this book four plates, three extremely fine, representing a dissected oyster, a lobster, and an earth worm.—In 1673, he published the first part of his "Pharmaceutice Rationalis, sive Diatriba de Medicamentorum Operationibus in Humano Corpore," a work composed of anatomical, physiological, and practical observations, with many curious plates of the lymphatics, vasa vasorum, and other finer parts of anatomy. He died before the second part of this work was printed, in the preface to which there is a short account of his life and writings. The works of *Willis* are very numerous and useful, and bear indubitable marks of great learning, genius, and industry, but they are seldom studied. Perhaps his medical works may be too philosophical for practical physicians, and his philosophical works too much blended with medicine, to please philosophers; and it does seem possible, by the study of arrangement and subtilties of science to lose sight of practice, as by the present systems of botany, its relation to medicine is almost forgotten; though so much of botany must be allowed to be of great use, as enables us to distinguish such plants as contribute to health either in diet or medicine from such as are unwholesome. But there is scarcely a subject connected with the science or practice of medicine, which

has not been cultivated by *Willis*. His chapter on the puerperal fever, when simply inflammatory, is judicious and good. He died in the year 1675, having founded a lectureship in the church of St. *Martin* in the Fields, where prayers are read at an early hour chiefly for the convenience of medical men. His practical works were badly translated into English in 1685, and afterwards all his writings, but in a language never very good, and now become obsolete.

Nathaniel Highmore wrote his "Disquisitiones Anatomicæ," in 1651, and "A History of the Generation of Plants and Animals," in which it appears, that he made many discoveries, particularly of the *antrum* in the upper jaw, to which his name has ever since been given.

Contemporary with these was *Walter Needham*, educated at *Cambridge*, then appointed physician to the Charter-house in *London*, but who afterwards resided at *Shrewsbury*. He wrote "Disquisitio Anatomica de Formato Fætu," a work of deservedly high estimation, in which he takes the opportunity of treating not only upon the contents and economy of the gravid *uterus*, but upon the lacteals and lymphatic system, and many other anatomical subjects.

In the year 1656 *Thomas Wharton* published his "Adenographia," a work of established reputation, in which, among other things, he has observed some which relate to the gravid *uterus*. This work is quoted in the first edition of *Nuck's Adenographia et Uteri Anatomia*, which is dated in 1679. On the claims of the first discovery of the lymphatics there seem to have been early debates, and from the curious verses prefixed to *Ruysch*, who first described their valves, the disputes upon the discovery of the lymphatics appear to have been national. But if we consider the labours of Dr. *William Hunter* on this subject, and above all the perspicuous and connected arrangement he has made of the glandular and lymphatic system, we must be convinced that the principal merit in this part of the anatomy is now due to him.

Nathaniel Henshaw published his "Aero-Chalinos" in the

year 1677. This contains the five following tracts:—"On Fermentation—Chylification—Respiration—Sanguification—The good effects of changing Air."

About the same time lived *Walter Charlton*, who published "Onomasticon Zoicum" in the year 1668, and in the following year his "Economia Animalis," of which Sir *George Ent* gave this character—*opus maturo consilio inchoatum, magna cura elaboratum, ingenio denique et doctrina singulari perfectum.* *Charlton* wrote several other works, particularly "De causis Catameniorum et Uteri Rheumatismo."

He also published the works of *Theodore Mayerne*, to whom a vain monument was erected and still remains in the church of St. Martin in the Fields.

In 1668, Dr. *Mayow*, of Oxford, published his works, entitled "Opera omnia Medico-Physica," in the *German* edition, which is the only one I have seen.

These consist of the following essays:—1. De Sal-Nitro et Spiritu Nitro-aereo.—2. De Respiratione.—3. De Respiratione fœtus in utero & ovo.—4. De Motu Musculari & Spiritibus Animalibus.—5. De Rachitide. In these he treats of many other interesting and curious subjects, which have been lately brought into public notice, and much approved, though *Mayow* seems to have been greatly neglected; but this may be accounted for by his dying at the age of thirty-five.

Dr. *Richard Lower*, before mentioned in the account of *Willis*, in 1676 published his "Tractatus de Corde, item de motu et colore Sanguinis, et chyli in eum transitu."

This celebrated work has many observations on the lymphatics, and the *receptaculum chyli*, which he considered as their general centre, as early as *Pecquet*. He also made many curious anatomical and physiological experiments, and in this work asserts his claim to the invention of the art of transfusing blood, to which he seems to have been very partial.

The Chirurgical Treatises of *Richard Wiseman* were dated

in 1676, and allowing for the time when they were written, are acknowledged to have great merit. He may not unjustly, perhaps, be esteemed the first English surgeon. "The Comes Chirurgorum," containing Dr. *Read's* Lectures, was printed in 1686. But the improvements in surgery did not keep pace with those in physick, for in the last, and even in the beginning of the 17th century, it was not unusual for foreign surgeons to come into this country, to perform the nicer and more difficult operations, such as those for lithotomy, all diseases of the eyes, and every thing which related to the teeth. But *Cheselden* acquired so much fame by his dexterity in cutting for the stone, that the King of Sweden sent his secretary of state into England, for the express purpose of having that operation performed by *Cheselden*, who (very much promoting the improvement both of anatomy and practical surgery) successfully extracted from him a stone of an unusually large size. Every operation appertaining to the eyes is now performed with the most consummate skill and dexterity, and with corresponding success, by *Wathen*, *Ware*, and *Phipps*; and those for the teeth by the *Spences*, and many others. It is at the present time universally acknowledged, that the English surgeons equal, in every branch and respect, if they do not exceed, those of any other nation.

Dr. *Nehemiah Grew* published separately, though they were afterwards collected into one volume, his "Anatomy of Plants," in which there are many observations respecting the solutions of salts; his "Anatomy of Roots—"Comparative Anatomy of Trunks," between the years 1670 and 1680 —"Cosmologia Sacra," and several other works.

At the same time lived *John Ray*, the celebrated Physician and Botanist. In 1685 Dr. *Samuel Collins*, Physician to Charles the Second, published "A System of Anatomy treating of the body of Man, Beasts, Birds, Fish, Insects, and Plants." An elaborate work, and of considerable merit for the time when it was written. *Mayfield* printed his *Exer-*

citationes Anatomicæ in 1678; *Molins* his work on the muscles in 1680; and *Blanchard* his *Anatomia* in 1688.

Clopston Havers published his "Osteologia Nova" in 1690. In this work he described the mucous glands of the joints, which he discovered, and the internal structure and an account of many diseases of the bones, cartilages, &c.

In the year 1695, *Ridley* published his "Anatomy of the Brain," of which he is said to have discovered the lymphatic vessels; and his "Observations", in which he treats on several abstruse parts of anatomy.

Dr. *Richard Morton* published his "*Phthisiologia*" in 1689: his "Pyretologia, seu de Morbis acutis universalibus" in 1691; and his work "De Febribus inflammatoriis" in 1694. *Sydenham's* treatment of Fevers was almost universally antiphlogistic; *Morton's* on the contrary, was cordial and sudorific; but we have between these two writers most of the arguments, which have been advanced in favour of both methods of practice.

The first edition of *Cowper's* "Myotomia Reformata" was published in 1695; and *Keil's* Anatomy in 1698.

By the writings of these very eminent men, and of many others whom I might have named, particularly of the celebrated *Robert Boyle*, it appears that the physicians and surgeons of this country were, from the beginning to the end of the seventeenth century, indefatigable in the acquisition and improvement of science; that they were not only acquainted with the general knowledge of the *Greeks*, *Romans*, *Arabians*, *Italians*, and *French*, but might fairly be put in competition with those of any other nation, if they did not excel them; and that all the changes we have seen were produced in less than two hundred years, that is, from the time when the College of Physicians was established, in the year 1518, to the termination of the seventeenth century. Early in the eighteenth century, the benefits of medicine to society were rendered conspicuous by the introduction into *England*

of the practice of inoculating for the small-pox; for the knowledge of which we are indebted to the sagacity and judgement of Lady *M. W. Montague.* The mortality attending that disease in a natural way was estimated at least as one in eight; but by inoculation it scarcely amounts to one in a hundred. Many objections were made to inoculation, when first introduced; but the practice being conducted with much caution and understanding by some able medical men, and protected by queen *Caroline*, at length became general. It required, however, the experience of fifty or sixty years, to bring inoculation to its present state of perfection, the merit of which is exclusively due to *English* physicians and surgeons; for the practice was strongly resisted by many other nations. Inoculation for the cow-pock as a preventive of the small-pox, has been lately discovered and recommended by my very intelligent and acute friend Dr. *Jenner*, a physician of great worth and abilities, to whom only we are also indebted for the first account of the cow-pock as a part of natural history, and for our knowledge of the treatment of the disease when inoculated. As far as can be judged at present, Dr. *Jenner's* discovery, when carried into general practice, will be the means of saving much anxiety, and an infinite number of lives, and may probably lead to the complete extirpation of the small-pox.

I must in this place beg leave to make a digression. In the year 1668, *Herman Boerhaave* was born near *Leyden.* He was originally designed for the church, but was led by inclination, and the ill state of his own health, to apply himself, when very young, to the study of medicine. He graduated in the year 1693, was chosen Lecturer on the Institutes of Medicine in 1701, and enjoyed all the honours which the university could bestow, or the city of *Leyden* confer upon him. He raised the reputation of this school of medicine beyond that of any other in *Europe.* The industry of *Boerhaave*, in the pursuit of knowledge of every kind, is almost incredible; that of any other man compared with his may be called

amusement; the facility, with which he communicated this knowledge to others, was beyond expression happy; and his whole conduct, in every religious, moral and scientific view, to the highest degree laudable. He was greatly honoured in his life, and his memory is universally respected. His history, which was written by Dr. *Samuel Johnson*, must ever remain a very useful study to medical men, and an example of fine composition. *Boerhaave* died in the year 1738, in the 70th year of his age. He unfortunately paid too little regard to the nervous system.

Among the favourite students of *Boerhaave*, was *Alexander Monro* who in the year 1719 returned from *Leyden* to *Edinburgh*, a city at that time not distinguished by any eminence in medicine. But in the following year, Dr. *Monro* being chosen professor of Anatomy and Surgery, and Dr. *Alston* of Botany, they began to give Lectures, established a school of medicine, which they had the very great satisfaction of soon raising by their abilities to an equal degree of honour with any of whatever period. Dr. *Monro* died in the year 1767, leaving behind him many valuable works, which were afterwards collected into one volume, and published by his son Dr. *Donald Monro*, who did not succeed his father as professor. By this establishment, the further advantage was gained to *Britain* of having at *Edinburgh* a succession of very able and eminent men, who have dedicated the chief part of their time to the acquisition and improvement of medical science, and to the instruction of those who were intended for the profession. But Dr. *Black* and Dr. *Cullen* appear to have been the most eminent men in that school

Here I shall conclude these general observations, and confine myself to such only as relate to the practice of midwifery, premising a short remark on a subject, in which the interests of society, and the claims of individuals, are deeply concerned.

The economy of the medical profession has in this country undergone many alterations, according to those of society at large. Physicians, who are called to take charge of all cases

of uncommon difficulty or danger, or of the lives of persons of high rank and eminence, have generally such an education, as leads not only to the acquisition of medical knowledge, but to the cultivation also and highest improvement of all the powers of the mind. But the operative, and all the inferior parts of the profession fall under the conduct of those, who have been educated as surgeons, or apothecaries, or jointly. By the former of these are performed all the operations in surgery, many of which require an admirable combination of mental and personal qualities; and to their skill and care the lives of the greatest part of the lower class of people, and of those who serve in the army and navy, are almost constantly submitted in every branch of medicine. In order to their being duly qualified for these important duties, young men, having received a reasonable share of classical education, are bound, for a certain term of years, to some person, competent to give them proper instruction and information. To such young men it can only be necessary to observe that they will at some future time be called upon, to take charge of the *lives of men*, for which they must be responsible, not only to the laws of God, but to the law of the land; which has the power of inflicting such punishment, as any particular instance of ignorance or negligence may be proved to deserve; and, which is beyond all other punishment, their names may become ignominious. I may therefore be permitted to recommend the profession of any part of medicine, as a very sacred trust to those who engage in it; the necessary and proper qualifications for which demand all their attention, and the sober, constant, and most industrious application of all their abilities. But it is very much to be doubted, whether some of those, who, both as parents and masters, take the charge of such young men, are not sometimes selfish, and negligent in the performance of that share of the duty which they undertake; and whether, having received the gratuity usually paid, they either give due attention to the morals of the young men, or instruct them properly in the knowledge

of their profession. Through this negligence of the masters, or the thoughtlessness and inattention of the young men, at the end of their servitude these must of necessity frequently be ignorant of many things which they ought to know, to their own misfortune and disgrace, and to the great prejudice of society. To all students I must recommend among many other things, their perfecting themselves in the art of drawing.

By the nature of one part of my employment, that of giving Lectures, I have had too many opportunities of knowing the truth of the foregoing remarks; which with the greatest unwillingness to give offence, I feel called upon to make, and in confirmation of which I beg leave to add the following quotation from unexceptionable authority.

"Clerks and apprentices ought to be employed *entirely* in the profession or trade, which they are intended to learn. Instruction is their hire; and to deprive them of the opportunities of instruction, by taking up their time with occupations foreign to their business, is to defraud them of their wages."*

The "Byrth of Mankynd, or the Woman's Book," with sketches not badly intended or engraved, was printed in the year 1540: and as it went through many editions, and as I find no other book of equal value published about that time, I consider it as having been the popular book for near one hundred years; that is, till the year 1634, when all the works of *Ambrose Parè* were translated in one volume. *Parè* was a man of much experience, some erudition, and not a little credulity, but he made many useful observations relative to midwifery. In the year 1653 *Harvey's* Exercitations were published in English, but whether translated or original I cannot decide. About the same time also lived Dr. *Chamberlen*, a very celebrated physician, who applied himself to this branch of the profession. A very elegant monument was erected by the Duke of *Buckingham*, in Westminster Abbey, to this Dr. *Chamberlen*, of whom the Duke has also in his Essays given a very amiable character. He had three sons, who, with their

* *Paley's* Moral and Political Philosophy, Vol. I.

father, were supposed to have a better method of relieving women in cases of difficult parturition than any other person, by means of an instrument said to be the *forceps*, but which I believe to have been a *vectis*; or perhaps they had more than one instrument. One of the sons went over to Paris, with a view of selling the secret, or of making a fortune by practice; but being foiled in the first case to which he was called, yet acting without discretion and suffering more obloquy than he deserved, he returned to England, and immediately published a translation of *Mauriceau's* work, which remained for many years in very high esteem. This was in the year 1672.

Having been favoured by the late Dr. *Kirkland* with a manuscript written by Dr. *Percival Willughby*, who lived at Derby, and afterwards in London, I am able to give the reader some idea of the practice of that time, many of the cases being dated from 1640 to 1670. This work is entirely practical, and was intended to be published for the use of midwives, there being a title page, and two copies with variations.

His preface is in this manner:

"I haue read many bookes, with all the late writers in midwifery, and I do perceiue that they all follow one common roade, taking their seueral scheemes and figures one from another.

"In seueral of these scheemes uarious things may be perceiued which will be troublesome to the labouring woman, which a judicious practitioner will not followe. Let midwiues mark whatt hath been written in my obseruations, let them consider diligently the seueral reportes not faigned, or the surmised thoughtes, nuctors, or man's fantasie, sitting and meditating in his studye, but which really haue been performed in the trauaiing woman's chambre.

"From mine and their directions let midwiues choose the best and facilest waies of relieving women in affliction, and to decide all disputes, let reason be the judge, let experience argue the dubious points of practice; and, after a full debate,

let unspotted truth recorde to succeedinge times what is most fitt to be followed and used," &c.

This is a specimen of his illustration. " Let midwiues obserue the waies and proceedings of nature for the production of her fruit on trees, or the ripening of walnutts and almondes, from theire first knotting to the opening of the huskes and falling of the nutt; the greene huskes sticking so close that it is not possible to separate the huske from the shell, whilst it is unripe; but as the fruit ripenneth the huske choppeth and with a fissure openeth, and by degrees separateth the fruit without any enforcement.

" An egge representeth the wombe: now the henne with keeping the egge warm doth breed the chicken, which when it comes to maturitie doth chip the shell, and is by degrees hatched without injurie. These signatures may teach midwiues patience, and persuade them to let nature alone to perform her own worke, and not to disquiet women by their strugglings, for such enforcements rather hinder the birthe than anywaie promote it, and oft ruinate the mother and usually the childe; and let midwiues know that they be nature's seruantes," &c. *Willughby's* practice is not much different from that of the present time. He divides labours into two kinds only, natural and unnatural. The particular rules I cannot pretend to describe in this place; but the following letter, which he has quoted from a scarce work, corresponds so nearly with an observation it was my fortune to make some years before I saw this manuscript, that I may be excused relating it.

" Referam hoc casu, quid beatæ meæ conjugi acciderit. Tertio fœtu gravidam, nono prægnationis mense, labores parturientium arripiunt circa noctem. Mox rupta aqua (ut hic mulieres loqui amant) extra genitale, infantuli manus propendit. Ubi obstetrix advenisset, uxorem meam in sedili collocavit, eamque ad continuos conatus (me nolente nec instigante natura) adegit. Cum vero res eo modo non succe-

deret, meamque conjugem supra sedem continuo detineret, ac diris cruciatibus illapsum ex uteri cervice manum brachiumque retrudere niteretur, quo fœtum ad exitum commodius disponeret. Ego præ dolore charæ meæ conjugis impatiens, ac indesinentur obstetricem admonens, ne quidem elapsi membri reductionem in uterum cogitaret possibile, multo minus moliretur, secundum obstetricem accersiri jussi, præsertim cum uxor mihi nunciaret, quod obstetrix eam dilaceraret per illam præconceptam ac miseram elapsi membri repulsionem. Cum insequenti die, obstetrix altera venisset, illa manus ad opus applicans remque diligenter explorans, uxorem meam in lectum deposuit, mandavitque ut se quietam deteneret, nullosque conatus excitaret, nisi quando natura eam sui admoneret officii.

" Interim obstetrix illa prudens et expertissima prædixit mihi amicisque præsentibus, uxorem meam non ante parturam, quam fœtus in utero, ex indebito situ, conatibus strangularetur, quod eventus docuit. Multiplicati sunt labores parturientis, et fœtus inflexo ad dorsum capite (salva matre) prodiit in lucem".*

By a genealogical manuscript, written by the first Duchess of *Chandos*, in the possession of Colonel *Kearney*, it appears, that this Dr. *Willughby* was one of the six sons of Sir *Percival Willughby*, and grandson of Sir *Francis*, so famous in the time of Queen *Elizabeth*.

It is probable, that the fortune and eminence acquired by the supposed advantages of the method of the *Chamberlens*, which they reserved as a secret, might be the occasion, that many gentlemen, engaged in practice, endeavoured to establish themselves upon the same principles, that is, of concealing the instruments they used; of which class was Dr. *Bamber*. Others might attempt to gain equal reputation and fortune by the very contrary means, that is by decrying the use of instruments of every kind, on any occasion; for about the year 1723, Dr. *John Maubray* published a volume upon

* Novus exortus hominis et animalium. *Anton. Everard.*

this subject, called "The Female Physician, or the whole Art of New improved Midwifery," in which he exclaims with great vehemence against their use, and the book, though written in quaint language, has some general merit. In the following year he also published an appendix, under the title of "Midwifery brought to Perfection," in which he demands great credit for the many improvements he had made. This appendix is in truth, no more than a *Syllabus* of his Lectures, a course of which consisted of twenty, twelve anatomical and physiological, and eight practical. I believe it would be unjust to deny to *Maubray* the credit of having been the first public teacher of Midwifery in Britain. He gave his lectures at his house in *Bond-street*.

In the year 1719, *Dionis'* Midwifery was translated into the English language; and in the year 1729 *Deventer's* work was translated and published: and though it appears, that rather more credit has been given to this author than he deserved, yet as he enters upon a discussion of the causes of many difficulties which occur in practice, and of the means of relieving them, and as he was generally averse to the use of instruments, *Deventer*'s work might be esteemed a considerable addition to the stock of obstetric knowledge in this country. *Deventer* was originally a watch-maker.

Dr. *Simson*, professor at *St. Andrew's*, published in 1729 his "System of the Womb," a work of sufficient ingenuity, but not of much use in practice, even if his theory were true.

About the year 1733, *Edmund Chapman* published his "Treatise on the Improvement of Midwifery," in which there are several useful observations; and other writings of temporary consequence only. *Chapman* was the second public Teacher of Midwifery in London, and he was the first also who described the *forceps*, in the third volume of the Edinburgh Medical Essays.

In the year 1734 Dr. *Hody* published a "Collection of Cases in Midwifery," written by Mr. *William Giffard*. These

cases, two hundred and twenty-five in number, seem to be written with great fidelity; and as they occurred in his own practice, they were lessons of conduct which was to be pursued in similar cases, and may now be considered as examples of the state of practice at that time. *Giffard* also gave a plate representing the *forceps*, and was, I believe, among the first who asserted, that the *placenta* might be attached over the *os uteri*.

"The Midwife rightly instructed" was published in the year 1736 by *Thomas Dawke*; and the "Midwife's companion" by *Henry Bracken*, in the following, with several other things equally unimportant.

About this time lived *Richard Manningham*, who quitted the profession of Pharmacy, and applied himself with great assiduity to the practice of Midwifery. In a controversial pamphlet, published in the year 1730, he is mentioned as having been knighted. In the year 1739, he established a ward, or small hospital, in the parochial Infirmary of *St. James*, Westminster, for the reception of parturient women only, which was the first thing of the kind in the British dominions. At this ward, which was supported by public subscription, he gave lectures, and the students had opportunities of being qualified for practice. He published a "*Compendium Artis obstetricæ*," a "*Treatise on the Febricula*", on the "Use and Abuse of Physic". "*Aphorismata Medica*", and many other essays, relating chiefly to the practice of Midwifery. Sir *Richard Manningham* was a man of considerable learning and information, eminent and successful in practice, and very humane in the exercise of his art. He died about the year 1750. Before that time there had also been published a translation of *Heister*'s Surgery, and this, containing not only a general outline of midwifery, but many excellent practical observations, must have been a source of great benefit in a country not then over-stocked with information.

Sir *Fielding Oulde* of *Dublin*, in the year 1741, published

a "Treatise of Midwifery," the most interesting parts of which are his observations on the continuance of the thickness of the *uterus* during pregnancy, and his description of the manner in which the head of a child passes through the *pelvis* at the time of birth; the truth of which observations has since been fully proved and acknowledged.

Having taken this short and imperfect view of the progress of Midwifery in this country, from 1540 to the year 1740, it will be prudent to conclude, or this preface would be carried to an inadmissible length. The English might then be said not only to have pursued, but to have been in full possession of the subject; all the books written in the neighbouring countries being translated, public lectures given, and an hospital established for the further improvement of the art, which was taught by men of ability and eminence in practice. As all the books and papers printed at that time may be readily procured, every gentleman has an opportunity of forming his own opinion of their respective merits without any laborious research. But the College of Physicians having been pleased, in the year 1783, to form a rank, in which those who dedicate themselves to the practice of Midwifery should be placed, I trust that future accounts will be more apposite and correct, and that this measure adopted by the College will promote the public benefit, by confining the industry and abilities of one class of men to this branch of the profession. It is my earnest wish, to support their views in this wise and benevolent arrangement; as the fruits of which, I entreat Dr. *Latham*, the President of the College of Physicians, whom I must suppose to be not less dignified by his learning, and the integrity and liberality of his principles and conduct, than by his rank in the profession, to accept this work, dedicated, with all respect, by

His most obedient and obliged servant,

THO. DENMAN.

London, 1815.

CONTENTS.

CHAPTER I.

ON THE PELVIS.

		Page
Sect. I.	On the bones of the pelvis	1
II.	On the connexions of the bones of the pelvis	5
III.	On the separation of the bones of the pelvis	6
IV.	On the reunion of the bones of the pelvis	13
V.	On the position and structure of the pelvis	14
VI.	On the formation of matter between the loosened bones of the pelvis	17
VII.	On the form and dimensions of the pelvis	18
VIII.	On the dimensions and structure of the head of the fœtus	19
IX.	On the application of mechanical principles to midwifery	21
X.	On distortion of the pelvis	22

CHAP. II.

ON THE EXTERNAL PARTS OF GENERATION.

Sect. I.	Description of the external parts	25
II.	On tumours and excrescences of the external parts	26
III.	On edematose swellings of the external parts	28
IV.	On the cohesion of the labia	*ib.*
V.	On abscesses of the labia	29
VI.	On laceration of the perinæum	*ib.*
VII.	On a peculiar laceration of the perinæum	32
VIII.	On the enlargement of the clitoris	33
IX.	On diseases of the bladder and urethra	*ib.*

Page

Sect. X. On the pruritus or itching of the external parts of generation..... 34
XI. On the hymen..... 35

CHAP. III.

ON THE INTERNAL PARTS OF GENERATION.

Sect. I. Description of the internal parts..... 37
II. On the contraction of the vagina..... 42
III. On the cohesion of the vagina..... 43
IV. On cicatrices in the vagina..... 44
V. On polypi..... 45
VI. On fluor albus..... 55
VII. On prolapsus uteri..... 57
VIII. On hydatids of the uterus..... 60
IX. On the dropsy of the uterus..... 61
X. On the tympany of the uterus..... 62
XI. Of moles..... 63
XII. On the dropsy of the ovaries..... 64
XIII. On inflammation, scirrhus, and cancer of the ovaries..... 69

CHAP. IV.

ON THE PARTS CONTAINED IN THE CAVITY OF THE PELVIS.

Sect. I. On the retroverted uterus..... 71
II. On the retroflected uterus..... 78
III. On the dropsy of the perinæum..... 79
IV. On the elytrocele..... 81

CHAP. V.

ON MENSTRUATION.

Sect. I. On the menstrual discharge..... 82
II. On the efficient causes of menstruation..... 86
III. On the final causes of menstruation..... 88
IV. On the formation of a deciduous membrane..... 89
V. On obstruction of the menses..... 91
VI. On excessive menstruation..... 94
VII. On painful menstruation..... 96

Page

SECT. VIII. On the treatment which may be proper at the time of the final cessation of the menses..... 97

CHAP. VI.

ON CONCEPTION.

SECT. I. On the different theories of conception..... 101
II. On the growth of minerals, vegetables, and animals 104
III. On the ova of animals..... 108
IV. On the difference of the structure of the uterus in different animals..... 109
V. On the first stage of conception..... 110
VI. On the formation aud structure of the fœtus..... 112
VII. On the funis umbilicalis..... 115
VIII. On the placenta..... 116
IX. On the membranes..... 118
X. On the liquor amnii..... 120
XI. On the changes which the uterus undergoes in consequence of impregnation..... 121

CHAP. VII.

ON THE SIGNS OF CONCEPTION, AND THE DISEASES OF PREGNANCY.

SECT. I. On the signs of conception..... 126
II. On quickening..... 130
III. On the suppression of the menses during pregnancy 131
IV. On the febrile disposition attending pregnancy..... 132
V. On the use and abuse of exercise during pregnancy..... 133
VI. On vomiting..... 134
VII. On indigestion, and depravity or loss of appetite... 136
VIII. On heartburn..... 137
IX. On costiveness..... 138
X. On collections of indurated fæces in the intestines 139
XI. On the hæmorrhoids..... 140
XII. On blotches of the skin and jaundice..... *ib.*
XIII. On tenesmus, diarrhœa, and dysenteric complaints 141
XIV. On the strangury and incontinence of urine..... 142
XV. On fluor albus..... *ib.*
XVI. On erratic pains, cramps, and numbness of the inferior extremities..... 143

Page

SECT. XVII. On varices of the legs, thighs, and abdomen..... 144
XVIII. On inquietude and want of sleep..... *ib.*
XIX. On the solicitude and anxiety attending a state of pregnancy..... 145
XX. On headachs, drowsiness, vertiginous complaints, and hemiplegia..... 146
XXI. On anasarcous swellings of the inferior extremities..... 147
XXII. On ascites..... *ib.*
XXIII. On partial distention of the abdomen and umbilical herniæ..... 148
XXIV. On the excessively distended and pendulous abdomen..... 149
XXV. On the venereal disease..... *ib.*
XXVI. On the small-pox.—General remarks on diseases occurring during pregnancy..... 151

CHAP. VIII.

ON UTEROGESTATION.

SECT. I. On the situation of the fœtus in utero..... 152
II. On the term of uterogestation..... 154
III. On the causes of labour..... 156
IV. On the predisposing signs of labour..... 158
V. On examination..... 161

CHAP. IX.

ON LABOUR.

SECT. I. Classification of labours..... 164
II. On natural labour..... 165
III. On the symptoms accompanying labour..... 166
IV. On false pains..... 172
V. Cautions against endeavouring to promote the power and effects of pain..... 173
VI. First stage of labour..... 174
VII. Second stage of labour..... 177
VIII. Third stage of labour..... 179
IX. On tying and cutting the navel-string..... 186
X. On the exclusion of the placenta..... 189

CHAP. X.

ON DIFFICULT LABOURS.

		Page
SECT. I.	General reflections	192
II.	Equivocal signs of difficult labours	200
III.	On the definition and distinction of difficult labours	202
IV.	On the first order of difficult labours	204
V.	On the second order of difficult labours	217
VI.	On the third order of difficult labours	224
VII.	On the fourth order of difficult labours	232
VIII.	General observations on difficult labours	243

CHAP. XI.

SECT. I.	On the fillet, forceps, and vectis	246
II.	On fillets	249
III.	On the forceps	250
IV.	General observations on the use of instruments	253
V.	On the application of the forceps	256
VI.	On the action with the forceps when applied	257
VII.	On the application of the forceps under various circumstances	260
VIII.	On the vectis	261
IX.	On the different kinds of vectes	263
X.	On the comparison of the vectis with the forceps	265
XI.	On the manner of using the vectis	268

CHAP. XII.

SECT. I.	On lessening the head of the child	270
II.	On the signs of a dead child	274
III.	On the causes of the death of the child	279
IV.	On the instruments used in the operation	281
V.	On the manner of performing the operation	282
VI.	On the perforation of the head	283
VII.	On the evacuation of the contents of the head	284
VIII.	On the extraction of the head	285
IX.	On the subsequent treatment	289
X.	On the propriety of bringing on premature labour.	290
XI.	On the section of the symphysis of the ossa pubis	295

CHAP. XIII.

Page

SECT. I. On the Cesarean operation 298
II. On the general reasons for performing the operation 300
III. On the supposed reasons for performing the operation 301
IV. On the actual reasons for performing the operation 302
V. On the causes of death after the operation 305
VI. On the manner of performing the operation..... 306

CHAP. XIV.

SECT. I. On the distinction of preternatural labours..... 308
II. On the signs of preternatural labours..... 310
III. On the first order of preternatural labours 311
IV. On the distinctions of the second order of preternatural labours 316
V. On the first distinction..... 318
VI. On the second distinction..... 321
VII. On the third distinction 322
VIII. On the evolution of the child 326
IX. On the distortions of the pelvis 331
X. On the separation of the head..... 334

CHAP. XV.

COMPLEX LABOURS.

SECT. I. On abortion, and labours attended with hæmorrhage 336
II. On the frequency of abortion in women..... 338
III. On the treatment of abortion..... 342
IV. On the symptoms preceding and accompanying abortion 344
V. On hæmorrhages in the three last months of pregnancy..... 351
VI. On hæmorrhages in which the placenta was attached over the os uteri 353
VII. On hæmorrhages occasioned by the separation of the placenta attached to any part of the uterus 358

Page

SECT. VIII. On hæmorrhages which come on after the birth of the child 361
IX. On the exclusion of the placenta 364
X. On the extraction of the placenta..... 369
XI. On hæmorrhages which follow the exclusion of the placenta..... 374
XII. On the inversion of the uterus..... 379

CHAP. XVI.

LABOURS ATTENDED WITH CONVULSIONS.

SECT. I. General observations on labours attended with convulsions 385
II. On the reputed causes of convulsions 387
III. On the means of preventing convulsions 390
IV. On the treatment of convulsions 392
V. On the delivery by art..... 396

CHAP. XVII.

LABOURS WITH TWO OR MORE CHILDREN.

SECT. I. General observations..... 400
II. On the signs of twins 402
III. On the management of twin cases 404
IV. On the management of the placentæ 407

CHAP. XVIII.

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

SECT. I. General observations..... 409
II. On the descent of the funis when the os uteri is but little dilated..... 411
III. When the os uteri is fully dilated..... *ib.*
IV. Further observations..... 413
V. On monsters..... 414
VI. On the extrauterine fœtus 417
VII. On superfetation 420

CHAP. XIX.

		Page
SECT. I.	On the management of women in childbed.....	422
II.	On mania	454
III.	On the swelled leg.....	460

BIOGRAPHICAL SKETCH

OF

DR. DENMAN.

"He, being dead, yet speaketh."—Heb. xi. 4.

BIOGRAPHICAL SKETCH

OF

DR. DENMAN.

It having been suggested that a Life of the late Thomas Denman, M.D., might afford some valuable instruction and useful encouragement to medical students, and, indeed, to all young men exposed to difficult and trying circumstances, the following memoir, written by himself, is now offered to the public. Excepting the omission of some attempts in the beginning to trace the origin of his own family, which could have been of no interest to others, scarcely any alteration has been made from the original, as it has been thought that from the minute detail of apparently trifling circumstances, the difficulties of his early life, the persevering industry with which he subdued them, and the simplicity and sweetness of his own character, would best be understood. It is to be regretted that this memoir terminates at so early a period of his life, but an attempt has been made to supply the deficiency.

A MEMOIR OF MY OWN LIFE, WRITTEN IN 1779.

Descendants, and perhaps relations, have a claim to be informed of the principles which have guided every man in his conduct through life, as the knowledge to be gained from the consequences of those principles, whether successful or otherwise, may be

useful to them. If no real use should arise from the following relation, it may at some future time afford amusement to my daughters or my son, or perhaps to their children; and if I can do them no essential service, which would be the highest gratification to my mind that it is capable of receiving, I am not so vain but I can think with pleasure of contributing to their amusement. Should they live, they will see what sort of a man I was. They will become acquainted with my views in life, my principles, my conduct, my success, my amusements, my connexions, and a variety of other circumstances which are usually known only to a man himself. I trust they will find two things proved in this narration; that my intentions were good, and that I was not of a lazy disposition. Allow me to repeat what has often been asserted, that it is the interest of every man to be virtuous. Let me say that every man should be virtuous himself, and yet sufficiently guarded against the impositions of the vicious; and I am firmly persuaded, that there is no state into which the mind can fall which so effectually precludes all possibility of success in the world, and eventually leads men into such distress, both of body and mind, as the habit of idleness. It is with great justice said to be the root of all evil.

I can hardly suspect myself to be influenced by vanity in writing this memoir; at least if I am, I might complain of my disappointment, for that passion could not be less gratified in any person than it is in me by an inquiry into the history of my family, or by every thing that I have heard of it. Perhaps it is owing to their insignificance that none of the family

have been disgraced. Yet, on consideration, that seems severe, for all the family whom I have known have been honest men, and with rather superior understandings, though their situations in life have been such as to prevent them from rising to eminence.

John, the second son of Thomas Denman, of Bevercotes, in the county of Nottingham, settled as an apothecary at Bakewell in Derbyshire, and was married to Elizabeth, daughter of Anthony Buxton, a mercer in that town. They had eight children: Anne, Joseph, Thomas, the writer of this paper, Sarah and Elizabeth, twins; Hannah, and William and Mary, who were also twins. My father having been supplied with no more money than was necessary to enable him to settle, marrying a wife without fortune, and his family rapidly increasing, was soon brought into great difficulties; and the want of courage to support them, together perhaps with tendencies acquired from former habits, instead of increasing his industry or frugality, drove him to the pursuit of such pleasures as are to be enjoyed in the country—drinking and company. Anne, Elizabeth, and William, died in their infancy, but the rest of us were brought up to be men and women, and we had such instruction as the place we lived in, and my father's situation could afford. My brother had a very good education at Manchester and Wakefield. After having been established in business about thirty years, my father found himself no richer than he was when he began, and I remember his suffering much uneasiness at the thoughts of leaving so many children without any provision. He died of a dropsy about the fifty-eighth year of his age, and I very much lamented him, as I

loved him greatly, notwithstanding his failings, which he did not take much pains to conceal. He was a very sensible and agreeable man, with principles of the most strict integrity, and he strongly endeavoured to impress these principles upon the minds of his children. When his circumstances were low, and he must have had great difficulty in supporting his family, he preserved the same upright conduct, from which I do not believe that any human consideration could have made him swerve.

My mother survived my father several years, and died when I was abroad in the king's service. She was a very religious, meek-spirited woman, and from this disposition she reaped comfort in all her difficulties.

My brother Joseph was in the twenty-first year of his age at the time of my father's death, and I was in my nineteenth. He had been well and properly educated, and had passed two years in attendance upon the hospitals and lectures in London. He succeeded my father in business at Bakewell, and though he suffered some inconveniences, because my father had not been able to attend to business in the latter part of his life, and because he was so very young, yet he was generally encouraged. He was a young man of great prudence, a good understanding, a considerable share of learning, and genteel behaviour, but his business was very little. I think the first year did not exceed fifty pounds, and from this sum to one hundred had been the general annual amount of my father's business. I remained at home, assisting my brother, and getting such improvement as I could, till I was twenty-one years of age, and then I came to London for further improvement and

information, on Sept. 13th, 1754. The money with which I was supplied for this purpose amounted to 75*l.*; 50*l.* bequeathed by my grandfather, and 25*l.* as my share of what my father was supposed to be worth at the time of his death. As I am now entering upon the detail of my own life, I may be permitted to speak of myself. I had been educated at the Free-School at Bakewell, in such sort of knowledge as my old master, Mr. Hudson, was capable of teaching. I understood a little Greek, I was tolerably well informed in the Latin language, and I wrote a good hand. I had not been instructed in any of those accomplishments which serve to show inferior capacities to advantage, nor had I seen much company, having never been from home a week at any time of my life. It might truly be said that I was "home-bred," but I had an excellent constitution, having been accustomed to live on the most homely diet, and I had hardly ever been out of bed at ten o'clock at night. In short, I was a meagre, hungry, sharp-set lad, with some learning, though my education was very incomplete. I had a very competent knowledge of pharmacy, and knew as much of diseases as the frequent reading of Dr. Sydenham's works, and of a few other books could give me. I had a common understanding, and some ambition to succeed in the world, though I was ignorant of the means of procuring success, but I had been trained in habits of industry, frugality, and civility or respect to those with whom I had been connected.

When I arrived in town, I was recommended to Mr. Hunt, a hair-dresser, in Dean Street, Soho, with whom my brother had lodged and boarded. I paid

him ten shillings and sixpence a week, and a hard bargain he had. The money I brought with me to London was intended for the purpose of enabling me to attend St. George's Hospital, and two courses of Anatomical Lectures, but in six months it was wholly expended. I knew little of economy, for having never been accustomed to the management or disposal of money, I acted as a child in this respect, contriving how to spend it as soon as it was received. This was rather a misfortune than a fault, but it is amazing to me when I recollect how many years I lived in the world, without changing this disposition, and how many inconveniences it caused me in the course of my life.

My money being gone, there was a necessity of seeking some employment for immediate support. Many were thought of, but none seemed so agreeable to myself or my friends, as going to sea, in the king's service. I applied to the Navy Board for an order to be examined at Surgeon's Hall, and, very much to my own astonishment, I passed as surgeon to a ship of sixth rate, April 3d, 1755. I believe I was indebted for this to the kindness of Mr. Saint-hill, one of the examiners, who treated me with great tenderness, though I was an entire stranger to him. It must have been owing to humanity and kindness, for I was an awkward lad, little acquainted with the world, ignorant of the mode of intercourse between gentlemen, and had as little knowledge of my profession as might be expected from the scanty means of improvement within my power. I had, however, attended the hospital and lectures very assiduously. I had an excellent memory, and I knew and felt that

I was ignorant. This consciousness of my ignorance was fortunate for me, and in no future part of my life did I lose any opportunity of acquiring knowledge and improvement.

About this time, I was introduced to Mr. Nadauld, Surgeon of his Majesty's ship Lancaster, commanded by the Honourable John Hamilton, brother to Lord Abercorn. Mr. Nadauld was an old acquaintance of my father, so that I was very glad to go with him as first mate, and I had a promise of being made surgeon at the expiration of one year, if I gave satisfaction.

The ship lay at Blackstakes, but I had no money to prepare for the voyage, or to bear my expenses to the ship. I pawned my watch, and set off with about forty shillings in my pocket, to enter among strangers upon a way of life of which I had no more idea than of the Mogul's court. From Blackstakes we went to Portsmouth, where I received two months advance. This was a very great relief to me. A large fleet was sent under the command of Sir Edward Hawke, before the declaration of war, into the Bay of Biscay. The Lancaster was one of the ships belonging to this fleet, and we took abundance of French ships, but as they were not sold I got no prize-money, nor any thing but my bare pay; so that partly for want of management, and partly through real scarcity, I was often without a penny in my pocket. The care of the sick was left almost wholly to me, and though I had not much knowledge, they never wanted any thing I was able to do for them. Before the year was terminated, I was taken ill of a fever, and during the time of my illness the Lan-

caster returned to Spithead. Captain Hamilton being very desirous of going on shore, immediately ventured in a small boat, on a very stormy day, and it was overset in the passage from Spithead to Portsmouth. He was drowned, together with five men out of seven, who were with him. Captain Hamilton was a very worthy man; he was religious himself, and often read prayers to the ship's company. His principles were good and his conduct manly. By his death, my expectations of being made a surgeon were at an end, but at the time it happened I was delirious, in a fever of eighteen or twenty days' continuance, and was sent to sick quarters at Gosport. A good constitution and wholesome nourishment, together with the care of my host and hostess, who were very kind to me, enabled me to struggle through this fever, though I was much reduced. My hair fell off, and a bad cough remained, and before I was nearly recovered, hearing a report that the Lancaster was ordered to sea, I hurried on board in this very weak state, lest I should be left behind, and thrown among strangers.

Captain Amherst had succeeded Captain Hamilton in the command of the Lancaster, and to him I was recommended by the officers; but I was removed on board the Ramillies at St. Helens, in April, 1756, with a view of gaining promotion, and by this change my pay was reduced to thirty shillings a month. The Ramillies was the ship in which Admiral Byng hoisted his flag, in a fleet consisting of ten sail of the line, ordered for the Mediterranean, to relieve Minorca, then besieged by the French. The fleet sailed directly for Gibraltar, but remained only a few days

at this place. We came in sight of Minorca on the 18th of May, and I think on the 20th, we saw the French fleet commanded by Gallisoniere. The action began about five in the evening, but was indecisive. It was determined in a council held on the following day, that we should return to Gibraltar for the security of that place, where we soon arrived, and I was sent as an assistant to the hospital, in which there were more than eleven hundred sick. Here I was again taken ill of the hospital fever, but, having good care taken of me, I soon recovered.

The conduct of Admiral Byng not being approved, he and Mr. West, the other admiral, were superseded by Sir Edward Hawke and Sir Charles Saunders, who came from England to take the command of the fleet. I continued on board the Ramillies, and one of the surgeon's mates dying soon after, I was appointed first mate. The fleet returned to cruize off Minorca, and, in the passage to that station, we met the garrison, which had surrendered to the French. We cruized four months off Minorca, when the fleet being very sickly, we sailed for Majorca, but could not be received there. We then went to Altea in Spain, where we were supplied with plenty of fruit and vegetables, and fresh meat, at a cheap rate. After being refreshed, we returned to our cruizing station, off Minorca, and in a short time afterwards to Gibraltar. We did not remain there long, for Sir Edward, with a great part of the fleet, sailed for England, where we arrived at the latter end of the year 1756.

Though I had the honor of being surgeon's first mate in a flag-ship, and had reason to be convinced

that an opportunity of making me a surgeon would not be lost, it was impossible for me to remain much longer without promotion. I likewise began to be weary of this way of life, and having determined in my own mind to quit the sea, I got leave of absence, and returned to London. When there, I had access to the Dowager Duchess of Devonshire*, to whose family, at Chatsworth, my father had been for many years apothecary, and which my brother now attended. She recommended me to Lord Besborough, who was at that time one of the Lords of the Admiralty, and he gave me a letter to Mr. Devest, Secretary to the Navy. I was that very day appointed surgeon to the Weazle sloop, in which I remained only a month, and was then removed to the Centaur, a twenty-gun ship, under sailing orders for the coast of Guinea, in company with the Litchfield of fifty guns. I now flattered myself that I should not only live more comfortably for the present, but that in future I should have no difficulties to struggle with. Indeed I was very poor, but my associates were poor also, and this in fact is to be rich, for I could not compare myself with those who were better off than myself in this respect. Besides I felt no present inconvenience from the want of money, and I disregarded what was to come, or hoped for better days.

I think we sailed in March, 1757, for the coast of Guinea, and were ordered to touch at Teneriffe. In our passage thither we took a French privateer, which was sold when we got there, and my share of the prize money amounted to twenty-eight pounds. This was a very acceptable and necessary supply, and was suf-

* Charlotte, daughter and heiress of Richard, Earl of Burlington.

ficient for all my wants, or rather, perhaps, for the opportunities I had of spending money, during the voyage. We remained at Teneriffe about a month, passing our time very agreeably, partly from the attention and civility of the inhabitants, and partly from the novelty and variety of the things we met with, particularly the religious ceremonies of the inhabitants. We then proceeded to the Cape Verd islands, and took in water at St. Jago, but there was nothing else to be got, for it was a very poor place. We touched at all the places between Gambia and Ancober, and we were tolerably healthy, though it was the rainy season. I had money in my pocket which I had no occasion for, or opportunity of spending, my pay was increasing, and my prospects flourishing, so that this would have been an exceedingly pleasant voyage, but that the captain was a very ill-bred man, and eternally quarrelling with his officers. Quitting the coast of Africa we went to Prince's Island, where we wooded and watered, and then proceeded to the West Indies.

During this voyage, I determined to learn the French language, but having no master, I could only acquire sufficient knowledge to enable me to read it, and I always pronounced it very ill. However, the little I did acquire has been extremely useful to me on a variety of occasions. I studied, moreover, the History of England, and read almost every book on board, having much leisure upon my hands, and feeling always a great desire to improve myself. At this time, if I had met with any person capable of pointing out to me a particular line of study, and the method of prosecuting it, I believe I should have made

some progress; but my views and intentions were too diffused, and required directing to some particular object, so that what I now learned, which was more than at any other equal period of my life, gave me rather the appearance of being learned than really made me so.

We arrived at Barbadoes after a good passage, and then went to Antigua, where the ship was careened, after which we had several cruizes among the French islands, but the Centaur being a dull sailer, we took no prizes. After remaining in the West Indies about seven months, we were ordered home with a convoy, and, in August, 1758, we arrived in the Downs, after an absence from England of about seventeen months. We were ordered to Portsmouth, where the Centaur was paid off, and I was immediately appointed surgeon to the Aurora, a fine frigate of thirty-eight guns, commanded by Captain Francis William Drake. My prize-money had nearly borne my expenses during the voyage, and when I had received my pay, and some other emoluments, I might reckon myself worth about 90*l.*; but the Aurora remained in harbour with a very few men, so that being obliged to live on shore, and forgetting that I had ever been in want, I soon spent a great part of the money I had saved. Captain Drake had been removed from the Aurora to the Edgar, a new ship of sixty guns, and, upon an application from him, which I solicited, I was appointed surgeon in the spring of 1759. The Edgar was then under sailing orders for the Mediterranean, being one of the fleet under the command of Admiral Boscawen, and I went immediately on board, with seventeen guineas in my pocket, tolerably well

equipped, and free from debt. I felt myself very happy, in a fine ship, with a very worthy and amiable captain, and a set of good officers.

We soon arrived at Gibraltar, and after a short stay, proceeded to watch a squadron of French ships of war off Toulon and Minorca. After a cruize of about three months, the Edgar was ordered to Villa Franca, which gave me an opportunity of visiting Nice, and some other parts of Piedmont. During this cruize, Captain Drake was very ill of a sore throat, and my care of him upon this occasion laid the foundation of that intimate friendship which has subsisted between us ever since. Having rejoined the fleet, we went to Salo, near Barcelona, for refreshments, and soon after returned to Gibraltar. While the fleet was in Gibraltar Bay, a frigate which had been left to watch the motions of the French, gave notice of an enemy's fleet. At this time the admiral and many of the captains were on shore, and without the lines of Gibraltar. They hurried on board, and the fleet getting under weigh, gave chace to the enemy. They had originally fourteen sail of the line, but six of the smallest got into Cadiz; and the English fleet, consisting of fourteen sail of the line, came up with the remainder, and they engaged on the following day. Then was fought the action off Lagos, between the English commanded by Admiral Boscawen, and the French by Monsieur De la Clue. Two of the French ships, the Centaur and the Temeraire, were taken, and three others were burnt and destroyed; the rest escaped. The Edgar had been very sickly before, but became immediately after the action very healthy,

which change was attributed to various causes, but I suppose it was owing to her being well fumigated by the firing of the gunpowder. The Edgar was sent to Gibraltar with the Centaur, one of the prizes, and after a short stay we returned to Plymouth; but we did not rest long, being ordered to the Bay of Biscay, where we cruized, sometimes with and sometimes without a fleet, for seven or eight months, but we took no prizes. Some part of the time we were in Quiberon Bay, watching the motion of three or four French ships, which had got into the River Vilaine, after the defeat of Monsieur Conflans by Sir Edward Hawke. During this time Captain Drake was taken ill of a very violent bilious colic, which terminated in a very uncommon manner; but he recovered; and the care and attention which friendship rather than a sense of duty induced me to pay him, rendered our future intercourse rather like that of brothers than of a captain and a surgeon.

We returned to England, and were docked at Plymouth. At this time the siege of Bellisle was carrying on under General Hodgson and Mr. Keppell, and the Edgar was sent out with orders. I went on shore to see the manner of carrying on a siege, and was very near being killed by a cannon shot. We did not stay till the place surrendered, but went on a cruize, in which we had no success, and then returned to Plymouth.

In the beginning of the year 1760, there being war also with Spain, preparations were made for a great armament to go to the West Indies, whither we sailed with a fleet of merchantmen and transports, in company with the Oxford man-of-war. We waited some

time at St. Kitt's, and were joined by Sir George Pocock and Commodore Keppell, with a very powerful fleet, and troops on board under the command of Lord Albemarle. The fleet came off the Havanna in June, the siege was immediately commenced, and the place surrendered, I think, on the 11th of August. During the siege, both the fleet and army suffered infinitely more from the climate than from the efforts of the enemy. The Edgar fared as well as the rest. We had lost only seven men when we went into harbour, and I had several places prepared for the sick on shore, at Regla, an adjacent village. These places were generally old houses hired from the Spaniards, and were ill-aired, so that, with all the care I could take, and all the expense I was at, the Edgar lost about seventy out of her complement of four hundred and twenty men. Many of the ships lost a greater proportion, and the army suffered prodigiously indeed. For this attendance and the expense incurred by this service, every navy surgeon was allowed twenty-five shillings a day, and all extra expenses were repaid. On this account, I received, at the conclusion of the war, upwards of one hundred pounds, and all the other surgeons received in proportion. Towards the latter part of the time which we staid at the Havanna, in the whole about ten weeks, I received forty-two pounds as the first payment of my share of prize-money; but I was taken ill of the fever, and should certainly have died if we had continued there much longer. Fortunately the Edgar was ordered to sea in a small squadron, and I found myself growing better every day, though I was too ill to enjoy our meeting with eight or ten sail of

merchant ships, and taking them prizes. During my illness I received every mark of attention and kindness from Captain Drake, and I recovered my health perfectly.

After our success, we cruized some time off Hispaniola, and then went to Jamaica. I now felt no want of money. I had received a year's pay, near forty pounds, for the ships of war taken off Lagos; forty-two pounds as part of my Havanna prize-money; and the prize-money for the last ships amounted, I think, to fifty-eight pounds. But I had yet no idea of the necessity of saving money, and was, therefore, very negligent how I spent it, for which thoughtlessness I afterwards suffered very much. If my son should live to read this paper, I recommend him to take care of his money. I do not wish him to be mean or avaricious, but I exhort him and his children, and all my successors, to acquire and to practise habits of frugality and good management. They are always proofs of a good understanding, and show that a man forms a just estimate of the business of life; for though the possession of money is not necessarily the possession of happiness, yet money is the price of every thing, the state of his own mind excepted, which can contribute to happiness. I know that the most uneasy moments of my life, and the most humiliating situations I was ever in, have been occasioned by the want of money. I firmly believe also, that my progress in the world has been checked more by the want of money, than either of friends or of abilities; therefore I could not say less upon this subject. It may probably be thought too much, but it is not more than is true.

After a short stay at Jamaica, the Edgar was ordered on a cruize off St. Domingo, from which we expected great matters, and hoped to lay hold of some rich Spanish prize, it being their very track; but hostilities ceased during the time we were upon this cruize, peace having been established in Europe six months before. Upon the knowledge of this news we returned to Jamaica, and from thence to the Havanna, and this place being shortly afterwards restored to the Spaniards, we sailed for England.

Upon our arrival at Plymouth, the Edgar was paid off, and I was set at liberty in the year 1763, after a wandering, though not in general a disagreeable life of nine years. If I were disposed to divide my life into eras, I might say that the second era was now concluded, the first having terminated when I quitted Derbyshire. Being now in the thirtieth year of my age, and, when all my property was collected, worth upwards of five hundred pounds, I went first to Bakewell to see my friends, and they advised me to settle. Nine years had made great alterations among them, as well as in my sentiments. I determined first to dissect, and attend lectures on anatomy, which I did in company with Mr. Lloyd, late surgeon of the Oxford, with whom I had contracted a very intimate friendship. I also attended lectures in midwifery, and applied myself to the study of this branch of the profession; and I was afterwards encouraged to settle at Winchester, with the expectation of assistance and protection from the friends of Captain Drake, some of whom lived in that neighbourhood; but I did this without consideration, and I found Winchester a very poor place, containing al-

ready more medical people than could live. I soon became impatient of waiting, and began to blame myself and others for having undertaken a matter of so much importance without more deliberation. I fretted, and made myself less likely to succeed by uneasiness and solicitude, and, after teazing myself and my friends for about four months, I determined to quit Winchester, having thrown away since my arrival in England nearly two hundred pounds.

I then came to London, and lodged at Mr. Norton's a surgeon and apothecary in the Strand, with whom I also boarded. I attended dissections and lectures in anatomy, and began to think it might be useful if I took my degree as M.D., and got a diploma from the University of Aberdeen, on the recommendation of Dr. Kelly and Dr. Kirkpatrick. After staying about four months at Mr. Norton's, I took a lodging in St. Martin's Court, where I thought I could live cheaper, but I had no design of settling in London. However, I determined to do any little business which might offer, and very little it was, for I had no friends in town, and very few acquaintances; but the person of the house, whose name was Miller, was very civil and good, and one way or other I picked up about forty pounds. This was in the year 1765, and this money, though not adequate to my expenses, gave me some encouragement. I soon after thought it better to change my situation, and, accordingly, took a lodging in Oxendon Street, Haymarket, for which I paid seventeen shillings a week, and I used my utmost endeavours to make acquaintance and to get business; but I went on so slowly, spending daily the remainder of my little

stock, that I became tired, and again attempted to get appointed surgeon of a king's ship. Being, however, unable to obtain a warrant, I was obliged to go on, and about this time thinking my chance in midwifery the most promising, I published my Essay on Puerperal Fever, which I believe gained me some credit, and procured me some business. I also published, soon after, a letter to Dr. Huck on the Construction and Use of Vapour Baths, but this scarcely produced so much as to pay the expense of printing it. I became, however, more generally known, and I got about one hundred pounds a-year. Being informed that one of the King's yachts was vacant, I applied to Lord John Cavendish, who recommended me to Admiral Keppell, and I was also recommended to him by my old friend Captain Drake, who never forsook me. By this interest I was appointed surgeon of the William and Mary yacht, which appointment was worth about seventy pounds a-year. It was almost a sinecure, at least the duties did not interfere with my other employments: but in the year 1777, I was obliged to resign this situation, as the yacht was ordered upon service, and the attendance would have been incompatible with my business in London.

The whole savings of the nine years I had been at sea were now entirely expended, and I had with great difficulty kept myself out of debt, the thoughts of which hurting my pride, and giving me very mortifying reflections, I began to be very circumspect about my expenses. However, on the strength of the yacht, I ventured to take a small house in Oxendon Street, but I furnished only one parlour, think-

ing to complete it gradually, as I was able, and I hired a maid-servant, who cheated me very much. When I went into this house, excepting my furniture, I had but twenty-four shillings in the world, but I was out of debt. My business increased every year, and in the third year after I had taken my house, I got two hundred and fifty pounds, which, together with the profits from the yacht, prevented all present inconvenience, and gave me better hopes for the future.

About this time died Dr. Cooper, a teacher of midwifery, of no great reputation. Mr. Osborn, who had attended St. George's Hospital when I did, and who was pretty much in the same predicament with respect to fortune as myself, agreed to give lectures with me. We purchased Dr. Cooper's apparatus for 120*l.*, and great difficulty we had to raise the money between us. We began to read lectures in the year 1770, awkwardly enough, and with little encouragement, as I suppose most people do at first; but it is probable that we improved, for in a short time the lectures flourished, and with them my business, and I believe my credit also.

Dr. Cooper had likewise been man-midwife to the Middlesex Hospital, I offered myself as a candidate to succeed him; and, after a very hard contest, some expense, and endless trouble, I was elected jointly with Dr. Krohn.

I was now surgeon to the William and Mary yacht, I was a teacher of midwifery, I was man-midwife to the Middlesex Hospital, I had published two pamphlets, which had at least acquired me a character for industry and common abilities, and I got upwards of 300*l.* a-year by my business. I was in the thirty-

seventh year of my age, and I determined to marry, and becoming acquainted with the family of Mr. Brodie, a respectable army linen-draper, I chose Elizabeth, his youngest daughter, then in the twenty-fourth year of her age. I received no money as a dowry, but two leasehold houses in Vine Street, Piccadilly, which produced about eighty pounds a-year, clear of all deductions. It is impossible to have chosen a wife more suitable to my disposition and circumstances; her manners are amiable, her disposition gentle, her understanding naturally good, improved by reading and the conversation of reasonable people, and she has that regard for truth and propriety, that I am firmly persuaded no human consideration could induce her to depart from them. She is frugal without meanness, temperate and cheerful, and it is impossible for any two people to have lived together with more perfect harmony than we have done for these nine years. Within the year after our marriage, my wife was brought to-bed of twin daughters, Margaret and Sophia, and when born there did not appear much chance of their living; but the care and attention of their mother was unwearied, and they are at this time very healthy girls.

My assiduity increased with my family, and we lived frugally, so that in the very year in which we were married, we saved 200*l.*, and have continued to do so every year since. About two years after our marriage, I thought it necessary to take a larger house, partly for appearance, and partly for convenience, that in which we lived being very small. In the year 1772, I therefore removed into Queen Street, Golden Square, which I thought would be a

good situation both for lectures and for business, and I soon after purchased the lease of this house for 1200*l.* Three hundred pounds of this money I had saved, and for the rest I paid interest about four years, when the whole purchase was completed. I had now a large house, my business brought me in about 400*l.* a-year, the lectures 100*l.*, the houses in Vine Street 80*l.*, the yacht 70*l.* and I lived rent-free.

My business was chiefly among the lower class of people, but I never lost sight of the possibility of getting business among a higher rank, and I had struggled through so many difficulties that my mind became seasoned against common accidents, and I was better qualified to conduct myself in the more intricate parts of the business of life. My friends have for some years given me the credit of being remarkably steady, but I may assure the reader of this, whether it be my wife, or my daughters, or my son, that if I have steadiness it is all acquired, my natural disposition being impetuous. I always thought steadiness worth every other quality, either in man or woman; and it has been the business of my life to acquire it.

About this time I took courage, and kept a chariot in the winter, but the advantages which might result from it were rather expected than realized. My business, however, both increased and improved, though slowly; but in the year 1778, it amounted to about 600*l.*, and the profits of the lectures to 150*l.*, and then I built a new chariot. In the year 1777, I purchased two pieces of land near Lynn in Norfolk, for which I paid down 350*l.*, and was to pay 500*l.* more. This land was to bring me in four per cent. for my

money, or 34*l.* a-year, but I was not lucky in my bargain, the value of money increasing almost immediately after I had made it; first by the failure of Mr. Fordyce, the banker, which put almost an instant stop to all credit, and secondly by the French and American war, which occasioned a real scarcity of money.

With my new chariot I had a coachman in a handsome livery, and a servant behind, which were beyond my wish or inclination, but I thought them due to my present reputation, as well as to my future prospects, and I hoped that I had secured my family from distress, if I were to die before I had an opportunity of making any further addition to my fortune. We observed the most strict frugality in all other respects. On Feb. 23d, 1779, I was made happy by the birth of my son, which was an unexpected blessing, as I had given up all hopes of having any more children, my daughters being at that time more than seven years of age. I shall not fail to do all in my power to provide for them, consistently with those rules of probity and integrity which I have always established as the guides of my conduct, and from which, when they are capable of judging, they will be glad that I have never swerved. If the property I may leave behind me should not be so much as they expect, or as I wish, they will see the reason in this narrative. Whatever it may be it ought to wear well, because it has been honestly gained. They will also see an example of the good which attends industry and fair intentions, even when counteracted by errors and indiscretion.

The continuation of this Memoir must be left to

some future period, and it concludes for the present on the 5th day of August, 1779.

THOMAS DENMAN.

CONTINUATION.

FINDING that his income from business did not increase rapidly, about this time Dr. Denman took one or two house pupils, but the whole number that he ever had amounted only to six, and it is remarkable that three of these have since attained considerable eminence in their profession*.

In the year 1781, he was burnt out of his house in Queen Street, in consequence of a fire which began at the next door, and upon this occasion the life of his son was saved only by his own presence of mind and determined resolution. So imminent was the danger, that many of the spectators thought he must have perished in the attempt, but he was soon afterwards perceived with the child in his arms, and with such a tranquil and sedate composure as to form a striking contrast with the tumult of the scene, and the terror of those less deeply interested. This event involved him for a time in considerable pecuniary difficulties, arising from the conduct of the builder he employed, and whom he considered as a friend; but the ultimate advantages were great, for his removal into a better situation had an immediate effect upon his business, and the death of Dr. Hunter, which happened in 1783, raised him at once into the highest

* The late Dr. Parry, of Bath; Mr. Chessher, of Hinckley; and Philip Martineau, Esq, of Norwich.

practice, and placed him at the head of his branch of the profession. From Queen Street he removed to Old Burlington Street, where he lived for many years, and the first person of very high rank whom he attended was the late Duchess of Devonshire, in the year 1783; a circumstance particularly gratifying to him, as, from the impressions of his early life, he always felt strongly attached to that noble family. After he removed to Old Burlington Street, Dr. Denman gave no more lectures, but they were carried on by Dr. Osborn, in conjunction with the late Dr. John Clarke. In the year 1789, his eldest daughter, Margaret, was married to Richard Croft, Esq.*, and, in 1791, his daughter Sophia was married to Matthew Baillie, M.D.

Dr. Denman's business becoming at this time so extensive that with all his industry he could hardly overtake it, he gradually introduced his son-in-law, Mr. Croft, who had chosen the same branch of the profession; and in this way he by degrees relinquished the most laborious parts of the business, and became every year more and more a consulting physician with respect to the diseases of women and children. This line of practice he continued till his death, with very high reputation and the unbounded confidence of the public; and such was the tenderness and sympathy of his manner, and his devoted attention to the claims of humanity, that many a sick-bed was soothed and comforted by his kindness and conversation, long after it was known that no

* In the year 1816, he succeeded his brother, the Rev. Sir Herbert Croft, Bart., and became the representative of an ancient and honourable family.

advantage could be expected from his medical assistance.

When Mr. Croft was fully established in the practice of midwifery, Dr. Denman removed to a smaller house in Old Burlington Street, and afterwards to another in Mount Street, and he likewise had for a few years a country house at Feltham Hill, near Sunbury, to which he occasionally retired.

His son, Thomas Denman, was educated at Eton, and afterwards at St. John's College, Cambridge, and in the year 1806 he was called to the bar*. In October, 1804, he married Theodosia-Anne, eldest daughter of the Rev. Richard Vevers, Rector of Saxby, Leicestershire, by whom he has a numerous family. He was appointed Solicitor-General to Queen Caroline, on the demise of his late Majesty†, and continued in that office till her death. He is now Common-Sergeant of the City of London, and M.P. for Nottingham.

In the summer of 1815, Dr. Denman took a journey, with one of his grandsons, and his wife, to visit her relations in the neighbourhood of Salisbury, and appeared to be in the enjoyment of good health, and to possess his usual cheerfulness of manner. He afterwards went alone to Hinckley, where he found himself considerably indisposed, and became so ill upon his return, that he was obliged to stop at Northampton, where he received the utmost kindness and attention from Dr. Locock. He became better, and

* From the age of about three years to five, he had the benefit of Mrs. Barbauld's tuition, and he was likewise for a short time, before he went to Eton, with the Rev. Dr. Thompson, at Kensington.

† George III.

returned to London, apparently pretty well, but still complaining of feeling indisposed, and was unable to attend the annual dinner of the Society for the Relief of the Widows and Orphans of Medical Men, an establishment in which he had always taken the warmest interest. On Saturday, the 25th of November, he went in the evening to Dr. Baillie's house in Lower Grosvenor Street, to meet his family, who had been for some time absent from London. He walked there, and back again to Mount Street, and appeared well and cheerful, but, upon parting from his daughter, he embraced her with even more than his accustomed tenderness. At least she thinks so now! The next morning he rose at his usual hour, and went down stairs to breakfast. To his wife's enquiries after his health, he replied that he was "quite well," but having occasion to leave the room for a few minutes to get something that she wanted, she found him upon her return stretched upon the floor, and totally insensible. His countenance was tranquil and composed, but all attempts to restore animation were in vain. Not a moment had been allowed for preparation; but what preparation could have better fitted him for the awful change?* He was buried in St. James's Church, in the quiet, unostentatious manner that suited his character and habits, and a simple tablet has been erected to his memory.

Dr. Denman was a man of strong original understanding, of great sagacity, and of an ardent curiosity after knowledge. He was not only profoundly skilled in his own branch of the medical profession,

* His brother, Dr. Joseph Denman, died at a small house which he inhabited at Lambeth in 1812, after an illness of a few hours only.

but he had a great deal of general information, acquired by correct observation, and much miscellaneous reading, and clearly retained by an excellent memory. He had the most perfect integrity of character, and great benevolence of disposition, which was not chilled by the progress of age, but was mixed, to the last, with all the cheerful animation that belongs to youth. To the last, also, he retained the most lively interest in passing events, and read with eagerness new publications of merit; his constant habit of early rising affording him many hours of leisure, which were always actively employed.

Familiar with all the standard works that belong to the classical literature of the country, he felt an ardent admiration for the pre-eminent genius of Bacon, and derived peculiar pleasure from the essays of Sir William Temple, while Shakspeare was his constant companion and his daily study. He often introduced his more striking passages in conversation, and took great delight in interpreting his language by reference to provincial idioms, and in explaining the old customs to which Shakspeare so frequently alludes, by the recollections of his early days passed in his native county. He was among the warmest admirers of the great author, whose popular productions first appeared shortly before his death, and whose Guy Mannering was the last novel that he read.

The perusal of the Bible afforded him constant satisfaction, and, during the latter part of his life, not a day passed without his reading a portion of it. He was a true Christian, but his religious sentiments were wholly free from bigotry or dogmatism, and he

never lost sight of their utility as influencing moral conduct. On the last evening of his life, he read prayers aloud to his family, according to his established custom.

He was fond of society, and had particular pleasure in the conversation of young people, into whose sports and amusements he entered with extraordinary vivacity, and whom he delighted to assist in the more important business of life. Moderate and abstemious in every thing that regarded himself, he was generous and bountiful when any reasonable claims of distress were presented to him. He was sweet in his temper, agreeable in his conversation, and, from his easy and amiable intercourse with his intimate friends, and the members of his own family, he was most justly beloved, as well as respected by them.

In his person he was firm and strongly made, about five feet eight inches in height. His hair was perfectly white, his complexion fresh and vigorous, his eye, which was blue, continued remarkably clear and bright, his hearing was unimpaired, and his teeth remained entire to the very last. Such he was in the eighty-second year of his age.

During the course of his life, Dr. Denman wrote a good many essays, chiefly on subjects relating to midwifery, and made some important new observations. The Essay on Puerperal Fever, mentioned in his own memoir, was much approved of by the public. He was the first who pointed out a power in the uterus under particular circumstances, of turning a child by its own efforts, when the arm presented; an observation which is both curious, and of considerable importance. He likewise first pointed out a

membrane exactly similar to the decidua, but having no connexion whatever with pregnancy. Indeed, while this membrane is formed by the womb, a state of pregnancy cannot take place. He contributed to improve the treatment of those convulsions which occasionally precede or accompany labour, and published some excellent observations upon rupture of the uterus, and the mania lactea. The work, of which a new edition is here given to the public, has long been considered as the best system of midwifery that has hitherto appeared in this or any other country. It has been translated in the Latin and French languages, and is well known in America*.

Soon after he became a lecturer, he published some valuable observations under the title of Aphorisms upon the uses of the Forceps, which underwent seven editions; and a few years ago he published a small treatise upon cancer, a second edition of which was nearly printed off at the time of his death. He was very much interested in this subject, knowing the disease to be so afflicting to human nature, and because he thought that of late years some improvement had been made in its pathology; that its treatment, also, both with respect to external and internal remedies, had been improved. These are his chief publications, some of which have been of the most important advantage to society. They all bear evidence of a powerful understanding, and of an ardent desire to be useful in that station of life in which it had pleased Providence to place him. B.

August 1, 1823.

* This work first appeared about the year 1784 or 1785.

INTRODUCTION

TO THE

PRACTICE OF MIDWIFERY.

CHAPTER I.

SECTION I.

ON THE PELVIS.

The anatomical and physiological knowledge of all the parts concerned in parturition is indispensably necessary for those who mean to excel in the practice of midwifery; even that of the whole body may, on various occasions, be employed with advantage. In the investigation of every subject there must however be some point of commencement, and, as there is much use and propriety in the method hitherto pursued by systematic writers, I shall follow their example, and give, in the first place, a description of the situation, structure, connexion, use, and diseases of these parts; beginning with the *pelvis*, which is of great importance, on account of the direct influence which it has upon labours, and because it may be esteemed the foundation on which all the other parts are sustained. But this is only intended so far as may be requisite for the study and practice of midwifery.

The term *pelvis* has been indiscriminately given to the inferior part of the cavity of the *abdomen*, and to the bones which form the cavity; but it appears more eligible to confine the term to the bones, and to call the space between them the cavity of the *pelvis*.

The *pelvis* in the adult state is composed of four bones: the *sacrum*, the *os coccygis*, and the *ossa innominata*.

The *sacrum* is situated at the posterior and inferior part of the trunk of the body, and serves as a basis for the support of the spine, of which it is an imperfect continuation. Its figure is that of an irregular triangle, with the shortest side placed upwards. The anterior surface is smooth and flat, and has a considerable degree of inflection or curvature, called the hollow of the *sacrum*, by which the cavity of the *pelvis* is much enlarged. The posterior surface is convex and

uneven, and to it some of the muscles of the spine and thigh are attached.

In the infantile state, the *sacrum* is composed of five, and in some subjects of six bones, called false *vertebræ*, cemented together by intervening cartilages, which in the adult become bone; leaving little ridges or lines on the anterior surface, indicating the parts where they had been separate. These bones diminish in their size as they descend, so that the lowest, which makes the point of the *sacrum*, scarcely maintains the character of one of the *vertebræ*.

The articulation of the upper part of the *sacrum* with the last of the lumbar *vertebræ* is similar to that of the *vertebræ* with each other; but by the manner in which the *sacrum* and *vertebræ* are joined, the latter inclining over the former, an obtuse angle is made, called the great angle of the *sacrum*. In children educated with more regard to a false idea of beauty than to the acquisition of strength, this angle is sometimes so great as to require mechanical support.

Through the *sacrum* there is a canal for the residence and security of the lower part of the *medulla spinalis;* but the posterior part of the canal is incomplete below the third bone, a strong ligamentous substance supplying the place of bone. That part of the *medulla* which is contained in the *sacrum* is called the *cauda equina*.

On the anterior part of the *sacrum* there are four pair of holes or perforations, or more, according to the number of bones of which the *sacrum* was originally composed, through which large nerves pass for the use of the parts contained in the *pelvis* and of the inferior extremities. On the posterior part of the *sacrum* there is an equal number of perforations disposed in the same longitudinal order; but they are less than those on the anterior part, and covered by membranes, which allow small nerves to pass through them.

The *sacrum* is of a very cellular texture, and is said to be lighter than any other human bone of equal magnitude.

The lateral parts of the *sacrum* form a broad unequal surface, by which it is connected with intervening ligament and cartilage to another uneven surface at the posterior part of the *ossa innominata*. The inequalities of these surfaces receiving and being received by each other, contribute very much to the firmness of the union of these bones. An *anchylosis* is not unfrequently formed between the *sacrum* and *ossa innominata;* and sometimes in consequence of their separation an imperfect joint, which very much weakens that part, and impairs the manner of walking for the remainder of life.

To the inferior extremity or point of the *sacrum*, is subjoined the *os coccygis*, which has by some writers been considered as a distinct bone, and by others as an appendage to the *sacrum;* and these form, by the manner of their union, an obtuse angle, called the little angle

of the *sacrum*. In infancy, the *os coccygis* is cartilaginous, but, in adult age, it is composed of three, or more frequently of four bones, connected by intermediate cartilages, the uppermost of which is somewhat broader than the lowest part of the *sacrum*. In some subjects these bones coalesce and form a single bone; and in others an *anchylosis* is formed between the *sacrum* and *os coccygis*; in consequence of which the latter is shortened and turned inwards, so as to obstruct in some degree the head of the child in its passage through the *pelvis*. But the impediment thereby occasioned at the time of labour may be, and usually is, overcome by the force with which the head of the child is propelled, and the *os coccygis* again separated from the *sacrum* with a noise loud enough to be distinctly heard, of which I have known more than one instance. In general however, between the bones of which the *os coccygis* is composed, some regressive motion is preserved; and that which is produced between the *sacrum* and *os coccygis*, when the latter is pressed by the head of a child passing through the *pelvis*, occasions a considerable temporary enlargement of the inferior aperture of the *pelvis* *. The insertion of the *coccygæi* muscles, of a part of the *levatores ani*, and of portions or slips of the sacro-sciatic ligaments into the sides of the *os coccygis* keeps it steady, and prevents any lateral motion.

The *ossa innominata* are the broad large bones which form the fore part and sides of the *pelvis*, and the lower part of the sides of the *abdomen*. In children each of these bones is composed of three; and, though they afterwards become one, the lines of original distinction may be observed at the *acetabulum*, or socket, which receives the head of the thigh bone. While the bones are distinct they have peculiar names, the *ilium*, the *ischium*, and *pubis*, which names it is necessary to retain in the adult state, that we may be able to describe with more accuracy each individual bone, or allude to it in the description of the adjoining parts, and on many other occasions.

The *ilium* is the largest and uppermost of the bones which form the *ossa innominata*, constituting what, in a description of the external surface of the body, would be called the hip. It is flat, broad, unequally convex and concave; in some parts round, and in others of an irregular square figure. It is divided by anatomists into the *crista*, *basis*, anterior and posterior edge, and the two sides external and internal.

The upper part, which has a thick arched border, is called the *crista*. The anterior and middle part of it is convex outwardly, and the posterior somewhat convex inwardly. The *crista* has originally

* *Os coccygis adeo extrorsum sæpe vertitur, ut integros deinde annos conquerantur de dolore, in partibus his residuo.*—Ruysch, Advers. Dec. 2.

on its verge an *epiphysis,* of which there are often marks to an advanced age.

The *basis,* or inferior part of the *ilium,* is thick and narrow. It forms anteriorly a portion of the *acetabulum,* or socket, which receives the head of the thigh bone; and posteriorly a large share of the circumference of the *ischiatic sinus,* which is completed by the *ischium* and sacro-sciatic ligaments.

The anterior edge of the *ilium* has two eminences, called spines, distinguished as superior and inferior, between which there is an excavation or notch, and another below the inferior spine.

The posterior edge is shorter and thicker than the anterior, and terminates with two protuberances or spines, between which there is also an excavation.

The external side of the *ilium* is convex on the fore, and concave on the back part. The internal side is irregularly concave; and upon that surface which is connected with the *sacrum* there are several irregularities. From the upper part of this surface there runs a prominent line, which forms a margin, defining the upper aperture of the *pelvis.*

The *ischium* forms the lowest portion of the *ossa innominata.* Its parts are described under the names of body, tuberosity, or obtuse process, and *ramus.*

The body of the *ischium* forms the lowest and largest part of the *acetabulum,* and sends out a small *apophysis,* which projects backwards and inwards, and is called the spine or spinous process of the *ischium.*

The tuberosity or obtuse process of the *ischium* is very thick and uneven, and is turned downwards. As it is the part on which the body rests when we sit, it hath also been called *os sedentarium.* The convex portion was originally an *epiphysis;* and, from the remains of the tendons and ligaments which were affixed to it, has, in the fresh subject, a cartilaginous appearance.

The *ramus* is a flat thin process or *apophysis,* proceeding from the curvature of the tuberosity, ascending and joining to a similar but shorter process, which springs from the anterior and inferior part of the *ossa pubis.* The *ramus* of the *ischium,* aided by this short process, forms a large part of the outline of that opening called the *foramen magnum ischii.* This opening, in the recent subject, is filled up by a strong ligamentous membrane, which gives rise to the external and internal muscles called *obturatores.*

The *ossa pubis* contribute the smallest share towards the formation of the *ossa innominata.* Each of them has been described in three parts, the body, the angle, and the *ramus.*

The body is that part which is placed transversely before the an-

terior part of the *ilium*, to which it is united, forming by this union the oblique eminence, which distinguishes on the inner part of the *pelvis* these two portions of the *ossa innominata*. The body of the *pubis* contributes also to the formation of the *acetabulum*. The upper edge has on its inner part an oblique ridge, which is called the *crista*, and is continuous with that of the *ilium* beforementioned, as defining the margin of the *pelvis*.

The anterior part of the *pubis* is called the angle, and constitutes that surface, which, being joined to the opposite bone, forms the *symphysis* of the *ossa pubis*, and in common language goes by the name of the *share* bone. This part of the bone is flat and thin. The *ossa pubis* connected together form on the external or inferior side an unequal concavity; but on the internal or superior surface they are pretty equally convex, and both the edges have a small degree of flexure outwards.

The *ramus* is a flat, thin, short *apophysis*, which, running obliquely downwards, unites with that of the *ischium*. The two *rami* of the *ischia* and of the *ossa pubis* form on the interior and inferior part of the *pelvis* an arch, which is usually called the arch of the *pubis*. This arch is much larger in women than in men; which circumstance is favourable to the emergence of the head of the child at the time of birth, and constitutes the most distinguishing mark between the male and female *pelvis*.

SECTION II.

The advantage to be derived from the knowledge of the bones of the *pelvis*, in a dried or separate state, is not very evident. But we may consider the previous intelligence of this and some other parts of our subject as essentially useful and necessary, because it comprehends the rudiments of a more perfect knowledge than can be otherwise acquired; we shall therefore proceed to examine the manner in which these bones are connected.

To the two lateral surfaces of the *sacrum* are joined the posterior surfaces of the *ossa innominata*, and these are covered with a thin intervening cartilage, or ligamentous cartilage, the inequalities, as was before observed, contributing very much to the firmness of the junction. The *ossa innominata* are also joined at the anterior part by a thin cartilage, which covers the scabrous end of each bone, and the space between them is filled up with a ligamentous substance. This connexion is called the *symphysis* of the *ossa pubis*.

Within the circuit of the *pelvis* the *periosteum* is thickened at the parts where the *ossa innominata* are joined to the *sacrum*, and at the *symphysis* of the *ossa pubis*. The *symphysis* has also been described

as connected by a thin transverse ligament, or by ligaments which form what may be considered as a capsular ligament, adhering to the part which it incloseth, and to which it giveth the principal strength. Greater stability could not be procured by any internal mode of union, without a diminution of the cavity of the *pelvis**.

But on the external parts of the *pelvis*, where the union of the bones could be more firmly established by a ligament, there is no point where one is omitted; even the tendons of the muscles inserted into the projecting parts of the bones, though particularly designed for other purposes, eventually contribute to the strength of the *pelvis*.

From the posterior edges of those surfaces of the *ossa innominata* which are joined to the *sacrum*, strong ligaments pass, which bind these bones firmly together; and all that unequal space behind them is filled up with small muscles, or the small parts of large muscles, in such a manner as to give in the fresh subject, when covered by their tendinous expansion, a surface almost smooth.

From the obtuse processes of the *ischia* strong ligaments arise, which, expanding, pass to the posterior edges and *apophysis* of the *sacrum*, detaching in their passage small portions to the *os coccygis*. These ligaments are called the broad or external sacrosciatic. From the spinous processes of the *ischia* ligaments arise, which, crossing and adhering to the ligaments before described, pass to the inferior and inner edge of the *sacrum* and the upper part of the *os coccygis*, sending slips or small portions to the edges of this bone throughout its extent. These are called the internal sacro-sciatic ligaments.

SECTION III.

By the knowledge of the parts where, and the manner in which, the bones of the *pelvis* are connected together, we are enabled to explain many uneasy sensations which women have, and many infirmities to which they are liable at the time of pregnancy and after their delivery.

It was for many centuries a received opinion, that these bones, though joined together in such a manner as scarcely to afford any suspicion of a separation, were always separated at the time of parturition; or that there was a disposition to separate, and an actual separation, if the necessity of any particular case required that enlargement of the cavity of the *pelvis*, which was consequent to it. The degree of separation was also supposed to be proportionate to

* See a short but very precise account of the connexion of the bones of the *pelvis* by Dr. William Hunter.—*Medical Observations and Inquiries*, vol. ii.

such necessity; and if it did not take place, or not in such a degree as was required, distending instruments were contrived and used to produce or increase it: and upon the same principle the section of the *symphysis* of the *ossa pubis*, of which we shall hereafter speak, hath been lately recommended. This opinion ought probably to be assigned as one reason for the superficial notice taken by the early writers in midwifery, of those difficulties which are sometimes found to occur at the time of parturition from the smallness or deformity of the *pelvis* *. To this may also be referred much of the popular treatment of women in child-bed, and many popular expressions in use at the present time. But this opinion hath been controverted by many writers, who assert, that there is neither a separation nor a disposition to separate; but that when either of them does happen, they are not to be esteemed as common effects attendant on the parturient state, but as diseases of the connecting parts †. The disputants on each side have appealed to presumptive arguments, and to facts proved by the examination of the bodies of those who have died in child-bed, in justification of their several opinions. But, notwithstanding all that has been said upon the subject, I know not that we are authorized by the experience of the present time to say, that a separation, or a disposition to separate, prevails universally at the latter part of pregnancy, or at the time of labour; yet that these effects are often, if not generally produced, may be gathered from the pain and weakness so often mentioned and complained of, at the parts where the bones of the *pelvis* are joined to each other, before and after delivery. In some cases pregnant women are also sensible of a motion at the junction of the bones, especially at the *symphysis* of the *ossa pubis*, and the noise which occasionally accompanies this motion, may be frequently heard by an attentive by-stander.

A strong presumptive argument in favour of the separation of the bones has been drawn from quadrupeds. In these the ligaments

* Edoctus assero, ossa pubis sæpe ab invicem in partu laxari, emollito eorum cartilaginoso connexu, totamque hypogastrii regionem, ad miraculum usque, ampliari; non quidem ab aquosæ substantiæ profusione, sed sua sponte, ut fructus maturi excludendis suis seminibus solent hiscere.—*Harv. Exercitat.* lviii.

In partu difficili et laborioso ossa ischii aliquantulum a se invicem dehiscunt.—*Ruysch. Adv. Dec.* 2.

† Les uns et les autres disent, qui ces os que se séparent ainsi à l'heure de l'accouchement, y ont été disposez peu à peu auparavant, par des humiditéz glaireuses qui s'écoulent des environs de la matrice, lesquelles amollissent pour lors le cartilage qui les joint fermement, en d'autres temps. Mais ces deux opinions sont aussi éloignées de la vérité que de la raison.—*Mauriceau, tom.* 1, *livr.* 2. *cap.* 1.

which pass from the obtuse processes of the *ischia* to the *sacrum*, on which the firmness of the junction of the bones very much depends, and which at all other times resist any impression attempted to be made upon them, are for several days previous to parturition gradually deprived of their strength, and the animal walks in such a manner as would incline us to believe could only be produced by a separation of the bones of the *pelvis*. Now it is not reasonable to conclude, that a circumstance which generally takes place in one class of viviparous animals should never occur in another, especially in a matter in which there is no essential difference.

We may, however, leave the question to be completely settled by future observations. To insist that either of the changes occurs in every case, or that they never occur, seems an attempt to support opinions repugnant to daily experience. For no person, who has been conversant in the dissection of women who have died in childbed, can have wanted opportunities of seeing every intermediate state of these parts; from a separation in which the surfaces of the bones were completely loosened, and at a considerable distance from each other, to that in which there was not the least disposition to separate.

It then appears that the degrees of separation at the junctions of the bones of the *pelvis* to each other may be very different; and that, when it takes place beyond a certain degree, it is to be considered as morbid. Several cases of this kind, which have occurred in my own practice, and a greater number for which I have been consulted, have laid me under the necessity of considering this subject with the most serious attention, and I presume that it may be produced by two causes; first, a spontaneous disposition of the connecting parts; secondly, the violence with which the head of the child may be protruded through the *pelvis* *. Of a separation from each of these causes it will not be improper to give an example to prove the fact, and to show its consequences.

CASE I.

A YOUNG lady of a healthy constitution, and lively disposition, who was married in the twenty-first year of her age, was, in the beginning of 1774, delivered of her third child, which was unusually large, after a very severe and tedious labour. For several days before her delivery she was rendered unable to walk without assistance, by

* In the 484th number of the Philosophical Transactions there is an account of the separation of the *symphysis pubis* to the distance of four inches, occasioned by the sudden starting of the horse which the gentleman was riding.

pain and weakness in her loins. Her recovery was favourable and uninterrupted, except that for several succeeding weeks she was incapable of standing upright, or putting one foot before the other; the attempt to do either being attended with pain, and a sense of looseness or jarring, both at the parts where the *ossa innominata* are joined to the *sacrum* and at the *symphysis* of the *ossa pubis*. By the use of such medicines and means as contributed to strengthen her constitution, she soon became able to walk, and, in a few months, was perfectly well.

Having before seen a case of the same kind, I suspected, that these complaints were occasioned by the weakness of the connexion of the bones of the *pelvis;* and, imputing this weakness to too frequent parturition, she was advised to suckle her child a longer time. She accordingly continued a nurse fifteen months.

After weaning her child she soon conceived again; and when the time of her confinement drew near, the complaints which she had in her former pregnancy were increased to such a degree, that she could neither walk nor stand; and, for three weeks before her delivery there was reason to suspect, that the bones of the *pelvis* were separating.

July 7, 1777, she was delivered of her fourth child. At the time of her labour she had frequent faintings, great marks of disturbance and irritability, and was wholly unable to move her inferior extremities.

A few days after her delivery she had a fever, which terminated in an abscess in one of her breasts. By this, which was very painful and distressing, she was confined to her bed for near seven weeks. At the end of nine weeks she could walk with crutches, when she was sent into the country, from which she received much benefit; as she believed she likewise did by drinking half a pint of a strong infusion of malt twice every day. In about five months, she was able to walk without assistance, though she was sometimes sensible of the motion of the bones, which seem never to have been perfectly united.

About Christmas she was again pregnant; and in July 1778, being indisposed to move, as she imagined by the sudden and uncommon heat of the weather, the pain and weakness in her back returned, and she could not walk any more without assistance to the time of her labour, which came on October the 11th. On the 13th, she was delivered of a very fine child. Her labour, which was unusually severe and alarming, was made infinitely more fatiguing by her inability to move, all power of supporting herself being wholly lost, and every necessary change of position, though she was in bed, being made by her assistants.

On the fourth day after her delivery she was seized with a fever,

which was soon removed, but her situation remained really deplorable. The pain at the junction of the bones continued; she had no command of her inferior extremities; and when she was moved, the pain, which she described as the cramp, became excruciating, as if she was tearing asunder. Her stomach was at all times much disturbed, but, when she had the pain in an increased degree, a vomiting, or oppressive nausea, or hiccough was brought on. The pain also produced strange sympathies in various parts; as a very teasing cough, a constant sneezing, a sense of weight in her eye-lids, which she could not keep open, though she was not sleepy, a loud noise in the bowels, and many other nervous affections. When, therefore, the pain was violent, she had recourse to opiates, which she took discretionally, and the pain being quieted the sympathies soon ceased.

At the request of my patient I explained upon a skeleton the opinion entertained of her complaints; and, when I pointed out the manner in which the parts were supposed to be affected, she was fully persuaded of the truth of the opinion.

In this situation she had remained for several months, when it was thought expedient, that she should be raised from her bed, and make an effort to stand or walk, lest her constitution should be injured, and her complaints rendered worse by the habit of resting so long in an inactive state. Every position was tried, and every contrivance made, which had a chance of being useful; but the power of supporting herself was totally gone; the motion of the bones was plainly perceived; and the consequences of every trial were so painful and uncomfortable, that it was not judged proper to repeat them, but to wait till, by time, the connexion of the bones was more confirmed.

About six months after her delivery she menstruated, which she continued to do at irregular periods; yet, though much benefit was expected from this circumstance, no alteration was produced by it with respect to her complaints.

In the year 1779, she was removed, upon a couch in a boat, to *Margate*, for the benefit of the air and bathing in the sea, from which she was always sensible of receiving advantage. There she continued to reside; when eight years were elapsed from the time of her delivery, she became able to walk without crutches; and, though now perfectly recovered, her amendment has been extremely gradual. I have lately been informed of two other cases of the same kind, in one of which the process, by which the lameness was at length cured, also required eight years for its completion.

CASE II.

MANY years ago I attended a young woman of a healthy but deli-

cate constitution, who was in labour of her first child. The *os uteri* was fully dilated, the membranes broken, and the waters discharged, before I arrived at her house.

She was immediately put to bed, and the pains being very strong, the head of the child was soon pressed upon the *perinæum*, the laceration of which I endeavoured to prevent by supporting it in the usual manner; but the head of the child was rapidly forced through the external parts in opposition to the resistance which I was able to make.

At the instant when the head of the child was expelled I perceived something to jar under my hand, and was even sensible of a noise, which led me to suspect, that the *perinæum* was lacerated by the sudden expulsion of the head, but on enquiry this was found to be perfectly safe.

After a short time the *placenta*, being separated and protruded into the *vagina*, was extracted without hurry or violence. The uneasiness of which she then complained, being supposed to be what are called *after-pains*, did not make me solicitous, but a few drops of *tinctura opii* were given to appease it.

On the following days she complained of more than usual pain in the lower part of the *abdomen*, which she did not accurately describe; but as there was no symptom of fever, and the milk was duly secreted, no particular enquiry was made, and I presumed that she would soon be well.

On the fourth day after her delivery she was taken out of bed, but could not stand or sit in her chair on account of the pain and weakness in the part of which she originally complained, and which I found to be immediately upon the *symphysis* of the *ossa pubis*.

For near three weeks she remained in the same state, perfectly well in her health, and easy in her bed, unless when she attempted to turn on either side; but when she was removed from her bed she could neither stand nor make any effort to walk without assistance, though she could sit for a few minutes, resting her elbows upon the arms of the chair.

The continuance of a complaint so very uncommon rendered it necessary to have a consultation, and a gentleman of great experience and ability was called in. After a very careful examination, we found the internal parts in the natural situation and free from disease; the *perinæum* was not lacerated, nor was there the least appearance of injury about the external parts. But it was judged by the seat of the pain, by her inability to stand or walk, except in particular attitudes and positions, that the *symphysis* of the *ossa pubis* had given way, and was wholly separated; and there was scarce a doubt, but that the separation had taken place when the bulk of the

head of the child was passing between the spinous processes of the *ischia*, when I was sensible of the jarring noise.

The opinion of the separation was chiefly founded on the particular attitudes and positions in which the patient sought relief; it therefore seems necessary to describe them more fully, as they were very remarkable.

When she endeavoured to stand upright, which she could do better on one foot than both, and better with her feet close than at a distance, together with the pain at the *symphysis*, she had a sense of extreme weakness, accompanied with a faintness. When she first sat down in her chair, resting her elbows upon the arms of the chair, the complaints became tolerable. When she had remained a little time in this position, they were again importunate, and she supported herself with her hands upon her knees, and presently bent forwards, so as to lean her elbows upon her knees; this position becoming irksome, she was obliged to return to her bed, where she was immediately easy. When she first attempted to walk, she was compelled to bend forwards in such a manner as to rest her hands upon her knees, making a straight line from her shoulders to her feet.

The explanation of her case, and the comfort she received from the assurance that was given of her recovery, encouraged her to bear her confinement and the present inconveniences she suffered, with composure; yet the knowledge we had acquired, presuming our opinion to be true, was useful, rather by teaching us how to avoid doing mischief, than by enabling us to render any actual service.

At the end of fourteen weeks, whilst she was in a coach, into which she had often been lifted for the benefit of air and exercise, she had a discharge, which she supposed to be menstruous; and though it had ceased before her return, she was sensible of immediate relief. From that time she mended daily, and in six weeks was able to walk, her complaints having gradually left her.

She had afterwards three children, with all which I attended her. Her labours were easy; and neither before nor after her delivery had she any tendency to the complaints I have been describing.

The discharge which preceded her recovery was thought to be menstruous; but as it had ceased before her return, and gave relief to a part not directly affected by menstruation, it is more reasonable to conclude, that it was from the *symphysis;* and of whatever kind it was, that it had acted as an extraneous body, preventing the re-union of the bones.

Instances have occurred, though they are rare, of women who, after labours, have suffered much pain in the region of the *sacrum*, and have lost all power of moving their inferior extremities; and the inability

has been imputed to some paralytic affection. They are said to be *bed-ridden*, which describes the effect, though it does not explain the cause, of their disease. As these patients have, after a confinement of several months, or even years, been generally restored to the use of their limbs, it is not unreasonable to think, that their infirmity was occasioned by a separation of the bones, which at different periods after the accident, according to the degree of separation, had recovered their former connexion and strength.

SECTION IV.

An inquiry into the manner in which the bones of the *pelvis* may re-unite when they have been separated seems necessary, as the treatment to be enjoined, and the prospect of success, will be regulated by the idea we entertain of the state of the parts when separated.

When the connexion of the bones of the *pelvis* has either been impaired or destroyed, it is probable, that a confirmation or re-union takes place by a restoration of the original mode; by a *callus*, as in the case of a fractured bone; or by *anchylosis*.

It is also possible for them to remain in a separated state; and that an articulation should be formed by the ends of each bone, at the *symphysis* of the *ossa pubis*, and at the junction of the *ossa innominata* with the *sacrum*; of which, by the favour of Mr. Cline, I have seen an instance in the dead body, and have had reason to suspect the same accident in the living.

In all the lower degrees of imperfection in the union of these parts, it is reasonable to conclude, that the former mode is restored soon after delivery; for the complaints which women make of pain and weakness in these parts are almost always relieved, before their month of confinement is concluded. But, should they continue a longer time, it appears, that the greatest benefit will be derived from rest and a horizontal position, which will lessen the present inconveniences, and favour that action of the parts by which their infirmity must be repaired.

But if the complaint be in an increased degree, and the health of the patient likewise be affected, a longer time will be required for the recovery of the part; which may be forwarded by such means as invigorate the constitution, such applications as quicken the action of the parts, or by mechanical support.

Should the injury be too great to allow of the restoration of the original mode of union, of which we are to judge by the consequent impotence to move, a much longer time will be required for the formation of a callus, if that be ever done but as a previous step to

an *anchylosis*, which has been observed by anatomists to take place at the junction of the *ossa innominata* with the *sacrum* not unfrequently, but never or very seldom at the *symphysis* of the *ossa pubis*. Under such circumstances, unless by an amendment of the general health, little good is to be expected from medicine, the process which the parts must undergo being an operation of the constitution which it will not be in our power to control. In the first case related, a variety of applications were tried, from the most emollient to those which are active and stimulating; but from cold bathing only did the patient receive any real advantage. She was also very much assisted by the use of a swath, or broad belt, made of soft leather, quilted, and buckled with such firmness over the lower part of the body as to lessen, if not prevent, the motion of the bones; and this was restrained in its situation by a bandage passed between the legs, from the hind to the fore part of the belt. If this belt be made with a string, it may be fixed lower over the *ilia*, worn tighter, and with less inconvenience.

In that unfortunate situation, in which a joint is formed between the separated surfaces of the bones, all hopes of the recovery of the patient to her former abilities may be given up. She must for the rest of her life walk imperfectly, and all that remains to be done for her relief will be, by the use of a belt, or a similar contrivance, to substitute as much artificial firmness as we can, for the natural which is lost. In the case in which I suspected this event to have happened, the life of the patient was truly miserable; but I presume that such very rarely occur, having been lately informed of another person, who, after a confinement of more than eight years to her bed, in consequence of the separation of the bones at the time of labour, was restored to the full and perfect use of her inferior extremities. And farther experience has shown me many varieties, not only in the degrees, but in the circumstances attending this complaint; particularly in an unexpected and total freedom from it, after subsequent labours.

SECTION V.

THERE is a wonderful variety in the position of the *pelvis* of animals, as it relates to that of the body in general; and their powers and properties very much depend upon this circumstance. But, with a view to this subject, they may be divided into three kinds; the strong, the swift, and the mixed.

In those animals which possess the greatest share of strength, the position of the *pelvis* is nearly perpendicular, and the two apertures of the cavity nearly horizontal, as may be seen in the elephant.

In those which are distinguished by their speed or agility, the position of the *pelvis* is nearly horizontal, and the two apertures nearly perpendicular, as may be seen in the stag.

In mixed animals, or those in which strength and speed are united, the position of the *pelvis* is neither horizontal nor perpendicular, but inclined; so as to partake, by different degrees of inclination, of a certain share of the advantages of either position, as may be seen in the horse and ass. But these descriptions are taken from the dried skeletons.

In the human species, when the position of the body is erect, the *pelvis*, which, bearing the weight of the whole body, is stronger in proportion to their size than in any quadruped, is so placed, that a line passing from the third of the lumbar *vertebræ* will fall nearly upon the superior edge of the *symphysis* of the *ossa pubis;* the cavity of the *pelvis* being projected so far backwards, that the *ossa pubis* become the part on which the enlarged *uterus* chiefly rests in the advanced state of pregnancy*. If, then, we recollect the smallness of the *ossa pubis*, the manner in which they are connected, and advert at the same time to the increasing effect which may be produced by the internal pressure of the weight supported by them, in addition to that of the body, we shall not be surprised at the frequency of the complaints of pain and weakness at the *symphysis;* especially when the child was large, or the patient under the necessity of standing for a long time. And should there be any degree of weakness, relaxation, or disunion, at the parts where the *ossa innominata* are joined to the *sacrum*, similar effects will be produced; and one of these parts can scarcely be affected without an equivalent alteration in the other.

The consequences of the separation of the bones of the *pelvis*, or of their disposition to separate, will be more clearly comprehended, if we consider the *pelvis* as an arch supporting the weight of the superincumbent body. In this view, the *sacrum* may be called the key-stone; the *ossa innominata*, as far as the *acetabula*, the pendentives; and the inferior extremities the piers of the arch.

If a greater weight be laid upon an arch than it is able to sustain, one of these consequences will follow; the key-stone will fly, the pendentives will give way, or the piers will yield to the pressure.

To prevent the two first accidents, it is usual to lay heavy bodies upon the different parts of the arch, the weight of which must bear a relative proportion to each other, or the contrary effect will be produced; for if too great weight be laid upon the key-stone, the pen-

* This part has been considered as the centre of gravity in the human body; but *Desaguliers* thought that it was in the middle space between the *sacrum* and *ossa pubis*.

dentives will fail; and, if there be too much pressure upon the sides, the key-stone will be forced.

When the greatest possible strength is required in an arch, it is usual to make what is called a counter-arch, which is a continuation of the arch till it becomes circular, or of any intended form. This contrivance changes the direction of the weight, before supported at the chord; and part of it will be conducted to the centre of the counter-arch, and borne in what is called the sine of the arch.

If the resemblance of the *pelvis* to an arch can be allowed, we may consider all the fore or lower part of it, between the *acetabula*, as a counter-arch, which will explain to us the reason of so much stress being made upon the *symphysis* of the *ossa pubis*, when there is any increase of the superincumbent weight; or when that part is in a weakened or separated state, as in the second case before described, and particularly by the bending of that part in the rickets in children, and in the *mollities ossium* in adults.

When the patient before mentioned lay in a horizontal position, she was perfectly easy, there being then no weight upon the *pelvis*.

When she was erect, the weight borne by the *symphysis* being greater than it could support, she could walk before she could stand; or, if she stood, she was obliged to move her feet alternately as if she were walking; or she could stand upon one leg better than upon both. By these various movements she took the superincumbent weight from the weakened *symphysis*, and conducted it by one leg, in a straight line, to the ground.

The fatigue of walking, or of the alternate motion of the feet, being more than she was able to bear, she was obliged to sit. When she first sat in her chair she was upright, resting her elbows upon the arms of the chair; by which means part of her weight was conducted to the chair, not descending to the *pelvis*, which was also propped. But there being then more weight upon the *symphysis* than it was able to bear for any long time, and her arms being weary, by putting her hands upon her knees she took off more of the superincumbent weight, conducting it by her arms immediately to her knees. When she rested her elbows upon her knees, the same effect was produced in an increased degree; but this position becoming painful and tiresome, she had no other resource, and was obliged to return to her bed.

It cannot escape observation, that this patient instinctively or experimentally discovered the advantages of the particular attitudes into which she put herself, and by which she obtained ease, as exactly as if she had understood her complaint, and the manner in which I have endeavoured to explain it.

In the weariness which follows common exercise, when we often

change our position, apparently without design, the manner in which ease is procured to any particular part may be readily understood by a more extensive application of the same kind of reasoning, and it seems as if the slightest changes were not made in such conditions without some advantage.

SECTION VI.

THE violence which the connecting parts of the bones undergo, when the head of the child is protruded through the *pelvis* with extreme rapidity or difficulty, sometimes occasions an affection of the *symphysis* of the *ossa pubis*, of more importance than a separation; because, together with all the inconveniences arising from the separation, the life of the patient is endangered by it. This is the formation of matter on the loosened surfaces of the bones, preceded by great pain and other symptoms of inflammation; though, in the beginning of the complaint, it is difficult to ascertain whether the connecting parts of the bones, or some contiguous part, be the seat of the disease.

When suppuration has taken place in consequence of the injury sustained at the junction of the *ossa innominata* with the *sacrum*, the abscess has in some cases been formed near the part affected, and been cured by common treatment. But in others, when matter has been formed and confined at the *symphysis* of the *ossa pubis*, the symptoms of a hectic fever have been produced, and the cause has not been discovered till after the death of the patient. In others, the matter has burst through the capsular ligament of the *symphysis* at the inferior edge, or perhaps made its way into the bladder; and in others it has insinuated under the *periosteum*, continuing its course along the *ossa pubis* till it arrived at the *acetabulum*. The mischief being thus extended, all the symptoms were aggravated; and the matter making its way towards the surface, a large abscess has been formed on the inner or fore part of the thigh, or near the hip, and the patients, being exhausted by the fever and profuse discharge, have at length yielded to their fate. On the examination of the bodies after death, the track of the matter has been, in the few cases which have been examined, followed from the aperture of the abscess to the *symphysis*, the cartilages of which were found to be eroded, the bones carious, and the adjacent parts very much injured or destroyed.

It may, perhaps, be possible to discover, by some particular symptom, when there is in this part a disposition to suppurate; or it may be discovered when suppuration has taken place. In all cases of unusual pain, attended with equivocal symptoms, it will

therefore be necessary to examine these parts with great care and attention. For when there is a disposition to suppurate, by proper means this might be removed; and when matter is formed, if there be a tumefaction at the *symphysis*, more especially if a fluctuation could be perceived, we might deliberate upon the propriety of making an incision to evacuate the matter; and by such proceeding further bad consequences might be prevented *.

SECTION VII.

The form of the superior aperture of the *pelvis* has been described by some as triangular, and by others as oval, with the widest part from one side to the other. But the inferior aperture, independent of the ligaments and soft parts, cannot be said to resemble any known or general form, on account of its irregularity, though the widest part is from the inferior edge of the *symphysis* to the point of the *os coccygis*, allowing for the regressive motion of that bone.

The dimensions of the superior aperture of the *pelvis*, from the upper part of the *sacrum* to the upper edge of the *symphysis*, are generally stated to be more than four inches; and between the two sides they somewhat exceed five †.

Of the dimensions of the inferior aperture it is difficult to form a judgement; but if the ligaments are preserved, it may be said that the proportions are reversed, the narrowest part being on each side. But in the form and dimensions of the *pelvis*, in different women, there is an endless variety, not depending upon any alteration which may be produced by disease.

The depth of the *pelvis* from the upper part of the *sacrum* to the point of the *os coccygis* is about five inches; but this will be increased when the latter bone is pressed backwards. From the margin of the *pelvis* to the inferior part of the obtuse processes of the *ischia* the depth is about three inches, and at the *symphysis* about one and a half. It appears that the depth of the *pelvis*, at the posterior part, is rather more than three times the depth at the anterior; and that there is a gradual change between the two extremes, if we admit the ligaments to make a part of the outline of the inferior aperture. The knowledge of these circumstances will enable us to judge in the living subject how far the head of the child has proceeded through the *pelvis*, and prevent any deception to which we might be liable, if we were to form our opinion by the readiness with which we can feel the head at the anterior part.

* See *Medical Observations and Inquiries*. Vol. II.

† Quæ mensuræ, pollice fere integro, similes mensuras capitis fœtus superant. *Haller. Physiolog.* lib. xxviii.

The cavity of the *pelvis* is of an irregular, cylindrical form; but, towards the inferior aperture, there is some degree of convergence, made by the points of the spinous and obtuse processes of the *ischia* and the termination of the *os coccygis*. This convergence is of great importance in regulating the passage of the head of the child, as it descends towards the inferior aperture; and being perfected by the soft parts, it gives to the *vertex*, or preventing part of the head, the disposition to emerge under the arch of the *pubis*.

On the concavity or hollow of the *sacrum* the ease or difficulty with which the head of the child passeth through the *pelvis* will very much depend. A similar curvature is continued by means of the ischiatic *sinus*, and by the disposition of the sacrosciatic ligaments, to the obtuse processes of the *ischia*, where the sides of the *pelvis* are perpendicular. The upper edge of the *ossa pubis* has a slight reflection outwards, which prevents any obstruction to the entrance of the head of the child into the *pelvis;* and at the lower edge there is some degree of divergence, by which the departure of the head out of the *pelvis* is very much facilitated.

SECTION VIII.

Before we proceed to the examination of the manner in which the head of the child passeth through the *pelvis* at the time of birth, it is necessary to examine its dimensions and structure.

The largest part of the head of a child, not altered by compression, is from the hind to the forehead. The diameter from one ear to the other is less by nearly the same proportion, as the space between the *sacrum* and *pubis*, at the superior aperture, is less than that between the sides of the *pelvis*.

The head of a child, which appears to be larger according to the size of the body than that of other animals, is at the time of birth incompletely ossified at every part where the bones of which the *cranium* is composed afterwards unite; but chiefly at the greater fontanelle, or the centre of that part where the parietal and frontal bones meet in the adult. By this incomplete ossification, and by the pressure to which the head of the child is sometimes subject, in its passage through the *pelvis*, the form of the head may be very much altered, and the dimensions lessened; for the edges of the bones will not only accede to each other, but will lap over in a very extraordinary manner, without any detriment to the child. The degree of ossification varies in different subjects; but the head of a new-born infant is universally (except in some very rare deviations) found to be incompletely ossified, and the advantage resulting from it is not only perceived in those difficulties which may be occasioned by the na-

tural large size of the head of the child, but in those also which are produced by all the less considerable degrees of deformity of the *pelvis*. It is evident beyond all doubt, if this provision had not been made, that many children must have been destroyed at the time of birth, or their parents must have died undelivered.

Daily experience very obviously and sufficiently proves that there is a relative proportion between the head of the child and the *pelvis* of the mother; and, from the excellent order observed in all the operations of nature, it would be reasonable to conclude, that the largest part of the head is conformable to the widest part of the *pelvis*. By the examination of a great number of women, who have died in various stages of the act of parturition, it has appeared, contrary to the general doctrine of the ancient and of many modern writers, when the position of the head was perfectly natural, that the ears were placed towards the *sacrum* and *pubis*, or a little obliquely; and that the *vertex*, or that part where the hair diverges, is exactly or nearly opposed to the centre of the superior aperture of the *pelvis**. In the course of the descent of the head there being some difference in the form of the *pelvis* at each particular part of the cavity, the position of the head is accommodated to each part, not by accident but compulsion, and at the lower part of the *pelvis*, in consequence of that convergence before mentioned. With respect to the *pelvis*, the lower the head of the child has descended, the more diagonal is the position of the ears; but they are not always placed exactly towards the sides of the *pelvis*, even when a portion of the head has emerged under the arch of the *ossa pubis*. But this description of the changing position of the head of the child in its passage through the *pelvis* is founded on the presumption that it presents naturally, and is guided by the form of the internal surface. If the head should present differently, there will be corresponding, but not the same, changes; or, if it should be very small, it will not be influenced by the *pelvis*, but may pass in any direction.

It does not appear, that any ill consequences would follow an erroneous opinion of the manner in which the head of the child is protruded through the cavity of the *pelvis* in a natural labour; for, no assistance being wanted, no principle was required for the regulation of our conduct. But in all cases in which there was a necessity of giving assistance, and where a change of what was deemed the wrong position of the head was improperly comprised as a very material part of that assistance, as in the use of the *forceps*, great mischief must often have been unavoidably done both to the parent and child.

* This observation was first made by Sir FIELDING OULDE about the year 1737. *See his Treatise on Midwifery.*

SECTION IX.

From the examination of the form and dimensions of the cavity of the *pelvis*, and of the head of a child, attempts have been made to explain all the circumstances of a labour upon mechanical principles, and to establish the practice of midwifery upon the foundation of those principles.

It may be supposed, for a moment, that the passage of the head of a child through the cavity of the *pelvis* should be considered simply as a body passing through a space: and we may try whether it be possible to apply mechanical principles with advantage for the explanation.

The first circumstance to be considered in the attempt is, to ascertain with precision the capacity of the space. Now it is true that we have had many mensurations of the *pelvis* in all its parts, and that we have acquired a competent knowledge of the general dimensions, but we know, at the same time, that there is in the *pelvis* of every individual woman some variety, and that the exact knowledge of these varieties, on which the explanation of a mechanical process must depend, cannot be gained in any living subject.

It is equally necessary, that we should have an accurate knowledge of the size of the body intended to be passed through this space. But, though we have a good general idea of the figure and bulk of the heads of children at the time of birth, we are not ignorant, that those of any two children were never found to be exactly alike, and that the peculiar difference cannot be discovered before a child is born.

The head of a child is of a limited size before it enters the cavity of the *pelvis*; but, by compression in its passage, this is likewise altered in a manner and to a degree of which it is impossible to form any previous judgement.

In the consideration of a body passing through a space, there is also a necessity of knowing whether it be intended to pass by its own gravity or force, or whether it be passive, and is to be propelled by any adventitious power. If by the latter, as in the case of a child at the time of birth, the knowledge of the degree of that power is necessary to enable us to form an estimate of the possibility or likelihood of its success; but of the degree of this varying power we can form a very uncertain conjecture in any particular case.

If then we have neither precise ideas of the dimensions of the space, nor of the magnitude of the body, nor of the alterations in size or form which the body may undergo, nor of the power excited to propel the body, it does not appear possible to explain, upon mechanical principles, the progress of a labour.

So much is however to be granted to the introduction of mechanical principles into the practice of midwifery, that they afford the greatest advantage in all those cases of extreme difficulty, in which the assistance of art is ultimately required, because such assistance must be given upon these principles; and though they will not explain, they will illustrate the operations of the animal body, and, when applicable, are the surest guides of human actions. But, on the whole, a fondness for an imperfect knowledge, and some affectation of mechanical principles, seem to have been very detrimental; as to these the frequent and unnecessary use of instruments, and sometimes their improper use, in the practice of midwifery, may in a great measure be originally attributed.

SECTION X.

The observations which were made on the form and dimensions of the cavity of the *pelvis* relate to its natural state; but these are also to be considered when the *pelvis* is distorted.

Of the distortion of the *pelvis* there are two general causes, the first is that disease incident to children in the very early part of their lives, known by the term *rachitis*, which preventing the bones from acquiring their due strength, or sufficient firmness to support the weight of the superincumbent body, they bend in different directions and degrees, according to their weakness and the weight imposed upon them, and the distortion thereby occasioned is often fixed for the remainder of life. The second is a disease which may occur at any period of life, and from its effect is called *osteosarcosis*, or *mollities ossium* *. It is far less frequent than the *rachitis*, but more dreadful in its consequences, which no medicine hitherto tried has had sufficient efficacy to prevent or to cure. In this disease the ossific matter is not thought to be dissolved or altered, but to be reabsorbed from the bones into the constitution, and carried out of the body by the common emunctories, or deposited upon some other part where it is useless or prejudicial. The bones thus losing the principle of their stability become soft, according to the degree and continuance of the disease; are unable to sustain the weight of the body, and change their natural forms, in proportion to their weakness; so that in some instances the most distorted and frightful appearance of the whole body hath been exhibited †.

* Malacosteon. Ossium mollities. Vogel. Dxxiij.

† See Medical Observations and Inquiries, Vol. V. case 23. Memoirs of the Academy of Sciences, and various Authors. We shall afterwards refer to this subject.

The effect of either of these diseases is not confined to the *pelvis:* yet it is scarcely possible, that either of them should exist for any length of time without producing its influence upon it. Hitherto much advantage has not been obtained by the knowledge of *osteosarcosis*, nor have the symptoms which precede or accompany it been accurately observed, before the effect was produced. Yet it is possible, by attending to the secretions, and discovering an excess or defect of phosphoric acid or the like principles, the deficiencies and exceedings might be supplied or lessened, and perhaps the disease removed together with its effects.

The *pelvis* is more commonly distorted at the superior aperture than at any other part, but never laterally. This is particularly occasioned by the natural projection of the upper part of the *sacrum*, and the lowest of the lumbar *vertebræ;* though, in very bad cases, a considerable deviation from their natural position is given to several of the adjoining *vertebræ*, and the *ossa pubis* become distorted for the reasons before assigned. Should a disease exist in the constitution which is capable of weakening the bones, it will not appear extraordinary that the *sacrum* should be distorted, if we recollect, that its texture is originally spongy; that it supports, both in the erect and sedentary position, a great part of the weight of the body; and that, by the manner of its junction with the last of the *vertebræ*, a considerable angle is made, which, if but little increased, will cause a very important change in the form and dimensions of the superior aperture of the *pelvis*. In some cases an irregular convexity, and in others a concavity, are produced by the bending of the *ossa pubis* in different ways and degrees; by which, together with the projection of the *sacrum* and lumbar *vertebræ*, the dimensions of the superior aperture of the *pelvis*, which in the narrowest part should exceed four inches, have been, in some instances, reduced to less than one, and altered in every possible direction. It is probable, that, from a mere view of a distorted *pelvis*, independently of the weight of the bone or other circumstances, we might be able to distinguish, by the part chiefly distorted, between a distortion occasioned by the *rachitis* in infancy, and the *mollities ossium* happening to an adult.

The form and dimensions of the cavity of the *pelvis* may be changed in any part of its space; but the most frequent alterations proceed from the *sacrum*, which, besides the projection before mentioned, may become too straight, when the advantages which should be derived from its concavity will be lost. Or it may have too quick a curvature, by which the concavity will be rendered so small as not to admit the head of the child; or an *exostosis* may be formed on its internal surface, which will be the cause of inconveniences equivalent to those occasioned by the want of a proper degree of curvature.

The *os coccygis* may be pressed inwards in such a manner, that the point of it may approach the centre of the cavity; or the motions between the different portions of the bone may be lost: or an *anchylosis* may be formed between this bone and the *sacrum;* by all which changes, according to their degree, the head of the child may be impeded in its passage through the *pelvis.*

The *ischia* may be distorted by the unnatural bent of the spinous processes; and the effect of their pressure may be observed for some time after birth, on the temporal and parietal bones of the head of a child propelled between them with much difficulty. The dimensions of the inferior aperture also may be lessened by the tuberosities of the *ischia* bending inwards or forwards, by which the arch of the *pubis* will be lessened, and rendered unfit to allow of the emergence of the head of the child under the *symphysis* of the *ossa pubis.*

When the stability of the bones of the *pelvis* is impaired, it is not possible to enumerate every kind of distortion which they may suffer; but it is principally in the degree that we are to seek for those great and, sometimes, though rarely, insurmountable difficulties which occur in the practice of midwifery, and prove dangerous to either, or both the parent and child.

In some cases the distortion of one part of the *pelvis* produces an enlargement of the rest. Thus when the superior aperture is contracted, the inferior may be expanded; and hence it is often observed in practice, when the head of the child hath passed the point of obstruction with the most tedious difficulty, that a labour will be unexpectedly and speedily completed.

When women have the appearance of being much deformed, it is reasonable to think that the *pelvis* must be affected. But there have been many instances of extreme distortion of the spine, yet the *pelvis* has preserved its proper form and dimensions; and some women, who were in other respects straight and well proportioned, have had a distorted *pelvis.*

If the inferior extremities are crooked, or if any part of the body were distorted at a very early period of life, and remained in that state, it is said that we may be assured the *pelvis* partakes of the disease, and is involved in its consequences. But, when the spine becomes distorted at a more advanced period, as at twelve or fourteen years of age, it is not to be esteemed a presumptive sign of distortion of the *pelvis,* being generally occasioned by a local disease of the spine. These observations are, I believe, commonly well founded; but, as there are many exceptions, we should not be justified in giving an opinion of a case of this kind, unless we were permitted to make an examination *per vaginam.* Nor should we by this examination, or by any external mensuration, be able to determine with

precision the existence of every small distortion, but such only as was considerable in its degree. If we should not be able to feel any projection of the *sacrum*, or *vertebræ*, we should have a right to conclude, that there was no considerable deformity of the *pelvis;* but, if we could feel the *sacrum*, or *vertebræ*, we must judge by the readiness with which they can be felt, of the degree of distortion, and of the impediments which may be thereby occasioned. But, in a matter which may be of so much concern, it behoveth us to be extremely circumspect before we give an opinion, lest, by our error, the peace of families and the comfort of individuals should be destroyed.

In some child-bearing women, having deformity of the *pelvis*, the deformity is found to increase gradually in every succeeding labour.

CHAPTER II.

SECTION I.

ON THE EXTERNAL PARTS OF GENERATION.

The preceding account of the *pelvis* appearing sufficient to serve all the useful purposes of the practice of midwifery, we shall, in the next place, consider the parts of generation, which have been properly divided into external and internal.

The external parts are the *mons Veneris*, the *labia*, the *perinæum*, the *clitoris*, and the *nymphæ*, to which may be added the *meatus urinarius*, and the orifice of the *urethra*. The *hymen* may be esteemed the barrier between the external and internal parts.

That soft fatty prominence which is situated upon the *ossa pubis*, extending towards the groins and *abdomen*, is called *mons Veneris*. Its use seems to be chiefly that of preventing inconvenience or injury in the act of coition. If a line be drawn across the anterior angle of the *pudendum*, all that part above it, which is covered with hair, may be called *mons Veneris;* below it the *labia* commence, which being of a similar, though looser texture, appear like continuations of the *mons Veneris*, expanding in the middle, and passing on each side of the *pudendum*, which they chiefly compose. Proceeding downwards and backwards the *labia* again unite, and the *perinæum* is formed.

All that space between the posterior angle of the *pudendum* and

the *anus* is called the *perinæum*, the external covering of which is the skin, as the *vagina* is the internal; including between them cellular and adipose membrane, and the lower part of the *sphincter ani*. 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 thin anterior edge is called the *frænum labiorum*.

Below the anterior angle of the *pudendum* the *clitoris* is placed, which rises by two *crura*, or branches from the upper part of the *rami* of the *ischia*. The external part, or extremity of the *clitoris* is called the *glans*, which has a prepuce or thin covering, to which the *nymphæ* are subjoined. The *clitoris* is supposed to be a principal seat of pleasure, and to be capable of some degree of erection in the act of coition.

The *nymphæ* are two small spongy bodies, or doublings of the skin, rising from the extremities of the prepuce of the *clitoris*, less in size, and of a more delicate texture, but resembling in their form the *labia*. They pass on each side of the *pudendum*, within the *labia*, to about half its length, when they are gradually diminished till they disappear.

Immediately below the inferior edge of the *symphysis* of the *ossa pubis*, between the *nymphæ*, is the *meatus urinarius*, or termination of the *urethra*, which is about one inch and a half in length, and runs to the bladder in a straight direction along the internal surface of the *symphysis*, to which, and to the *vagina*, it is connected by cellular membranes. On each side of the *meatus*, and on the whole internal surface of the *pudendum* are small orifices, which discharge a mucus, that, among other purposes, answers the end of preserving the external parts from any injury, to which they might be liable from the acrimony of the urine.

There is a very great difference in the appearance and size of all these parts in different women, especially in those who have had many children, and at various periods of life. In young women they are firm and vegete, but in the old, these, together with the internal parts, become flaccid and withered *.

SECTION II.

The external parts of generation are subject to many diseases in common with other parts of the body. They are also exposed to some peculiar complaints, and to accidents at the time of parturition, of which we ought to be well informed, that we may by our care

* Partes genitales, cum earum nullus est usus, marcescunt, detrahuntur, ac veluti obliterantur. *Harv.*

prevent them, or give such relief as may be required when they have unavoidably happened.

The *labia* and *nymphæ*, as might be expected from their fatty and cellular texture, are liable to elongation, to excrescences, and to the production of scirrhous tumours; which in some instances have grown to an enormous size, especially in hot climates *. For preserving all these parts in a healthy state, nothing is more beneficial than the daily and liberal use of cold water.

It is not unusual, and perhaps not unnatural, for one of the *labiæ* or of the *nymphæ* to be somewhat larger and more pendulous than the other; but neither the enlargement, nor elongation, is to be regarded as a disease, till some inconvenience is produced by it. The same observation may be made of excrescences or scirrhous tumours, which are therefore generally found to have acquired a considerable size before they are divulged by the patient.

In all the subordinate degrees of these complaints, when there is reason to think that they arise from some constitutional cause, relief may be given by such medicines or treatment, as will alter and amend the general health. Or if they be owing to any specific cause, as the venereal disease, of which excrescences in particular are a very frequent consequence, preparations of quicksilver are to be used or given, till we are certain that the constitution is freed from the infection. Applications suitable to the state they are in, are at the same time necessary; and of these there will be occasion to use a variety, from the most emollient and soothing, which may be proper when the parts are in a very irritable and inflamed state, to those which have different degrees of escharotic qualities, when we presume there is a chance of removing the excrescences by such means. But when complaints of this kind have been of long continuance, or when the parts have increased to such a size as to hinder the common offices of life, there is but little reason to hope for their removal by any application or medicines, and the diseased part must be extirpated with the knife: which operation may be performed with safety, and the fairest prospect of success. As the blood-vessels are few, and naturally small in proportion to the size of the parts, there is not much danger of a hemorrhage, though, in some cases, this is said to have been alarming and extremely difficult to manage †. But I have more than once seen both the enlarged *nymphæ*, and several excrescences of considerable size growing upon them, removed by the knife at the same time, yet the surgeon has not been under the necessity of tying a single blood-vessel.

* Nymphæ aliquando enormes sunt; quare Coptæ et Mauri eas circumcidunt. *Haller. Physiolog.*

† See Mauriceau, Vol. ii. Obs. clxxiv.

SECTION III.

Edematose swellings of the external parts may occur, either in a general anasarcous state of the whole body, or when any cause produces a temporary pressure upon those vessels, which are intended to conduct the returning fluids from the inferior extremities; particularly the enlarged *uterus*, in the advanced state of pregnancy. Whatever may be the cause of these swellings, if they should increase so as to become troublesome, the method of giving relief is obvious and easy, as it consists only in making some very slight scarifications in different parts of the *labia*, by which the stagnating fluids will be discharged, and the *labia* reduced to their natural size. It is not unusual for these swellings to return two or three times towards the conclusion of pregnancy; in which case, or even in the time of labour, the scarifications, if necessary, may be repeated. A flannel wrung out of some emollient fomentation, and applied to the parts when they have been scarified, will contribute to the easy and perfect discharge of the fluids, and after delivery the complaint will not return.

SECTION IV.

The cohesion of the *labia* to each other has been mentioned as a disease occurring to adult women, especially in hot climates, if inflammation, preventing the due secretion of the mucus with which these parts are naturally clothed on their internal surface, should take place; or if they should be excoriated by any accidental cause and neglected in that state. The *labia* will also very frequently cohere in children, in such a manner as to leave no vestige of a passage into the *vagina*, except at the anterior part, for the discharge of the urine; and lead us, by the general appearance, to apprehend a defect in the organization of the parts. In such cases, we have been directed to separate them with a knife; and how far such an operation may be necessary in the adult, if the parts should cohere, either in consequence of some new affection, or if a cohesion originating in infancy should continue to adult age, must depend upon the judgement of the surgeon. But in infants such an operation is neither requisite nor proper; because a separation may always be made, by a firm and somewhat distracting pressure upon each *labium* at the same time, which scarcely makes the child complain; though the small vessels, which had inosculated from one *labium* to the other, may be perceived to be dragged out during the continuance of the pressure. When a separation of the cohering *labia* has been made in the manner before mentioned, a folded

piece of linen, moistened in a very weak solution of the *zincum vitriolatum*, or some lightly astringent liquor, should be applied every night when the child is put to rest, to prevent the reunion, to which there is a great disposition ; and which will certainly take place, if the *labia* be suffered to remain in contact immediately after the separation.

It is extraordinary that so little notice should have been taken of a complaint which is very frequent in children; but it is probable that the constant and free use of their limbs, when they begin to walk, causes a separation without any other assistance, otherwise the cohesion must frequently have occurred in adults, in whom the case is very rare. But on this expected probable separation we should be afraid to rely, when we are assured that the complaint does actually exist.

SECTION V.

In consequence of violent inflammation from accidental or other causes, either of the *labia* may become tumified, and a large abscess has been afterward formed. This is attended with extreme pain, the desire of relieving which has induced surgeons to open the abscess, and give vent to the matter as soon as it could be perceived to fluctuate. But though the pain may, for the present, be abated by the early discharge of the matter, the part continues indurated, is indisposed to heal, and not unfrequently becomes fistulous. But if the abscess be suffered to break of its own accord, the part will have the kindest tendency to heal, and, with common care, the cure be soon perfected. Should the pain be extreme during the suppuration, which is often the case, besides the use of fomentations and cataplasms, recourse must be had to opiates for its abatement. There is never any reason to attribute this complaint to any venereal affection, though it is often suspected. Scirrhous tumours of the *labia* may be extirpated with full as much ease as those of any other part of the body.

SECTION VI.

Though the *perinæum* is not often affected with any particular disease, it is subject to a laceration from the distension which it undergoes, when the head of the child is passing through the external parts. This laceration, which is most likely to happen with first children, though with rude treatment, hurry, or neglect, either on the part of the patient or practitioner, it may occur with subsequent ones, especially in those women who have the *perinæum* naturally short, differs in direction and extent, and may be in every degree,

from the *frænum*, or edge of the *perinæum*, to the extremity of the *sphincter ani*, or even higher up into the *rectum*.

That some degree of laceration should sometimes occur will not be surprising, if we consider the great change and violence which all these parts sustain, at the time when the head of the child is passing through them; or that when a laceration begins, it should extend through a part rendered at that time extremely thin, and suffering an equal degree of force. When the *perinæum* is indisposed to distend; or if, when distended, it cannot permit the head of the child to pass with facility, the anterior part of the *rectum* is dragged out, and gives to the *perinæum* a temporary elongation. The true *perinæum*, and the temporary, as it may be called, thus forming an equal, uninterrupted space, if a laceration should commence at any part, it might without the greatest care extend through the whole. Of the method by which the laceration may be prevented, and of the treatment which may be proper when it has occurred, we shall speak in other places. At present we shall inquire into the causes of an accident, the prevention of which is the principal object of our attention in natural labours.

Though no means are used to prevent the laceration of the *perinæum* in quadrupeds at the time of parturition, it is remarkable that they are very rarely or never liable to it, except in those cases in which the necessity of their situation is supposed to require assistance; and this being given with ignorance and violence (two very familiar companions) may not improperly be esteemed the cause of the accident. It is therefore reasonable to presume, that the frequent occurrence of this laceration in the human species, allowing that it is in some cases and in some degree unavoidable, ought to be imputed to some accidental cause, or to error in conduct, rather than to any peculiarity in the construction of the part, or in the circumstances of their parturition; because when women were delivered without assistance, I have not in any case observed any very considerable laceration. I believe, no observation is more generally true, than that of the existence of a power in the structure and constitution of every animal, by which evils are prevented or remedied, and by which the greater part of the difficulties occurring at the time of their parturition are overcome; which power, combined with sympathetic or corresponding actions of other parts, is commonly exerted with a degree of energy and effect proportionate to the difficulty.

The causes disposing to, and capable of, producing a laceration of the *perinæum* seem to be these:

First, the increased tenderness and delicacy of the skin, occa-

sioned by peculiar habits or modes of living. That this and every other part of the body may, by alteration from its natural state, become more susceptible of pain, and less able to bear violence of any kind, is clearly proved by the different degrees of those properties in parts of the body which are usually clothed or uncovered.

Secondly, The position of women at the time of delivery. Women in this country, at the present time, are placed in bed upon their left side, with their knees drawn up towards the *abdomen;* which position, though convenient to the attendant, seems to occasion a projection of the part of the child, which presents, in a line unfavourable to the *perinæum.* But if they were to be placed upon their knees, and leaning forwards, which is a position at that time perhaps the most natural, as it is often instinctively sought for, and in some countries chosen in cases of difficulty and distress; then the head or part presenting would, by its line of gravitation, lessen the pressure upon the *perinæum*, and, of course, the hazard of its laceration.

Thirdly, The disturbance of the order of a labour. Every change which is made in the parts, both external and internal, at the time of labour, is successive, and every pain seems to produce two effects; it dilates one part, and gives to some other part a disposition to be dilated. If therefore, by hurry or imprudent management, the head of the child, in its passage through the *pelvis,* be brought into contact with parts which have not yet acquired their disposition to dilate; or if, by artificial dilatation, we attempt to supply the want of the natural, the parts will sooner be lacerated than distended.

Fourthly, When animals bring forth their young, the effort to expel is instinctive, no part of the force exerted appearing to be voluntary. Women, on the contrary, either from erroneous opinions, or from false instructions, exert a considerable degree of voluntary force, often indeed their whole strength, with the hope and intention of finishing their labours speedily. Now if we suppose that the *perinæum* is able to bear all the force instinctively exerted, without injury, but no greater; then the whole voluntary force will, in proportion to its degree, induce the danger of a laceration, unless its effect be counteracted by some adventitious help. On this principle it is usual to support the *perinæum,* according to the exigence of the case, not with the view of altering the direction of the head of the child, but simply of retarding its passage through the external parts. For the *perinæum* is not torn because the head of the child is large, or passes in any particular direction, but because it passes too speedily, or presses too violently upon the parts, before they have acquired their proper dilatability; it therefore rarely hap-

pens, that the *perinæum* is lacerated in very slow or difficult labours, whatever may be the size or position of the head of the child. Without some precaution the *perinæum* may be lacerated by the shoulders or breech of the child, or by the rude hand of an operator.

SECTION VII.

That kind of laceration of the *perinæum*, which commences at the anterior edge, and runs obliquely or directly backwards, is alluded to in every dissertation upon this subject. But there have been many instances of another kind of laceration which may be called a bursting or perforation of the *perinæum*, at that part which is connected with the circumference of the *anus*, when the anterior part is preserved; and through such perforation it is said children have sometimes been expelled. There is in some French writer, whose name I cannot recollect, an account of a case of this kind, in which the head and body of the child were excluded through an opening in the *perinæum* thus casually made, in which the *frænum* of the *perinæum* was preserved entire. Nor does the common laceration of the *perinæum* always commence at the *frænum*, even in instrumental deliveries, but further back, and then usually bears down before it all the anterior part.

In a case which occurred in my own practice, I was sensible of this kind of laceration before the expulsion of the head, which I guided through the natural passage, supplying the want of the *perinæum* with the palm of my hand. The external parts were in this patient extremely rigid and contracted; and, as I applied myself with great assiduity to preserve them, at the anterior part of the *perinæum*, I imputed the accident to this circumstance rather than to the necessity of the case. The patient did not make any unusual complaint, immediately after delivery; but, on the following day, there was a violent inflammation of the parts, with a suppression of urine, and the *lochia* were discharged through the ruptured part, but no *fæces* ever came through it, or by the *vagina*. By the use of fomentations and cataplasms, of cooling laxative medicines, and occasionally of opiates, the inflammation was soon abated. The suppuration being profuse, the bark was given; and, at the end of ten weeks, the lacerated parts were healed. No particular examination was ever made during the cure, and none but superficial dressings applied. When I attended this patient with her second child, I observed a large round cicatrice at the rugous part of the *anus*, but she then scarcely suffered any inconvenience from it; and recovered as well as if no such accident had formerly happened. Of this kind of accident another case has lately been communicated to me, which created much trou-

ble for a considerable time after delivery, but which at length terminated without any permanent inconvenience.

SECTION VIII.

The *clitoris* is little concerned in the practice of midwifery, on account of its size and situation. But it is said to have been sometimes elongated and enlarged in such a manner as to equal the size of the *penis*, when it makes one of those many peculiarities which have been supposed to constitute an hermaphrodite *, or an animal partaking of the sexual properties of the male and female; but if there be any examples of true hermaphrodites, the term is in this case improperly used †.

Should the *clitoris*, from any cause, increase to such a size as to occasion much inconvenience, it may be extirpated either by the knife or ligature ‡; but if the cause of the enlargement, which is commonly assigned, be true, it is not probable that any motive of delicacy or inconvenience will be a sufficient inducement to suffer the pain of extirpation §.

SECTION IX.

The bladder and *urethra* in women are naturally liable to fewer diseases than the same parts in men, the former being more short, in a straight direction, and their connexion far more simple; their use being wholly confined to the reception and conveyance of the urine. Women have, nevertheless, a stone sometimes formed in the bladder: and it has been thought an improvement in practice to evade the operation of lithotomy, by distending, with bougies gradually enlarged, the *urethra*, till it is of sufficient dimensions to allow the stone to pass through it. It is proved by experience, that the *urethra* will distend, or may be artificially distended, sufficiently to allow a stone of a considerable size to pass, as I have known in many instances; but if the distension be carried beyond a certain degree, it is said the tone of the part will be destroyed, and the patient ever remain subject to an involuntary discharge of urine, a greater evil than

* Hermaphroditi veri non dantur.—*Ruysch. Thes.* viii.

† *Clitoris* major in fœtu existit.—*Ruysch. Thes.* vi. l. 1. *Cercosis.* Clitoris prælonga. Vogel ccccxxxv.

‡ See *Bruce's* Travels; and Travels in *Africa*, *Egypt*, and *Syria*, by *G. W. Browne*, in which we are told that it is always extirpated as a religious ceremony; yet of this there remains some doubt. See also *Sonnini*, Chap. 23.

§ Quæ extra venerem, in casta femina, parva fuerat, suo etiam modo arrigit et intumescit, ut preposteræ veneri servire possit, multoque usu ejus turpitudinis, denique moles ejus augetur.—*Haller. Physiolog.*

any of the common consequences of lithotomy, which is a far less complex and difficult operation in women than in men.

From the cavity of the bladder, in the course of the *urethra,* and about the *meatus urinarius,* excrescences of various forms and sizes sometimes grow, which produce symptoms almost equally troublesome, and similar to those which are caused by the stone or other diseases in the bladder, for which they are often mistaken. These may be extirpated by the knife, by ligature, by caustic applications or by wearing bougies, according to their size, or the part where they grow, which may render one method more convenient or preferable to the rest. But these excrescences, when they arise in the *urethra* or bladder, are sometimes not to be removed without much difficulty and trouble; and as little violence as possible is to be used in the operation, when we attempt to remove them by ligature, otherwise the bladder might be inverted or a profuse hemorrhage occasioned.

I have lately seen an instance of a person dying in consequence of a number of small excrescences with which the whole internal surface of the bladder was beset.

SECTION X.

The *pruritus,* itching, or stinging of the external parts, is a complaint to which women are liable at any period of life; but it is most frequently attendant on the state of pregnancy, of which it is one of the most troublesome consequences. If it affect the internal parts, or be excessive in its degree, it is said to terminate in the *furor uterinus.* It is sometimes occasioned by a disease or affection of the bladder, and is then equivalent to the itching of the *glans penis* in men; but it more frequently proceeds from some affection of the *uterus,* having been most frequently observed to occur in pregnancy, especially when the child was dead, or about the time of the final cessation of the *menses,* when there was a disposition to disease in the *uterus.* The instances of this *pruritus* either proceeding or accompanying truly cancerous dispositions of the *uterus* are very rare.

The means used for the relief of the patient must depend upon the seat, the cause, and the degree of the complaint. When it happens during pregnancy, and at all other times, if attended with inflammation, it is necessary to bleed; to give gentle laxative medicines; and to use sedative applications, of which perhaps the best is a weak solution of *cerussa acetata* as a lotion; or a decoction of poppy heads, with a small quantity of *cerussa acetata* dissolved in it, as a fomentation. But of all the applications I have seen used, none has more generally afforded relief than cold water very frequently or constantly applied with a sponge, and occasionally made colder

with the addition of ice, or a little vinegar and spirit of wine. More active applications are often prescribed; but I have suspected that these, in many cases, rather aggravate than lessen the complaint, though such benefit is sometimes derived from washing the parts with water moderately acidulated with the nitric acid: or the application of one part of the *unguentum hydrargyri muriati*, and three parts of the *unguentum cerussæ acetatæ*. If the patient be pregnant, the attempt to cure it will often be vain, and we must be satisfied with moderating it till she is delivered, when it will generally cease spontaneously. When this complaint, independently of pregnancy, originates from an affection of the *uterus*, and is of long continuance, the applications must be varied, and such medicines given as promise relief by changing the state of that part. Sulphur, taken internally, has sometimes been of much service; or applied to the part as a powder, liniment, or lotion. The burnt sponge with nitre, and the *extractum cicutæ*, have also been given with advantage; together with a lotion composed of equal parts of the *aqua zinci vitriolati cum camphora* and rose water; or the application of the *unguent. hydrargyr. fort.* I have also frequently given five grains of *Plummer's* pill every night at bed-time for a month, and a pint of the decoction of *sarsaparilla* daily; though there was no suspicion of any venereal infection, of which the itching is, I believe, a very unusual symptom. But when this complaint has been occasioned by an affection of the bladder, the constant or daily use of a bougie in the *urethra* has in some cases effectually cured the patient.

SECTION XI.

THE *hymen* is a thin membrane of a semi-lunar, or circular form, placed at the entrance of the *vagina*, which it in great part closes. It has a very different appearance in different women; but it is generally, if not always*, found in virgins, and is very properly esteemed the test of virginity, being ruptured in the first act of coition; and the remnants of the *hymen* are called the *carunculæ myrtiformes* †. The *hymen* is also peculiar to the human species; from which a moral writer might draw inferences favourable to the estimation of chastity in women.

There are two circumstances relating to the *hymen* which require medical assistance. It is sometimes of such a strong ligamentous

* Membrana hymen, quæ utrum detur, necne, sub judice lis olim fuit hoc autem tempore in anatomia magis versatis nihil notius esse potest.—*Ruysch. Thes.* iii. No. xv.

† Hymenis dissoluti reliquiæ, et corruptæ adeo pudicitiæ indicia.—*Haller. Physiolog.*

texture, that it cannot be ruptured, and prevents the connexion between the sexes. It is also sometimes imperforated, wholly closing the entrance into the *vagina*, and preventing any discharge from the *uterus*; but both these cases are extremely rare.

If the *hymen* be of an unnaturally firm texture, but perforated, though perhaps with a very small opening, the inconveniences thence arising will not be discovered before the time of marriage, when they may be removed by a crucial incision made through it, taking care not to injure the adjoining parts, and to prevent their reunion.

But the imperforation of the *hymen* will produce its inconveniences when the person begins to menstruate*. For, the menstruous blood being secreted from the *uterus* at each period, and not evacuated, the patient suffers much pain from the distension of the parts; many strange symptoms and appearances are occasioned, and suspicions injurious to her reputation are often entertained. In a case of this kind, for which I was consulted, the young woman, who was twenty-two years of age, having many uterine complaints, with the *abdomen* considerably enlarged, was suspected to be pregnant, though she persevered in asserting the contrary, and had never menstruated. When she was prevailed upon to submit to an examination, the circumscribed tumour of the *uterus* was found to reach as high as the navel, and the external parts were stretched by a round soft substance at the entrance of the *vagina*, in such a manner as to resemble that appearance which they have when the head of a child is passing through them; but there was no entrance into the *vagina*. On the following morning an incision was carefully made through the *hymen*, which had a fleshy appearance, and was thickened in proportion to its distension. Not less than four pounds of blood, of the colour and consistence of tar, were discharged; and the tumefaction of the *abdomen* was immediately removed. Several stellated incisions were afterwards made through the divided edges, which is a very necessary part of the operation; and care was taken to prevent a reunion of the *hymen* till the next period of menstruation, after which she suffered no inconvenience. The blood discharged was not putrid nor coagulated, and seemed to have undergone no other change, after its secretion, but what was occasioned by the absorption of its more fluid parts. Some caution is required when the *hymen* is closed in those who are in an advanced age, unless the membrane be distended by the confined menses, as I once saw an instance of inflammation of the *peritonæum* being immediately produced after the operation, of which the patient died as in the true puerperal fever, and no other reason could be assigned for the disease.

* Menses a membrana vulvam claudente suppressi, perque hujus incisionem evacuati.—*Ruysch. Obs.* xxxii—*and all the older Writers.*

The *caruncul*æ *myrtiformes*, by their elongation and enlargement, sometimes become very painful and troublesome. Under such circumstances, they require the same management, and admit of extirpation in the same manner as the diseased *nymph*æ.

CHAPTER III.

SECTION I.

ON THE INTERNAL PARTS OF GENERATION.

The internal parts of generation are the *vagina*, the *uterus*, the *fallopian* tubes, and the *ovaria*. The ligaments may be esteemed appendages to the *uterus*.

That canal which leads from the *pudendum*, or external orifice, to the *uterus*, is called the *vagina*. It is somewhat of a conical form, with the narrowest part downwards, and is described as being five or six inches in length, and about two in diameter. But it would be more proper to say that it is capable of being extended to these or even greater dimensions; for, in its common state, the *os uteri* is seldom found to be more than three inches from the external orifice, and the *vagina* is contracted as well as shortened.

The *vagina* is composed of *two* coats, the first or innermost of which is villous, interspersed with many excretory ducts, and contracted into *plic*æ, or small transverse folds, particularly at the fore and back part; but by frequent child-bearing these are lessened or obliterated. The second coat is composed of a firm membrane, in which muscular fibres are not distinctly observable, but which is endowed to a certain degree with contractile powers like a muscle. This is surrounded by a cellular membrane, which connects it to the neighbouring parts. A portion of the upper and posterior part of the *vagina* is also covered by the *peritonæum*.

The entrance of the *vagina* is constricted by muscular fibres, originating from the *rami* of the *ossa pubis*, which run on each side of the *pudendum*, surrounding the posterior part, and executing an equivalent office, though they cannot be said to form a true *sphincter*.

The upper part of the *vagina* is connected to the circumference of the *os uteri*, but not in a straight line, so as to render the cavity of the *uterus* a continuation of that of the *vagina*. For the latter stretches beyond the former, and, being joined to the *cervix*, is reflected over

the *os uteri;* which, by this mode of union, is suspended with protuberant lips in the *vagina,* and permitted to change its position in various ways and directions. When, therefore, these parts are distended and unfolded at the time of labour, they are continued into each other, and there is no part which can properly be considered as the precise beginning of the *uterus,* or termination of the *vagina.*

The form of the *uterus* resembles that of an oblong pear, flattened, with the depressed sides placed towards the *ossa pubis* and *sacrum;* but in the impregnated state it becomes more oval, according to the degree of its distension *.

For the convenience of description, and for some practical purposes, the *uterus* is distinguished into three parts; the *fundus,* the body, and the *cervix.* The upper part is called the *fundus,* the lower the *cervix,* and the space between them, the extent of which is undefined, the body. The *uterus* is about three inches in length, about two in breadth at the *fundus,* and one at the *cervix.* Its thickness is different at the *fundus* and *cervix,* being at the former usually rather less than half an inch, and at the latter somewhat more; and this thickness is preserved throughout pregnancy, chiefly by the enlargement of the veins and lymphatics, there being a smaller change in the size of the arteries †. But there is so great a variety in the size and dimensions of the *uterus* in different women, independently of the states of virginity, marriage, or pregnancy, as to prevent any very accurate mensuration.

The cavity of the *uterus* corresponds with the external form. That of the *cervix* leads from the *os uteri,* where it is very small, in a straight direction, to the *fundus,* where it is expanded into a triangular form, with two of the angles opposed to the entrance into the *fallopian* tubes; and at the place of junction between the *cervix* and the body of the *uterus,* the cavity is smaller than it is in any other part. There is a swell, or fulness, of all the parts, towards the cavity, which is sometimes distinguished by a prominent line running longitudinally through its middle.

The villous coat of the *vagina* is reflected over the *os uteri,* and is continued into the membrane which lines the cavity of the *uterus* ‡. The internal surface of the *uterus* is corrugated in a beautiful manner, but the *rugæ,* which are longitudinal, lessen as they advance into the *uterus,* the *fundus* of which is smooth. In the intervals between

* Facies uteri anterior planior est, convexior posterius; latera pene in aciem extenuata.—*Roederer.*

† Pars magna crassitiei uteri ad venas pertinet.—Vesalius and *all the older Writers.*

‡ Pulposum magis quam vaginæ velamentum aliquoties reperi.—*Haller, Physiolog.*

the *rugæ* are small orifices, like those in the *vagina*, which discharge a mucus, serving, besides other purposes, that of closing the *os uteri* very curiously and perfectly during pregnancy *.

The substance † of the *uterus*, which is very firm, is composed of arteries, veins, lymphatics, nerves, and muscular fibres, curiously interwoven and connected together by cellular membrane. The muscular fibres are of a pale colour, and appear also in their texture somewhat different from muscular fibres in other parts of the body. These are seen most perfectly in a *uterus* which has been parboiled.

The arteries of the *uterus* are the spermatic and hypogastric.

The spermatic arteries arise from the anterior part of the *aorta*, a little below the emulgents, and sometimes from the emulgents. They pass over the *psoæ* muscles, behind the *peritonæum*, enter between the two *laminæ*, or duplicatures of the *peritonæum*, which form the broad ligaments of the *uterus*, proceed to the *uterus*, near the *fundus* of which they insinuate themselves, giving branches in their passage to the *ovaria* and *fallopian* tubes.

The hypogastric arteries are on each side a considerable branch of the internal iliacs. They pass to the sides of the body of the *uterus*, sending off a number of smaller branches, which dip into its substance. Some branches also are reflected upwards to the *fundus uteri*, which anastomose with the spermatic arteries, and others are reflected downwards supplying the *vagina*.

The veins which reconduct the blood from the *uterus* are very numerous, and their size in the unimpregnated is proportioned to that of the arteries; but the enlargement during pregnancy is such, that the orifices of some of them, when divided, will admit of the end of a small finger. The veins anastomose in the manner of the arteries, which they accompany out of the *uterus;* and then, having the same names with the arteries, spermatic and hypogastric, the former proceeds to the *vena cava* on the right side, and on the left to the emulgent vein; and the latter to the internal iliacs.

From the substance and surfaces of the *uterus* an infinite number of lymphatics arise, which follow the course of the hypogastric and spermatic blood-vessels. The first pass into glands of the internal iliac *plexus;* and the other into the glands which are situated near the origin of the spermatic arteries. Of these *Nuck* first gave a delineation.

The *uterus* is supplied with nerves from the lower mesocolic *plexus*, and from two small flat circular ganglions, which are situated behind

* Adeo abundans ut totam cervicem repleat, et osculum quasi obturet.—*Haller, Physiolog. and many of the older Writers.*

† In gravida femina in laminas possit dividi, et in morbis in lacinias, squamasque.—*Noortwych. Uter. Gravid.* 1 l. c.

the *rectum*. These ganglions are joined by a number of small branches from the third and fourth sacral nerves. The *ovaria* derive their nerves from the renal *plexus*. By the great number of nerves these parts are rendered extremely irritable; but it is by those branches which the *uterus* receives from the intercostal, that the intimate consent between it and various other parts is chiefly preserved.

The muscular fibres of the *uterus* have been described in a very different manner by anatomists, some of whom have asserted, that its substance was chiefly muscular, with fibres running in transverse, orbicular, or reticulated order; whilst others have contended, that there were no muscular fibres whatever in the *uterus*. In the unimpregnated *uterus*, when parboiled, for the purpose of a more perfect examination, the former seems to be a true representation; and when the *uterus* is distended towards the latter part of pregnancy, these fibres are very thinly scattered; but they may be discovered in a circular direction at the junction between the body and the *cervix* of the *uterus*, and surrounding the entrance of each *fallopian* tube in a similar order. Yet it does not seem reasonable to attribute the extraordinary action of the *uterus* at the time of labour to its muscular fibres only, if we are to judge of the power of a muscle by the number of fibres of which it is composed, unless it is presumed, that those of the *uterus* are stronger than in common muscles.

With respect to the glands of the *uterus* none are discoverable dispersed through its substance. Upon the inner surface of the *cervix*, between the *rugæ*, there are *lacunæ* which secrete mucus, and there are small follicles at the edge of the *os uteri*. These last are only observable in a state of pregnancy or disease, when they are much enlarged.

From the angles at the *fundus* of the *uterus* two processes of an irregularly round form originate, called, from the name of the first describer, the *fallopian* tubes. They are about three inches in length, and, becoming smaller in their progress from the *uterus*, have an uneven, fringed termination, called the *fimbriæ*. The canal which passes through these tubes is extremely small at their origin, but it is gradually enlarged, and terminates with a patulous orifice, the diameter of which is about one third of an inch, surrounded by the *fimbriæ*. It is also lined by a very fine vascular membrane formed into serpentine *plicæ*. Through this canal, the communication between the *uterus* and *ovaria* is preserved. The *fallopian* tubes are wrapped in duplicatures of the *peritonæum*, which are called the broad ligaments of the *uterus*; but a portion of their extremities thus folded hangs loose on each side of the *pelvis*, and fringed, by which the impregnated *ovum* is supposed to be guided and conveyed from the *ovarium* into the *fallopian* tube.

The *ovaria* are two flat oval bodies, about one inch in length, and rather more than half in breadth and thickness, suspended in the broad ligaments about the distance of one inch from the *uterus*, behind, and a little below the *fallopian* tubes *.

To the *ovaria*, according to the idea of their structure entertained by different anatomists, various uses have been assigned, or the purpose they answer has been differently explained. Some have supposed, that their texture was glandular, and that they secreted a fluid equivalent to and similar to the male *semen;* but others, who have examined them with more accuracy, assert that they are *ovaria* in the literal acceptation of the term, and include a number of vesicles, or *ova*, to the amount of twenty-two of different sizes, joined to the internal surface of the *ovaria* by cellular threads or pedicles; and that they contain a fluid, which has the appearance of thin lymph. These vesicles are in fact to be seen in the healthy *ovaria* of every young woman. They differ very much in their number in different *ovaria*, but are very seldom so numerous as has just been stated. All have agreed, that the *ovaria* prepare whatever the female originally supplies towards the formation of the *fœtus;* and this is proved by the operation of spaying, which consists in the extirpation of the *ovaria*, after which the animal not only loses the power of conceiving, but desire is for ever extinguished.

The outer coat of the *ovaria*, together with that of the *uterus*, is given by the *peritonæum;* and whenever an *ovum* has passed into the *fallopian* tube, a fissure may be observed at the part through which it is supposed to have been transferred. These fissures healing, leave small longitudinal cicatrices on the surface, which are said to enable us to determine, whenever the *ovarium* is examined, the number of times a woman has conceived.

The *corpora lutea* are oblong glandular bodies of a yellowish colour, found in the *ovaria* of all animals when pregnant, and, according to some, when they are salacious. They are said to be *calyces* from which the impregnated *ovum* has dropped; and their number is always in proportion to the number of conceptions found in the *uterus*. They are largest and most conspicuous in the early state of pregnancy, and remain for some time after delivery, when they gradually fade and wither till they disappear. The *corpora lutea* are extremely vascular, except at their centre, which is whitish; and in the middle of the white part is a small cavity, from which the impregnated *ovum* is thought to have immediately proceeded.

From each lateral angle of the *uterus*, a little before and below the

* Ovaria in vetulis admodum exilia, ut plurimum visuntur.—*Ruysch. Obs. Anatom.* xlv.

fallopian tubes, the round ligaments arise, which are composed of arteries, veins, lymphatics, nerves, and a fibrous structure. These are connected together by cellular membrane, and the whole is much enlarged during pregnancy. They receive their outward covering from the *peritonæum,* and pass out of the *pelvis* through the ring of the external oblique muscle to the groin, where the vessels subdivide into small branches, and terminate at the *mons Veneris* and contiguous parts. From the insertion of these ligaments into the groin, the reason appears why that part generally suffers in all the diseases and affections of the *uterus;* and why the inguinal glands are in women so often found in a morbid and enlarged state. By the favour of Dr. R. Hooper, I saw two preparations in which the *fallopian* tubes terminated bluntly, and without any aperture, *fimbriæ* or *ovaria.* All such cases must necessarily occasion sterility.

The duplicatures of the *peritonæum,* in which the *fallopian* tubes and *ovaria* are involved, are called the broad ligaments of the *uterus.* These prevent the entanglement of the parts, and are conductors of the vessels and nerves, as the mesentery is of those of the intestines. Both the round and broad ligaments alter their position during pregnancy*; appearing to rise lower and more forward than in the unimpregnated state. Their use is supposed to be that of preventing the descent of the *uterus,* and to regulate its direction when it ascends into the cavity of the *abdomen;* but whether they answer these purposes may be much doubted.

SECTION II.

The diseases of the internal parts of generation will be best understood if they are described in the order observed in the description of the parts.

The diseases of the *vagina* are, first, such an abbreviation and contraction as render it unfit for the uses for which it was designed: secondly a cohesion of the sides in consequence of preceding ulceration; thirdly, cicatrices, after an ulceration of the parts; fourthly, excrescences; fifthly, *fluor albus.*

This abbreviation and contraction of the *vagina,* which usually accompany each other, are produced by original defective formation; and they are seldom discovered before the time of marriage, the consummation of which they sometimes prevent. The curative intentions are to relax the parts by the use of emollient applications, and to dilate them to their proper size by sponge or other tents, or,

* Ovariorum eorumque ductuum situs mutatur tempore gestationis et puerperii.—*Ruysch.* Thes. ix. No. xv.

which are more effectual, by bougies gradually enlarged. But the circumstances which attend this disorder are sometimes such as might lead us to form an erroneous opinion of the disease. A case of this kind which was under my care, from the strangury from the heat of the parts, and the profuse and inflammatory discharge, was suspected to proceed from venereal infection; and with that opinion the patient had soon after her marriage been put upon a course of medicines composed of quicksilver for several weeks without relief. When she applied to me, I prevailed upon her to submit to an examination, and found the *vagina* rigid, so much contracted as not to exceed half an inch in diameter, and not more than one inch and a half in length. The repeated, though fruitless attempts, which had been made to complete the act of coition had occasioned a considerable inflammation upon the parts, and all the suspicious appearances before mentioned. To remove the inflammation, she was bled, took some gentle purgative medicines, used an emollient fomentation, and afterwards some unctuous applications; she was also advised to live separate from her husband for some time. The inflammation being gone, tents and bougies of various sizes were introduced into the *vagina*, by which it was distended, though not very amply. She then returned to her husband, and in a few months became pregnant. Her labour, though slow, was not attended with any extraordinary difficulty; she was delivered of a full-sized child, and afterwards suffered no inconvenience.

Another kind of constriction of the external parts sometimes occurs, and which seems to be a mere spasm. This is to be removed in some cases by such applications as sooth and allay irritation, especially by introducing two or three grains of *opium* formed into a pill, into the *vagina* or *rectum;* and in others by such means as distend by resisting the spasm, which is sometimes so forcible as to require the use of bougies of a proper size for a long time, even in women who are married or have borne children. Perhaps this complaint may also be occasioned by an erysipelatose inflammation of, or defluxion of acrid humours on the parts, and will then require different modes of treatment.

SECTION III.

By the violence or long continuance of a labour, by the morbid state of the constitution, by the negligent and improper use of instruments, or by injuries, an inflammation of the external parts, or *vagina*, is sometimes produced in such a degree as to endanger a mortification. By careful management this consequence is usually prevented; but in some cases, when the constitution of the patient was prone to disease, the external parts have sloughed away, and in

others equal injury has been done to the *vagina*. But the effect of the inflammation is usually confined to the internal or villous coat, which is sometimes cast off wholly or partially. An ulcerated surface being thus left, when the disposition to heal has taken place, cicatrices have been formed of different kinds, according to the depth and extent of the ulceration; and there being no counteraction to the contractile state of the parts, the dimensions of the *vagina* become much reduced: or, if the ulceration should not be healed, and the contractibility of the parts continue to operate, the ulcerated surfaces being brought together may cohere, and the canal of the *vagina* be perfectly closed. The inconveniences and ill consequences of this complaint may in general be prevented, or very much lessened, by proper attention at the time of healing; but in many of the cases I have seen, the first inflammation being neglected, and the sloughing from the *vagina* overlooked, the cohesion had taken place long before it was suspected. When a slough of considerable size has been cast off from the bladder and *vagina*, the cohesion of the parts, by which a kind of artificial bladder is made, is a far less evil than a constant involuntary flowing of the urine.

SECTION IV.

Cicatrices in the *vagina* very seldom become an impediment to the connexion between the sexes: when they do, the same kind of assistance is required as was recommended in the natural contraction or abbreviation of the part, and I believe they always give way to the pressure of the head of the child in the time of labour, though in many cases with great difficulty. Sometimes the appearances may mislead the judgment; for I was lately called to a woman in labour, who was thought to have become pregnant, the *hymen* remaining unbroken. But on making very particular inquiry, I discovered that this was her second labour, and that the part which, from its form and situation, we supposed to be the *hymen*, with a small aperture, was a cicatrice, or unnatural contraction of the entrance into the *vagina*, consequent to an ulceration of the part after her former labour.

When the sides of the *vagina* cohere together, it may be requisite to separate them with a knife: and when they are in a healing state, their reunion may be prevented by tents or bougies, or by a leaden canula of a proper size, introduced into and worn in the *vagina*. But, if the cohesion have taken place far up in the *vagina*, the knife must be used with the utmost circumspection, or irreparable injury may be done to the bladder, *rectum*, or the adjoining part, as they all are drawn or knit closely together. A patient under these circumstances,

who applied to me for relief, and in whom the menstruous blood was secreted, though it could not be discharged, was advised to defer any operation; as I presumed the menstruous blood, at some future time, would be collected in such a quantity as either to separate or protrude the cohering parts in such a manner as to render the operation, if necessary, more secure, effectual, and easy. Accordingly when they were stretched and protruded by the retained *menses*, the point most eligible for perforation was indicated, and the operation was performed easily and safely. But in some cases of cohesion it has not been thought justifiable to attempt to separate the united parts by incision, and the patient has been obliged to submit to the injury for the remainder of her life, in preference to an involuntary and perpetual flowing of the urine, which every person who has seen will consider as one of the greatest evils to which any human being can be subject.

SECTION V.

Fungous excrescences arising from any part of the *vagina* or *uterus* have been distinguished, though not very properly, by the general term *polypus;* but as the term is by long custom *generally* understood, it may be retained. These are of different forms, sizes, and substances, and may sprout from any part of the cavity of the *uterus* and perpend in the *vagina;* or from the *os uteri;* or from the *vagina*, generally with one, but not very unfrequently with more roots. The texture of the excrescences is also very different, being in some cases fleshy and firm, and in others truly fungous and almost as soft as coagulated blood. Some of them hang by a small pedicle, and others have a broad basis, especially at their commencement. Such substances have not been described by anatomists, nor the accompanying symptoms marked by nosologists. Those who are not very guarded in their practice *are often* led into error, in their prognostic and treatment of these cases. Some of them are perfectly distinct substances, probably arising from the internal membrane of the *uterus;* but others are partly composed of the substance of the *uterus*, which shoots so as to be intermingled with that of the *polypus*, or to form a covering over it. These distinct structures of the *polypus* are not discoverable before an attempt is made to extirpate them.

The cause of *polypi* is supposed to be some accidental injury done to the part at the time of labour or otherwise; but more commonly it is a spontaneous disease, proceeding from a certain disposition of the constitution or of the part itself; as those who have a *polypus*, of the *uterus* for instance, are apt to have excrescences from other parts; and they sometimes exist in those who have never been pregnant, and even in virgins.

A *polypus* may be formed for several years before it is perceptible by any examination, and during the whole time may occasion many untoward and intractable symptoms. Sometimes it may be discovered within the *os uteri*, through which it at length drops by its own gravity, or is excluded by pains similar to those of labour, and when it has passed into the *vagina* it lies at rest. A *polypus* has been unexpectedly found in the *vagina*, which had passed through the *os uteri* without pain. It has happened, though very rarely, that there is a *polypus*, though growing in the cavity of the *uterus*, which does not always prevent conception, or much impede or obstruct parturition; which *polypus* has been immediately excluded after the birth of the child.

Those which are of a small size are not impediments either to conception or parturition; at least if they spring from the *vagina* or *os uteri*. Sometimes tumours of a similar kind are formed on the external surface of the *uterus*.

In the first stage, a *polypus* may be accompanied with all those symptoms which proceed from uterine irritation; and in its progress and advanced state with a serous, mucous, sanious, or sanguineous discharge, increasing in quantity, frequently changing its appearance, and irregular in the times of its continuance, according to the growth of the disease and the state of the constitution, or of the part. By these discharges, and often by the continual or frequently returning pain, the patient may at length be reduced to extreme weakness; and, if relief be not given by the extirpation of the *polypus*, she may perish from mere loss of strength, or the production of other diseases, as I have more than once known. But these symptoms being common to some other affections of the *uterus*, the cause of them is frequently overlooked, the detail of the symptoms which precede, or which accompany the commencement or progress of the uterine *polypus*, having been hitherto very imperfectly described. When therefore no advantage is obtained in cases of profuse discharges, by the use of suitable and efficacious medicines, it should be made a general rule to inquire, whether there may not be a *polypus*, or what is the nature of the local disease.

The *polypus* may be removed by excision, or by ligature, but the latter is by far the preferable method, and the ligature is to be used in the same manner, and on the same principle as in the extirpation of nasal *polypi*. The kind of ligature I have generally used has been either one of the laces made of silk, used in the dress of women, or a piece of fine whipcord, but wire and other materials have been used for the purpose. Perhaps coloured ligatures when moist, occasion soreness of the parts. The difficulty of the operation lies in the proper application of the ligature, and this depends upon the dis-

tance of the part to be tied from the external orifice, and upon the size and thickness of the basis or stem of the *polypus*, as well as the size and form of it. If the circumstances of the case will admit of delay, the operation will be rendered more easy by deferring it, as the tumour will descend lower, and the stem or pedicle become thinner and longer.

This is the manner of tying the *polypus:* Draw the ligature, doubled, through the canula or ligator commonly used for this purpose, and then conduct the bow of the ligature with the fingers, all round and over the bulk of the *polypus*, taking care that it does not hitch on one side when it is passed over the other, which it is apt to do if the *polypus* be large or uneven. In several cases, especially when the *polypus* was large, I have found it more convenient to pass the ligature single through the *canula*, which, being conducted to the stem of the *polypus*, becomes a fixed point, whence the ligature may be directed round the stem by either of the forefingers. But it will then be necessary, without disturbing the ligature already passed, cautiously to withdraw the *canula*, to give an opportunity of repassing the detached end of the ligature through the *canula*, and then acting as will be hereafter mentioned. Whatever part of the operation can be done with the fingers, is always done better and more safely than with any instrument. The ligature being passed over the *polypus* and upon its stem, the *canula* is to be again carried to the stem, and both the ends of the ligature carefully drawn through till it is tightened. We are then to examine with the finger whether the ligature be fixed upon the most eligible part, which is usually as high up as we can reach, and sometimes beyond it; but there is no occasion to fix it upon any precise part of the root of the stem, because the part beyond the ligature decays, and comes away with the rest, leaving the *uterus* clear. When the ligature is drawn to its proper degree of tightness, the ends must be fixed upon the cross bars of the *canula*, which, if too short, will press painfully on the external parts.

I have found it better to draw the ligature slowly to what may be called its bearing, than to tighten it hastily, especially at the time of fixing it, lest the stem should be cut through prematurely, if the substance were tender; and then perhaps the tumour might repullulate; there would be an awkward discharge for some time afterwards, and the operation would be less complete. I therefore very gradually tighten the ligature every day till it comes away, which cannot happen till the stem is separated, which is usually on the fourth or fifth day, earlier or later, according to the thickness or texture of the stem. In one case, the ligature remained till the fifteenth day from the time of its being fixed. The first sign of a suc-

cessful operation is the scent of something putrefying. When the stem of the *polypus* is divided by the operation of the ligature, or sloughs away, the ligature is set at liberty. There is seldom any difficulty in extracting the *polypus*, unless it were very large; and it is sometimes dwindled extremely; but of that we shall afterwards speak.

During the operation of the ligature, we must carefully watch any tendency there may be to pain or inflammation in the *abdomen*, and if either of these should come on in any material degree, we must obviate them, and proceed more circumspectly.

It has been mentioned as a general rule, that we ought not to pass the ligature round a *polypus* unless we can feel the stem; but in cases of extreme danger this rule must be disregarded; and when the *polypus* is very large, as in case the 5th, the stem cannot possibly be felt. We must also distinguish a *polypus* from an inverted *uterus;* for there is in some respects a resemblance between the two complaints, and sometimes they exist together, even when the *polypus* is not large.

Should a *polypus* arise from the substance of the part whence it originates with a basis as large or larger than the excrescence, the ligature cannot be fixed; for it will either slide off or take a partial hold. In such cases, attempts to pass the ligature produce no advantage; for, in general, such tumours have a cancerous disposition. But this deserves consideration; whether the stem cannot be laid hold of, and the whole substance destroyed, by means of a pair of denticulated *forceps*, of a proper length and curvature, so contrived as to remain fixed where they may be placed; and perhaps by some other device. When the *polypus* has a small pedicle, the case is commonly more favourable than where the pedicle is of a considerable thickness, whatever may be its size.

Before the ligature is passed, we should be informed of the state of the *uterus;* for if this be diseased, except as far as may be reasonably attributed to the irritation it has suffered, the patient will not profit by the extirpation of the *polypus*, and we may ultimately do no good, nor acquire any credit, though acting with the strictest propriety and greatest skill in the operation. There is also sometimes an apparent enlargement of the *uterus*, because the whole *polypus* is not excluded out of its cavity.

The *polypus* has sometimes terminated favourably without assistance, or with assistance of a different kind. After a long continuance of the disease, which may not have been suspected, or perhaps mistaken for some other, the tumour has pressed through the *vagina* and external orifice, and, the stem being too weak to sustain its weight, or to afford nourishment, it has decayed and dropped away; or

when the *polypus* has pushed through the external orifice, a ligature has been fixed round the stem, and the *polypus* been easily and perfectly extirpated. But in such cases the *uterus* is more frequently inverted by delaying to remove the *polypus* at a proper time, and the patient is unnecessarily exposed to a continuance of suffering, and an increase of danger. There have also been instances of the *polypus* decaying completely away, while it has remained attached in the *vagina*, one of which I have seen after having determined to pass the ligature.

As little has been said on this subject by any writer in this country, I presume it may be of use to give a detail of a few cases attended with rare symptoms; especially as it will give me an opportunity of mentioning some circumstances unnoticed in the foregoing description of the operation.

CASE I.

A single lady, twenty-two years of age, had for a considerable time been subject to frequent and profuse returns of uterine hemorrhage, which resisted all the means that could be devised for her relief, and at length reduced her to a state of great weakness. Dr. Turton (whose worth and continued friendship to me I am happy on every occasion to acknowledge) was the physician who attended, and he, suspecting some local disease, desired I might be permitted to make inquiry. I discovered a *polypus*, not of a large size, lying low in the *vagina*. When I came to pass the ligature, there was much embarrassment from the state of the parts, any injury to which I was solicitous to avoid. On the fifth day from the time of my passing the ligature it came away; but the *polypus* could not be extracted without much caution and trouble. There was no return of the hemorrhage; she soon recovered her strength, and in a few months was married. She has since had seven fine children with safe and easy labours. This *polypus* weighed four ounces.

CASE II.

Another young lady had long suffered from frequent uterine hemorrhages, together with most violent pains, recurring in the manner of those of labour. High up in the *vagina*, just cleared through the *os uteri*, I discovered a small *polypus*, round which a ligature was with difficulty passed. The late Mr. Hunter was with me at the time. When I began to tighten the ligature, she complained of very severe pain, and presently vomited. The ligature was immediately slackened; but, on every future attempt to draw it tighter, the same symptoms were instantly produced. After many trials,

I was obliged to desist altogether, leaving the ligature loose round the *polypus*, merely to keep up in the mind of the patient some faint hope of benefit. The health of this patient was very bad when I first saw her, and, in about six weeks from the time of the operation, she died.

Leave being given to open the body, the *uterus* was found inverted, and the ligature to have passed over the inverted part, which occasioned all the symptoms before mentioned. This *polypus* could not have weighed more than one ounce, and had a very short, if it could be said to have any, stem; so that the *uterus* could not in this case have been inverted mechanically, but by its own vehement action excited to expel the *polypus*, which, like any other extraneous and offending body, was a perpetual cause of irritation.

CASE III.

Many years ago I visited a lady, who had for a long time suffered greatly from various uterine complaints, and was supposed to have a cancer in the *uterus*, of which her general aspect gave very strong indications, but on examination I found a large *polypus* in the *vagina*. The late Dr. Ford, than whom no one was more intelligent or expert in practice, was in consultation with me. I passed the ligature and drew it tight, confidently expecting a happy termination of the case. The stem of the *polypus* was very thick, and it required eight or nine days action of the ligature to divide it. When I had removed the *polypus*, I was very much mortified to find a new substance, nearly of the size of that which had been taken away, in the *vagina*. Her health being very infirm, it was thought advisable for her to go to a short distance in the country, for the chance of establishing her health, before another operation. But a colliquative diarrhœa with aphthæ came on, she gradually declined, and about the end of the month died.

Of this repullulation, if it were such, I have never seen any other instance, so early after the operation, and it might be attributed, 1. to the thickness of the stem; or, 2. to the slow decay of the stem; or, 3. to a cancerous disposition of the *uterus;* or, 4. to a large portion of the *polypus* remaining in the *uterus*, besides what was discoverable in the *vagina*. If a case similar to this were again to occur to me, I should certainly act more speedily with the ligature, and, however reduced the patient might be, should feel justified in passing the ligature on the second excrescence, as affording the only chance of saving the patient; but this is, perhaps, to be considered as an instance of the great mischief done to the constitution, by too long delaying the operation.

CASE IV.

A lady about sixty years of age, who had had several children, had, with violent pain, frequent hemorrhages from the *uterus*, so profuse as to bring her at each time of their return into the greatest danger. When she permitted me to take an examination, there was no *polypus* in the *vagina*, but the *uterus* was much distended, and the *os uteri* being opened nearly to one third of its circumference. I could discover within, and pressing upon it, a tumour of apparently a very large size. In the course of a few weeks an immensely large *polypus* dropped into the *vagina*. Her health was much reduced, and the extirpation of the *polypus* appearing the only chance of saving her, I made many and strenuous attempts to pass the ligature, but without success. I then procured a longer and different instrument, like that used in tying the tonsils, but with this I was also foiled. In my endeavours to pass this instrument round the *polypus*, the surface was abraded, a blood-vessel of a considerable size was wounded, and there was a loss of blood, which rendered the patient still more weak. After a few days, without any instrument, I gradually introduced my hand into the *vagina*, got the ligature over the *polypus*, and then tightened it. Dr. Orme and Mr. Croft were with me at the time. But many complaints came on, and she died in a few days before the *polypus* could be extirpated.

The blood-vessels which convey nourishment to a *polypus*, probably bear a relation to its size, and must, of course, be sometimes very large; so that, in passing the ligature, it behoves us to be very careful that we do not wound the *polypus*; and, perhaps, in every case when the *polypus* is large, it would be better, if possible, to introduce the hand, for the conveyance of the ligature, than to use any instrument. Much will also depend on the texture of the *polypus*, which is sometimes so slight as to resemble an injected and corroded liver or kidney. I remember a case in which, though I only took a common examination, and with the usual caution, so violent a hemorrhage was occasioned, that I thought the patient would have died instantly. Was a case similar to this to occur to me again, I should be disposed to try the effect of styptic injections, deferring any attempt to pass the ligature, till I had seen the effect which would be produced by them.

The three preceding cases are the only ones among a very great number, in which I have not been successful; and I have judged it right to state them thus circumstantially, to set others upon their guard, and to prepare them for the possibility of disappointment.

In the museum of the late Dr. Hunter, there is a large *polypus*

from which an engraving was made, and by the register it appears that, after many attempts to pass the ligature, without success, this patient died. Perhaps by a knowledge of the causes of the miscarriage of others (as in case 4. just recited) subsequent trials, even in *polypi* which are of the largest size, may be more fortunate. I have very great pleasure in relating the following case, which was lately under my care.

CASE V.

A foreign lady who was born, and had lived the greatest part of her time, in a hot climate, applied to me. She had had every day, for more than three years, a very considerable discharge of blood from the *uterus*, together with others of a different kind and complexion, by which her strength was very much reduced. She had been attended by different gentlemen, who had not given any decided opinion of the nature of her disease. When I first examined her, I was indeed very much surprised, for not only the whole *vagina* was filled up with a fleshy substance, but the *os uteri* was as completely dilated as when the head of a child is passing through it, and the cavity of the *uterus* appeared to be filled and much distended with the same substance. I at first hesitated whether I should make an attempt to pass the ligature, as I could not reach the stem of the substance, but after deliberating upon the state of the patient, who must soon perish, unless relief could be given, and knowing that if the ligature could be passed I should have the power either of proceeding, or of stopping on the appearance of any untoward symptom, I determined to make a trial. The first and second attempts to pass the ligature were fruitless, but I at length conveyed the ligature beyond the bulk of the tumour and far beyond my reach, by means of a piece of thin cane, notched at the end. The ligature being daily drawn gradually tighter, was at liberty on the sixth day. The external parts were unusually contracted, and as any endeavours to bring away the *polypus* at that time must have failed, it was left in the *vagina* to soften and decay. On the ninth day after the ligature was come away, she had pains as regular as those of labour, and when the *os externum* became somewhat dilated, I laid hold of a portion of the tumour, first with my fingers, and then with a small sharp pointed hook, favouring the expulsion of it as well as I could, during the pains by which it was at length propelled with considerable force, after a labour of four hours continuance. From that time to the end of five weeks there was not any discharge of any consequence. Then she menstruated regularly, and returned home in perfect health.

This *polypus*, which was the largest I ever saw, was put into the

hands of Dr. Baillie, who saw the patient during the operation. It weighed two pounds and three ounces, so that allowing for its decay, perhaps it could not originally have weighed less than three pounds. But the violence of the symptoms does not always depend upon the large or small size of the *polypus*.

When *polypi* are too large to be extracted without much difficulty after their separation, no harm can arise from their remaining some days in the *vagina*, as I have found in several instances, and their bulk hourly lessening by decay, their extraction is rendered more easy.

In the museum of the late Dr. Hunter, there is likewise preserved a *polypus*, which from its size appears to have inverted the *uterus*, and the ligature when passed over it, being out of reach, was found to have been fixed upon the inverted part of the *uterus*, so that when drawn tight it had produced the same symptoms as those described in case 2; of this an engraving has also been made. It is remarkable that this woman lived till the inverted portion of the *uterus* was more than half cut through by the ligature, and I am of opinion with very slow proceeding she might have survived the operation. For in a case in which I was concerned with Mr. Heaviside and other gentlemen, the ligature being passed round a cauliflower excrescence, as it is called, of the *os uteri*, a portion of the *os uteri* itself was included and came away with the excrescence, and the patient lived several months after the operation. But the same causes and degrees of irritation differ so widely in their effects in different constitutions, that the event of such cases must be both hazardous and doubtful. These cases lead to an observation on the difference between what is properly meant by the term *polypus*, and excrescence. By the former is to be understood, those excrescences that arise distinctly from the *uterus* or *vagina*; and by the latter, a morbid enlargement of those parts. The first of these generally admits of extirpation with safety and advantage; but the latter, though they admit of extirpation, and even promise success, cannot with propriety or advantage be removed. If operations in surgery are proposed and only justified, when they are performed with the hope of removing present, or preventing future mischief, no operation ought in these cases to be performed, because in several in which I have passed a ligature over them, those particularly of the *os uteri*, the present sufferings of the patients have been grievously increased, and their lives have been shortened.

The late Dr. Hamilton, of Glasgow, obliged me with a drawing of a *polypus* which weighed one pound and four ounces, and had dropped through the *os externum*, inverting and dragging along with it the *fundus* of the *uterus*. The patient died. Had the nature of

this complaint been understood in due time, it would in all likelihood have been possible to have tied and extirpated it, before it had occasioned so much mischief. It is an example, among many others, of the impropriety of waiting till the *polypus* is excluded through the *os externum* before we attempt to tie it, an opinion which some have entertained.

A very great part of those on whom I have performed this operation have been foreigners, or persons who have lived in hot climates; but it remains to be proved whether women in such climates are more subject to the *polypus* than those who live in cold ones, or whether this has been an accidental circumstance.

I have seen several cases of excrescences, not above the thickness of a large earth-worm, springing from the cavity of the *uterus* or *os uteri*, and growing to a great length. These were easily tied and removed. In one case the *cervix* of the *uterus* was so much elongated as to drop through the external parts, assuming the appearance of a thickened membrane, but with this it was not thought prudent to interfere.

In the course of the year 1801, I met with two singular cases. The first was a *polypus* so large that I could not reach the stem, but having passed the ligature, very violent pain in the abdomen came on, which obliged me to slacken the ligature, to use fomentations, and to give opiates. When the patient became easier I gradually tightened the ligature again, and on the eighth day the *polypus* came away. But this patient's general health was very much affected. She went into the country, and died in about three months, having before her death a profuse discharge of purulent matter from the *vagina*. Probably the *uterus* was diseased, or some other part was affected.—In the second case there was a *polypus* or excrescence, not of a large size, but with a very thick stem, and when I passed my finger to the extremity of it, within the *os uteri*, I found as it were the bottom of the cavity of the *uterus*, with a considerable enlargement and induration of the body of the *uterus*. These cases I consider as of very uncertain event, however dexterously the ligature may be applied: they are often accompanied with certain proofs of the existence of cancer, or some incurable disease of the *uterus*. Yet it may be justifiable in some of them to try the consequences of a removal. Perhaps case 3. was of this kind.

I lately saw another patient whose situation was very much like that described above; but in this case the elongated *os uteri* was enlarged, and had assumed the form of a *polypus*, occasionally hanging without the *os externum*. The symptoms in this patient (who had never been pregnant) were such as are common in every case of great uterine irritation. I proposed her wearing a flat pes-

sary, and supporting her general strength; and if by the discharge and other circumstances, there should be any tokens of imminent danger, I thought it would be right to take the chance of doing some good and prolonging her life, by passing a ligature round the small part of the excrescence, near the proper *os uteri*: she died in the course of a few months in consequence of repeated hemorrhages; no attempt having been made to pass a ligature round the part.

I am sorry to have known reasons for concluding this account with the following observation. When a *polypus* is discovered to exist, it does not seem right to proceed to the operation immediately, but to request a consultation; to prove the nature of the disease and the necessity of the operation, that the honour of the profession, and of the person employed may be preserved inviolate. (See a case of *polypus* described in the 3rd volume of Medical and Chirurgical Transactions, page 308.)

SECTION VI.

A MUCOUS, ichorous, or sanious discharge from the *vagina* or *uterus*, is called the *fluor albus* *. These discharges are various in their degrees as in their kinds, from a simple increase of the natural *mucus* of the part, to that which is purulent or of the most acrimonious quality; but the first is not esteemed a disease, unless it be excessive in its degree. 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 same 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. In many cases the *fluor albus* is an indication of a disposition to disease in the *uterus* or parts connected with it, especially when it is copious in quantity, offensive in smell, or acrimonious in quality, about the time of the final cessation of the *menses*: and before the use of such means as are merely calculated for the removal of the discharge, we must first endeavour to restore the *uterus* to a healthy state.

The symptoms attending the *fluor albus*, whether it be an original disease, or a symptom of other diseases, are very similar. The complexion is of a pale, yellowish colour, the appetite is depraved, there is invariably a pain and sense of weakness in the back, loins, and inferior extremities; the patient has usually a feverish disposition, with a wasting of the flesh and reduction of the strength, and ultimately becomes hectic or leucophlegmatic.

* *Leucorrhœa.* Nimia muci aut ichoris ex vulva profusio. *Vogel*, cxix. Cachexia uterina, sive fluor albus. *Hoffman.*

The method of relieving or curing the *fluor albus* must depend upon its cause, and whether the discharge proceeds from the *uterus* or *vagina*. When it is occasioned by general weakness of the constitution, any of those medicines which are classed under the general term of corroborants or tonics, as bark and preparations of iron, and especially the *zincum vitriolatum*, to the quantity of one grain, or more, two or three times a day, may be given, under a variety of forms, with great advantage. But their effect upon the discharge is not immediate; and, previously to their use, it will be proper and necessary that the patient should take some mild purgatives, and in all cases where there is any feverish disposition, that is to be removed before the use of any kind of tonic medicine. Balsamic and agglutinating medicines of every kind, as the extract of bark with gum *olibanum*, *mastic*, or *elemi*, and all the class of terebinthinate balsams, of which the best for internal use is that called the balsam of *Gilead*, or the *Tinct. Benzoin. Composit.* are also frequently prescribed, and sometimes with much benefit. In some obstinate cases, preparations of quicksilver, especially *calomel* in very small doses, have been given with advantage, when there was no suspicion of any venereal infection. Gentle emetics have also been recommended in some cases of long continuance, and they are supposed to be of singular use, not only by cleansing the *primæ viæ*, or by making a revulsion of the humours from the inferior parts, but by exciting all the powers of the constitution to more vigorous action. Cold bathing, partial or general, particularly in the sea, has often been of eminent service. In this, and all similar complaints, good air, moderate exercise, nourishing, but very plain and simple diet, and a quiet regular manner of living, will of course be advised.

When there is reason to think that the complaint is local, and arises from the relaxation of those orifices by which a necessary *mucus* is discharged on particular occasions; or if the discharge should continue after an amendment of the constitution, injections of various kinds may be used daily. But the safest and best are those which are composed from astringent vegetables, as a strong infusion of green tea, or the leaves of the red rose; proceeding cautiously to weak solutions of *cerussa acetata*, *zincum vitriolatum*, or *alum*, as is the practice in long continued defluxions upon the eyes. Though these applications cannot well be expected to produce an absolute cure, they seldom fail to afford temporary benefit, which is a great comfort to the patient, and if cautiously and judiciously directed, they may be continued or repeated without hazard, and perhaps ultimately cure the disease.

SECTION VII.

The *uterus* is liable to many diseases, and being a part with which the whole body is readily drawn into consent, there is scarce one under which women have at any time laboured, but what has been attributed to its influence: yet it is not proved, that there is any essential difference in those diseases of women to which men are equally subject, though there is some variety in the symptoms. We shall confine our attention to the most obvious diseases of the *uterus*, and begin with the *prolapsus*, or *procidentia*, which very frequently occurs.

By the *prolapsus* is meant a subsidence or descent of the *uterus* into the *vagina*, lower than its natural situation, and it is termed a *procidentia* when the *uterus* is pushed through the external orifice of the *pudenda* *. This sometimes happens to such a degree as to put on the appearance of an oval tumour growing from the external parts, depending very low between the thighs, causing great pain and uneasiness, and rendering the patient unable to perform the common offices of life. A moderate share of circumspection, especially with regard to the state of the *os uteri*, will enable us to distinguish the *procidentia* of the *uterus* from its inversion, and from all resembling diseases.

There are many causes of the *prolapsus*, or *procidentia* of the *uterus*; as long standing during the time of pregnancy, carrying heavy burdens, an extreme degree of costiveness, and all sudden and violent exertions of the body; whence they most frequently happen to women in the lower ranks of life. They may be unavoidably occasioned by the circumstances of a labour, as the descent of the *os uteri* into the *pelvis*, before it is dilated; by the preposterous efforts of the woman in an erect position, by an uncommonly large child, by the rude and hasty extraction of the *placenta*, and by rising too early after delivery. Nor are oviparous animals free from these accidents from a difficult exclusion of the eggs, when these are of an unusual size. They may also be produced by mere relaxation of the parts, after a long-continued *fluor albus*, as unmarried women are sometimes subject to them, though less frequently than those who have had children. By a knowledge of the causes of these complaints, we are led to their prevention and cure; and it is worthy of observation, that when a *prolapsus* or *procidentia* has been occasioned by the circumstances of one labour, they may often be relieved, or sometimes perfectly cured, by care and long confinement of the patient in an horizontal position after the next. When women who have a

* *Hysteroptosis.* Uteri vel vaginæ procidentia. *Sauvag.* xlix.

prolapsus are pregnant, the inconveniences are increased in the early part of pregnancy, because the *uterus* being then more weighty and enlarged, sinks lower than usual into the *vagina;* but in the latter part, they are lessened, as it is then supported above the brim of the *pelvis.* Yet, when the *pelvis* is very capacious and the parts much relaxed, the lower part of the *uterus,* including the head of the child, has in some cases been pushed through the external orifice, even in the time of labour, before the *os uteri* was dilated.

The *procidentia* is not, properly speaking, a disease of the *uterus,* but a change of its position, caused by the relaxation or weakness of those parts to which it is connected, and by which it should be supported. It accordingly most commonly happens, that the first tendency to it is discovered by the protrusion or fulness of the anterior part of the *vagina,* and sometimes also the posterior part of the *vagina* first becomes tumid, forming a kind of pouch by the partial distension of the *rectum;* and this happens in some cases where there is no descent of the *uterus,* perhaps first caused by inattention to the state of the bowels, and suffering the lower part of the *rectum* to be distended mechanically till it has lost its contractile power. Before there is any actual change in the state of the parts, the patient has usually on slight exertions a strong sensation of their descent, but in the principal degrees of the *procidentia,* the position of the *uterus* and *vagina* is not only very much altered, but likewise that of the bladder and contiguous parts *.

The intentions in the cure of the *procidentia* or *prolapsus* are, to restore the *uterus* to its proper situation, and to retain or support it when replaced.

The reduction of the parts to their situation is not usually attended with much difficulty, even in the worst degrees of this complaint. In some cases, however, it is necessary, by bleeding, confinement in bed, gently-purgative medicines, and emollient fomentations, to lessen the inflammation and tumefaction, or to heal the ulceration of the parts if any exist; and when the *procidentia* or *prolapsus* occurs soon after delivery, very gentle means can only be used with propriety, as the parts are often in too irritable and tender a state to bear any other without mischief. When the parts are replaced it will sometimes be proper to use local astringent and aromatic applications, in the form of a lotion or fomentation applied externally, or conducted into the *vagina* by means of a syringe or sponge. But these will not often fully answer our intention, and we shall be obliged to have recourse

* Maximam vesicæ partem secum trahit. *Ruysch. Advers. Dec.* 1. 6. See Medical Observations and Inquiries, vol. iii. case 1. By Dr. Thomas White of Manchester.

to pessaries, of which many have been contrived of various forms and substances.

The intention in the use of pessaries is to support the *uterus* in its situation, without injuring it, or the adjoining parts; but certainly many of the kinds now in common use are ill calculated for one of both of these purposes, as they can neither be introduced nor worn without inconvenience, and often fail to answer our intention. Previously to these I have commonly recommended a piece of sponge of a suitable size moistened with red wine, to be tried; or a small ball of the elastic gum moderately distended with cotton; and if these fail, a pessary of a firmer kind must be introduced. Pessaries are generally made of box or ebony wood, or of cork covered with wax. By some the circular form is preferred; by others the oval; whilst others are persuaded that globular ones are the most effectual *; and if these are made very thin, they are certainly easy to wear, and completely relieve the complaint; but they cannot be used by women who live with their husbands. Much dexterity and judgement also are required in the introduction of pessaries of any kind, for if they are too small, they will not remain in the *vagina;* and, if too large, they will inflame and ulcerate the parts, mechanically causing the strangury, obstinate costiveness, and other painful symptoms. The size of those first used should be sufficiently large, and they may be gradually diminished, till they are no longer necessary. When a pessary has been introduced, it is requisite that the patient should for some time be quiet and in a horizontal position, by which the present inconveniences will be lessened, and the good we expect to be derived from it will be increased; yet, there is no doubt but that we are often disappointed in our expectations of the advantage to be gained by the use of pessaries, from impatience or the want of attention in their application. Pessaries, when introduced, are chiefly supported by the *perinæum,* but if this should have been lacerated, the common ones cannot be used. A sort has for such cases been contrived with stems, to which ligatures are to be fixed, and then brought forwards and backwards to a bandage passed round the waist. These are always very troublesome, and are therefore not recommended, unless those of another kind have failed to answer, but I have never met with a case in which the globular pessary could not be easily introduced and conveniently worn †.

Pessaries once fairly introduced may often be worn for many

* For the first account of the globular pessary, which was invented by Dr. Sandys, see London Medical Journal, vol. vii. 1786.

† The stem pessary has been very much improved by Edye, the truss-maker, in Dean Street, Soho.

years without any, or very little inconvenience. But sometimes from the long continuance of a common one, or from the entanglement and strangulation of the *os uteri* within the opening at the centre (which ought always to be very small) there has been much difficulty in withdrawing it when necessary. In the latter case the strangulated *os uteri* must be pressed firmly and for some time, between the finger and thumb till the size is reduced, when it may be extricated. But if it be possible to pass a piece of tape through the circular opening, and if we pull in a proper direction by both ends of it, with a firm and gradually increased force, so as to give the parts time to distend, we can hardly fail of success. Should that not be possible, the rim of the pessary must be broken, or divided by a pair of sharp strong *forceps*, of the kind used by watchmakers *. The globular pessary may at any time be extracted with a small *vectis*. But pessaries when once introduced may generally be suffered to remain for a long time without any hazard or inconvenience, and I think I once extracted one which had never been removed for fourteen years.

It has been observed, that the use of pessaries, except the globular ones, does not hinder the act of coition, or conception; and when a woman has a *procidentia* or *prolapsus* in an inferior degree, it is of great service that she should live with her husband †.

An opinion was formerly entertained, that a *procidentia* of the *uterus* was beneficial in several other complaints to which women are liable, and that it was not proper to replace it; but I have never seen any reason for this opinion, though the reposition of the parts sometimes occasions a temporary uneasiness ‡. In some cases it is also said, that the *uterus*, the surface of which is frequently ulcerated could not be returned, from its long continuance, or from the increased bulk of the neighbouring parts §; but I presume that all such cases might have been managed by persevering in the use of gentle evacuations, proper applications, and long confinement in a horizontal position; and a pessary is not to be introduced till the *uterus* is healed, as well as reduced in its size.

SECTION VIII.

Hydatids ‖, or small vesicles, hung together in clusters, from

* See Chapman's Treatise on Midwifery, chap. lxviii.

† Pessaires n'empêchent pas le femme d'user du coit, ni de devenir grosse.—*Mauriceau*, vol. i. l. 3. c. 6.

‡ Contigit uteri prolapsus; quem ego affectum salutarem illi fore prædixi.—*Harv. Exercit. de Partu.*

§ Restitui non semper debet, nec potest.—*Ruysch. Advers.* ix. *Anat.* 9.

‖ *Hydatis.* Vesicula cuticularis humore aqueo plena.—*Cullen*, cxxi.

one common stem, and containing a watery fluid are sometimes formed in the cavity of the *uterus*. These have been supposed to proceed from *coagula* of blood, or portions of the *placenta*, remaining in the *uterus*; and the opinion is generally true; but there is sometimes reason for thinking, that they are an original production of the *uterus*, independent of such accidental circumstances, and sometimes the precursors of organic disease in that part *.

The symptoms of this disease are such as are common in all cases accompanied with an increased degree of uterine irritation: and as there is also a suppression of the menses with a considerable distension of the *abdomen*, from the enlargement of the *uterus*, for the hydatids are often excluded in an amazing large quantity, it is not surprising that these cases should be frequently mistaken for pregnancy. In the early part of the disease, the symptoms are like those which attend a disposition to an abortion, and though troublesome, are not alarming; but at some certain time before, or about the termination of nine months, the *uterus* makes its efforts to expel them, and the attending circumstances are similar to those of labour. If the hydatids should be expelled without the occurrence of any dangerous symptom, there is no occasion for our assistance or interference. But if an hemorrhage of any importance should attend, or if the action of the *uterus* should be insufficient for their expulsion, it behoveth us to make gentle attempts to extract them, that the *uterus* may be at liberty to contract, and the orifices of the vessels be thereby lessened. We must, however, act with great caution; for, by hasty and rude proceedings, we should incur the danger of greater mischief than we mean to avoid, so that without some particular reason for giving assistance, it is commonly better to leave them to be excluded by the action of the *uterus*.

SECTION IX.

There are upon record many histories of the dropsy of the *uterus*, which is described as a collection of water or thin gelatinous fluid in its cavity, the *os uteri* being so perfectly closed as to prevent its escape †. It is supposed to be occasioned by an increased secretion, and a diminished absorption of lymph, as in collections of water in other cavities. The symptoms of this dropsy are the same as those which occur in the case of hydatids, and when the action of the

* Hæc retentæ moles placentæ, penitus amittens genuinam suam indolem, quia est merus vasorum sanguiferorum contextus, integro suo corpore mutatur in congeriem hydatidum.—*Ruysch. Adv. Anat. Dec.* 2. See also Dr. Baillie's Morbid Anatomy.

† Ascites Uterinus.—*Sauvag.* Hydrometra.—*Cullen.*

uterus comes on, the patient is usually imagined to be in labour; but after a sudden discharge of water, the *abdomen* subsides, and though chagrined at her disappointment, she recovers her former health.

The common explanation of the manner in which the water is confined in the *uterus* seems unsatisfactory, and in the few cases of this kind which I have seen, is not just. For in these the water being discharged, a membranous bag was afterwards voided, though not immediately, which when inflated put on the form of the distended *uterus*, of which it appeared to be a lining; so that what has been called a dropsy of the *uterus* is probably no more than one large hydatid.

Another kind of dropsy has been mentioned as appertaining to the *uterus*. In this the water, originally contained in the cavity of the *abdomen*, has been absorbed by the termination of the *fallopian* tubes and conveyed to the *uterus*, from which it was discharged; but of this kind of operation or process I have never known any satisfactory proof. Yet I must confess, I have seen some cases of water collected and repeatedly discharged from the *uterus* in the state of child-bed, which I was unable to explain on any other principle.

SECTION X.

It has been said, that wind may be collected and retained in the cavity of the *uterus* till it is distended in such a manner as to resemble pregnancy, and to produce its usual symptoms; and that by a sudden eruption of the wind, the tumefaction of the *abdomen* has been removed, and the patient immediately reduced to her proper size. Of this complaint I have never seen an example; but many cases have occurred to me of temporary explosions of wind from the *uterus**, which there was no power of restraining. When no injury has been done to the parts in former labours, I presume that this complaint happens to women with feeble constitutions, and some particular debility of the *uterus;* it is reasonable, therefore, to except advantage from such means as strengthen the habit in general, or give energy to the *uterus* itself, of which the best means seem to be the injection of the *Bath* water, or some composition of a similar kind, together with the use of tonic medicines internally. It is however right for me to acknowledge, that I have not been able in many cases to render much service to patients labouring under this complaint, by any means I could devise; but, as it has not prevented

* Physometra. Tympanites uteri.—*Cullen*, lxx.
Œdopsophia. Flatuum per urethram, vaginam, vel uterum, emissio. *Sauvag.*

conception, or produced any injurious effects at the time of parturition, it has given me no uneasiness, and after a certain time it has either subsided spontaneously, or ceased to draw attention.

SECTION XI.

By the term mole* authors have intended to describe very different productions of, or excretions from, the *uterus*. By some it has been used to signify every kind of fleshy substance, particularly those which are properly called *polypi;* by others, those only which are the consequence of imperfect conception, when the *ovum* is in a morbid or decayed state; and by many, which is the most popular opinion, every *coagulum* of blood, which continues long enough in the *uterus* to assume its form, and to retain only the fibrous part, as it is properly called, remaining, is denominated a mole.

There is surely much impropriety in including under one general name appearances so contrary, and substances so different. Of the *polypus* we have already spoken. Of the second kind, which has been defined as an *ovum deforme,* as it is the consequence of conception, it might more justly be arranged under the class of monsters; for though it has the appearance of a shapeless mass of flesh, if examined carefully with the knife, various parts of a child may be discovered, lying together, in apparent confusion, but in actual regularity. The pedicle also, by which it is connected to the *uterus,* is not of a fleshy texture, like that of the *polypus,* but has a regular series of vessels like the umbilical cord, and there is likewise a placenta and membranes containing water. The symptoms attending the formation, growth, and expulsion, of this apparently confused mass from the *uterus,* correspond with those of a well-formed child. By the favour of Dr. Bland, I many years ago saw a very curious instance of this kind.

With respect to the third opinion of a mole, an incision into its substance will discover its true nature; for, though the external surface appears at the first view to be organized flesh, the internal part is composed merely of coagulated blood †. As substances of this kind, which most commonly occur after delivery, would always be expelled by the action of the *uterus,* there seems to be no reason for a particular inquiry, if popular opinion had not annexed the idea of mischief to them, and attributed their formation, or continuance in the *uterus,* to the negligence or misconduct of the practitioner. Hence the persuasion arose of the necessity of extracting all the *coa-*

* *Mola.* Massa carnea, vasculosa, ex utero excreta. Ovum deforme.—*Vogel* ccclx.

† Excretiones uterinæ, sanguineæ, sæpe imponunt pluribus.—*Ruysch.*

gula of blood out of the *uterus* immediately after the expulsion of the *placenta*, or of giving medicines to force them away; but abundant experience hath proved, that the retention of such *coagula* is not, under any circumstances, productive of any dangerous mischief; and that they are most safely expelled by the action of the *uterus*, though at very different periods of time after their formation.

SECTION XII.

THE *ovaria* are the seat of a particular kind of dropsy, which most commonly happens to women about the time of the final cessation of the *menses*, though not unfrequently at a more early period of life, It is of the encysted kind, the fluid being sometimes limpid and thin, and at others discoloured and gelatinous. In some cases it has been found to be continued in one cyst, often in several; and in others the whole tumefaction has been composed of hydatids not larger than grapes. Of these different kinds we may often be able to form a judgement by the evidence or obscurity of the fluctuation, and by the inequalities of the *abdomen*, especially in its early stage. I have however seen many cases of a beginning dropsy of the *ovarium*, which, from the firmness of the tumour, had been considered as fleshy substances.

From the vesicular structure of the *ovaria* there may be in them some inherent disposition to this disease, or they may at first be affected like any other gland in the body, as it often happens to women, married or single, with strumous constitutions. But this kind of dropsy has usually been attributed to other causes; as accidents or rude treatment at the time of parturition, suppression of the *menses*, obstructions of the *viscera*, or casual injuries of the part. The symptoms attending it are pain in the lower part of the *abdomen*, with a circumscribed tumour on one or both sides gradually extending higher up, and across the *abdomen*, which, when there is a suppression of the *menses*, is often mistaken for pregnancy; there is also, in some cases, a swelling of the thigh or leg of the same side with the diseased *ovarium*. In the early state of the disease, this dropsy may be distinguished from the *ascites*, for which it has been often mistaken, by the circumscription and position of the tumour; but when it is increased to a large size, unless it be of an irregular form, and we are acquainted with the early symptoms, the distinction is very difficult, or sometimes impossible. It is to be observed, that the secretion of urine is but little, if in any degree diminished, and the constitution apparently not affected in the beginning of the dropsy of the *ovaria*; and that, even after a long continuance of it, the principal inconveniences seem to arise from the pressure it makes, from

the unwieldiness of the patient, and from apprehension of future mischief. It is also very remarkable, that this disease in many cases proceeds so very slowly, that twelve or fourteen years, and often a much longer time, may pass from its commencement to its greatest enlargement, though in others it makes a very quick progress; and that if one *ovarium* only be affected, the patient may nevertheless conceive and bring forth healthy children.

In the beginning of this dropsy, when the increasing *ovarium* is first perceptible through the integuments of the *abdomen,* and sometimes in its progress, there is often so much pain, as to require repeated local bleeding by scarification or leeches, blisters, fomentations, laxative medicines, and opiates to appease it. I have also endeavoured to prevent or remove the first enlargement by a course of medicines, the principal of which was the *unguentum hydrargyri* rubbed upon the part, or calomel, given for a considerable time in small quantities, with an infusion of burnt sponge; or the *ferrum tartarisatum* or *ammoniacale;* trying occasionally what advantage was to be obtained from blisters, from a plaster composed of gum ammoniacum dissolved in the *acetum scillæ,* or lastly from electricity. From all or some of these means I have frequently had occasion to believe some present advantage was obtained, or mischief prevented; but when the disease has made a certain progress, though a variety of medicines and of local applications have been tried, no method of treatment has hitherto been discovered sufficiently efficacious to remove it or prevent its increase. Incision into, or extirpation of the part, has been recommended, but seldom practised, though in the 381st number of the Philosophical Transactions a case is recorded, which is said to have been cured by an incision. I have also known one case in which, after the discharge of the fluid by a puncture, some wine was injected; but a general inflammation of the contents of the *abdomen* followed, and the patient died on the sixth day. But the fluid, once deposited, seems to be out of the power of the circulation, its absorption not being promoted by the use of any of those evacuating medicines, which sometimes prove successful in the other kinds of dropsy, or by local applications, though I have tried a great number esteemed the most efficacious and powerful, as the squills, the *digitalis* and the *elaterium.* When the disease is so much increased as to occasion difficulty of breathing or other untoward symptoms, recourse must be had to the operation of the *paracentesis,* by which present relief is afforded; and, by a repetition of the same operation, as often as the return of the abdominal swelling to a certain size may require it, the life of the patient has been prolonged to extreme old age. Nevertheless, I believe it is in general the best practice to defer the operation, till we are driven by necessity to per-

form it, and the progress of the disease is afterwards more rapid. Should there be any suspicion that the water is contained in different cysts, or that the tumour may be composed of hydatids, or the fluid gelatinous, it is proper to inform the friends of the patient, that the operation may not succeed, or not in a manner equal to our wishes; and it should be established as a general rule, that we be assured, by an examination *per vaginam*, that women are not pregnant, before this operation is performed, even supposing they have undergone the operation before ; provided they are at a time of life and under circumstances which justify any suspicion of pregnancy. For, through the want of this circumspection, deplorable and irremediable mischief has in some cases been done to the patient, and the profession very much disgraced. I have been informed of several cases of the dropsy of the *ovarium*, in which the disease was cured by some unexpected change or natural process, as in the following example.

A lady, who had had several children, was brought to bed in January, 1798, and had perfectly recovered her health. She menstruated regularly till the following June, when she became sensible of a pain in the right side of the *abdomen*, near the groin, which, though not violent, prevented her from lying with ease, or sleeping on that side. About the middle of January, 1799, she was suddenly seized with a violent pain in her bowels, tension of the *abdomen*, and much soreness on pressure, accompanied with vomiting, constipation, and frequent faintings. These complaints were relieved chiefly by glysters and gentle purgative medicines, but not entirely removed without repetitions of them. Before this attack, she had been much weakened by profuse discharges of blood from the *uterus*, and about ten days after, she suffered very violent pain in the lowest part of the back, seemingly near the extremity of the *sacrum*, which joins the *os coccygis*, extending to the loins and across to the hips, especially the right, and down that thigh. The slightest pressure on the *sacrum* or hip brought on excruciating pain in all the neighbouring parts, which continued for several minutes after the pressure was removed. This pain was considered as the sciatica, and it was relieved by the warm bath, and the occasional use of opiates. By a return of uterine hemorrhage, every six or eight days, together with loss of appetite and want of rest, she became extremely weak, irritable, and emaciated. On every return of uterine hemorrhage, the pains in the back were much increased, as they also were by the evacuation of a costive stool, for which reason glysters were daily injected. She never had such difficulty in voiding her urine, but frequent inclination to do it: yet there never was in it any distempered appearance.

About the middle of February, she could bear to be turned from

her back to her side, but at those times she felt as if some heavy substance was contained in the *abdomen*, which shifted its place as she was turned. After a confinement of six weeks to her bed, the painful symptoms were mitigated, she was able to sit in a chair, with her feet raised high and her knees drawn up, but she was soon obliged by the pain in her back, to return to a recumbent position; nor was she able to suffer the right leg to approach the ground, or bear the least weight upon it.

Her health and strength however gradually improved, and in March she was able to move and walk a little, but instead of her former complaints, there were great tension and pain above the *ossa pubis*, and the whole hypogastric region was full and hard, but not sore to the touch, except on the right side, where the hardness was first perceived. One day, about this time, while she was in the warm bath, she discovered a large and hard tumour, extending to the right side of the navel, the increase of which was so rapid, that in the course of a few days it occupied the whole *abdomen*. She was then freed from pain in all the parts contained in the *pelvis*, could turn herself in bed, and lie on either side, and not only move her legs, but walk much better. She frequently after this had slight shivering fits, and a sense of coldness down her back, followed by restlessness and feverish heat, especially in her hands and feet in the evening, which went off with a free perspiration towards morning. Her pulse was at all times very quick.

Though one or more stools had been regularly procured every day, an immense quantity of hardened fæces, of a large volume, were now discharged for three or four successive days, by which her size was much lessened. She was soon after able to bear a journey to London, her friends being solicitous that the nature of her complaint should be ascertained, as there had been various opinions and representations made of it, by different gentlemen who had seen her in the country.

On Sunday, March 31st, I visited this lady, and as it seemed of principal importance to discover in the first place the seat and nature of her disease, it was necessary to be particular in my inquiries and examination. The whole *abdomen* was distended by a circumscribed tumour evidently connected with, and springing from the right side, near the groin, thence extending across, and high up in the *abdomen*. This tumour, though not perfectly uniform over its surface, was distinctly circumscribed, and I thought I could perceive an obscure fluctuation in it. I could also feel an angle of the tumour in the posterior part of the *pelvis*, by which the *os uteri* was projected so high, and so far forwards, as to be almost beyond my reach as is the case in a retroversion of the *uterus*. I could also ascertain that

she was not pregnant. I did not therefore hesitate to give my opinion, that it was the dropsy in the *ovarium;* and by supposing this, early in the disease, to have dropped low down in the *pelvis,* and afterwards to have risen according to its increase, all the symptoms, which had occurred in the course of the disease, could be satisfactorily explained.

Having represented my opinion to the patient and her friends, though I could give but little hope of the disease being cured, I freed them from the fear and solicitude of any immediate danger.

The under-mentioned draught was the only medicine I advised:

℞ Flor. Chamamel. pulv. gr. xv.
Rad. Rhei pulv. gr. v.
—— Zingiber. pulv. gr. iij.
Aquæ Ment. sativ. unc. ij. m. f. Haustus.
Sumat ter quotidie.

On the following day, she informed me, that, after suffering considerable pain in the bowels, she had had four or five copious motions, and that after every motion she was sensible of her size decreasing. The motions were unusually offensive, and, before they came away, the desire to expel them was unnaturally urgent and painful. On examining them, I found that they almost wholly consisted of a gelatinous fluid, with many streaks of blood, and with little or no mixture of fæces.

The same medicines were repeated.

On Tuesday, after several other motions of the same kind, the distension of the *abdomen* was lessened more than one half, and, instead of being weakened by the evacuations, the patient felt herself very much relieved, and cheered with the prospect of a speedy recovery. She took a sufficient quantity of nourishment, and continued the same medicine.

On Wednesday, I had nearly the same account of the number of motions, and of the gradual decrease of the swelling of the *abdomen,* which was now in fact wholly gone, except that I could feel the small tumour formed by the cyst in which the fluid had been contained.

On examining this day *per vaginam,* the *os uteri* was found to be ascended into its proper situation, and no tumour whatever remained in the cavity of the *pelvis.* The patient in short felt, and considered herself as well, in which sentiment I encouraged her; concluding in my own mind, that, in consequence of preceding inflammation, an adhesion had taken place between the cyst of the tumour and some part of the intestine, probably, the *rectum,* the adhering portion of the bowel had given way, and, by that opening, the contents of the tumour had been evacuated.

But in several other cases, the disease has been entirely removed without the use of any medicine, or any adequate evacuation, or my being able almost to discover how the fluid was carried off. I have therefore recommended such exercise as was most likely to affect the part, as spinning, or turning the lathe, by which the coat of the cyst may perhaps be gradually worn through. It is well known, when the abdomen is much distended, that by a fall, or some extraordinary motion, the cyst has burst, and the water contained in it been speedily absorbed and carried off by the common emunctories.

SECTION XIII.

The *ovaria* are also subject, especially a short time after delivery, to inflammation, terminating in suppuration, and to scirrhous and cancerous diseases, with considerable enlargement. In the former state, they generally adhere to some adjoining part, as the *uterus*, the *rectum*, the bladder, or the external integuments; and the matter is discharged from the *vagina*, by stool, by urine, or by an external abscess of the integuments of the *abdomen;* and of these cases I have thought it necessary to subjoin an example. (See the Chapter on Puerperal Fever.) They are cases which always require much care and skilful management; but, in general, instead of aiming to cure them, it will be most serviceable to attend to the symptoms, and by quieting these, and supporting the strength, the constitution at length cures the disease. But in simple enlargements, or beginning dropsies of the *ovaria*, they continue detached and free from any adhesion; and, sinking lower down in the *pelvis* on one side, or in the hollow of the *sacrum*, sometimes produce inconveniences, according to their size and situation, by obstructing the offices of the *rectum* or bladder. Of those by which the progress of a labour may be impeded, we shall speak in the detail of the causes of difficult labours; but an instance of a diseased *ovarium*, occasioning the symptoms of a retroverted *uterus*, is so well described in a case sent me by my very able and most ingenious friend Sir Everard Home, now senior surgeon of St. George's Hospital, that I shall beg leave to relate it.

"Susannah Fletcher, in the twenty-third year of her age, had a suppression of urine, which frequently required the use of the catheter. Not being able to support the expense of medical attendance, she obtained admission into the Gloucester Infirmary, where having continued for several months, without any other than temporary relief, she gave up all hope of being cured, and returned to her husband. She soon became pregnant, and in a short time was surprised to find that her complaint left her, though it returned immediately

after her delivery. It disappeared a second time in the same manner, and under the same circumstances. Her husband went abroad while she was pregnant, and, after her delivery, she was obliged to go to service for her maintenance; but the daily necessity she was under of having the catheter introduced, rendering her unfit for that situation, she was admitted a nurse in the royal hospital at Plymouth, of which I was one of the assistant surgeons, in December 1778.

"She was then unable to void any urine without the catheter, she was habitually costive, her stomach was easily disturbed, and she was subject to hysteric fits. In all other respects she was tolerably healthy, and menstruated with regularity.

"In May 1779, in the agitation of a violent fit, she vomited a large quantity of blood; and this hemorrhage frequently returning, she died in the beginning of June following.

"The body was opened in the presence of several gentlemen belonging to the hospital.

"All the *viscera* of the *abdomen* were in a healthy state, except the stomach and *duodenum*, which were somewhat inflamed on their external surface, and the former internally also near the *cardia;* but we could not discover the orifice of the vessel which had been ruptured.

"Examining the contents of the *pelvis*, we found the *uterus* pushed forward toward the *ossa pubis;* and the right *ovarium*, which was enlarged beyond the size of a hen's egg, and, lying between the *vagina* and *rectum*, had formed a bed there, and was so much fitted to that position that it could not easily be retained in any other. The left *ovarium*, *uterus*, and bladder, were free from disease, or any alteration.

"The situation of the right *ovarium* was no sooner observed, than it occurred to me that it had produced the same effect as when the *uterus* falls back upon its *cervix* in the retroversion of the *uterus;* and with this idea, all the symptoms of the disease under which the poor woman had laboured, the removal of the suppression of urine during pregnancy, and its return after delivery, could be readily explained. The analogy between the symptoms of the retroverted *uterus*, and the effect produced by the diseased *ovarium*, were in this case too obvious to escape observation; but if the cause of the disease had been discovered during the life of the patient, it would have been difficult to have afforded relief, unless some surgeon had been intrepid enough to have passed a trocar through the posterior part of the *vagina* into the *ovarium*, and discharged the fluid which it was found to contain."

There have been instances of one of the *ovaria* passing under

Poupart's ligament into the groin, or through the tendinous opening of the oblique muscles, where it has put on the appearance, and produced the same symptoms, as when a small portion of the *omentum* or intestines is strangulated; and relief has been obtained by the same mode of proceeding as if it were a real *hernia* of the intestine; that is, by dividing the stricture. In Mr. Pott's works there is a very curious case of this kind, in which both the *ovaria* were extirpated. The patient recovered, but never menstruated afterwards.

It is very remarkable that, in diseases of the *ovaria*, teeth, hair, bones, and other extraneous animal substances, are found in them so frequently, that there is scarce a collection of anatomical curiosities in which there are not various examples. These substances have hitherto been considered as remnants or parts of an imperfect conception; but a celebrated anatomist of the present time has fully proved, that they may be formed without conception, or even any connubial intercourse*.

CHAPTER IV.

SECTION I.

ON THE PARTS CONTAINED IN THE CAVITY OF THE PELVIS.

The principal parts contained in the cavity of the *pelvis* are, first, the *urethra*, which is connected with the internal surface of the *symphysis* of the *ossa pubis*, with its orifice terminating immediately below the inferior edge, and joined at its other extremity to the bladder; which, when distended with urine, ascends into the cavity of the *abdomen*, in proportion to its distension, and rests upon the upper edge of the *ossa pubis*. Secondly, the *vagina*, or canal which leads from the *pudendum* to the *uterus*, passing obliquely upwards and backwards; connected posteriorly with the lower part of the *rectum*, and anteriorly with the *urethra* and inner surface of the *ossa pubis*, as is the *uterus*, in part, to the bladder. Thirdly, the *rectum*, or intestine, the posterior part of which adheres to the hollow of the *sacrum*. But

* See a very excellent work, published in 1812, The Morbid Anatomy of some of the most important parts of the Human Body, by Dr. Matthew Baillie, in which this subject is exemplified and explained.

we are not to conclude that any part of the cavity of the *pelvis* is unoccupied; for, besides these principal parts, the nerves, and blood vessels, some of which are of a considerable size, every space between them is filled with cellular or adipose membrane; and it seems as if by the pressure upon this, at the time of parturition, an effect equivalent to an absolute enlargement of the cavity was produced.

The cavity of the *pelvis* is considered by anatomists as the inferior part of the cavity of the *abdomen;* but, in a description of its contents, with a view to the practice of midwifery, it appears more convenient to speak of them as distinct cavities, separated by the *peritonæum,* which, descending from the fore part of the *abdomen,* passes over the *fundus* and posterior part of the bladder, ascends over the anterior part and *fundus* of the *uterus,* and then, making a deep inflection, covers the back part of the *uterus,* and a great portion of the *vagina.* It then reverts over the anterior part of the *rectum,* and proceeds to form a lining to the cavity of the *abdomen.*

By this inflection of the *peritonæum* the *uterus,* during pregnancy, is permitted to expand more freely, and to rise without inconvenience into the cavity of the *abdomen.* But from the same cause women become liable to various diseases, to the retroversion of the *uterus,* to the *hydrocele,* or dropsy of the *perinæum,* and to that species of *hernia,* which is occasioned by the descent of the intestines between the *vagina* and *rectum.* But quadrupeds, by their horizontal position, are exempt from every disadvantage, to which the inflection of the *peritonæum* may subject women.

By the term retroversion, such a change of the position of the *uterus* is understood, that the *fundus* is turned backwards and downwards upon its *cervix,* between the *vagina* and *rectum;* and the *os uteri* is turned forwards to the *pubis,* and upwards in proportion to the descent of the *fundus,* so that, by an examination *per vaginam,* it cannot be felt, or not without difficulty, when the *uterus* is retroverted or subverted. By the same examination there may also be perceived a large round tumour, occupying the inferior part of the cavity of the *pelvis,* and pressing the *vagina* towards the *pubis.* By an examination *per anum,* the same tumour may be felt, pressing the *rectum* to the hollow of the *sacrum;* and if both these examinations are made at the same time, we may readily discover that the tumour is confined between the *vagina* and *rectum.*

Besides the knowledge of the retroversion which may be gained by these examinations, it is found to be accompanied with other very distinguishing symptoms. There is in every case, together with extreme pain, first a retention, and afterwards a suppression, of urine; and by the continuance of this distension of the bladder, the tumour formed by it in the *abdomen* often equals in size, and re-

sembles in shape, the *uterus* in the sixth or seventh month of pregnancy. But it is necessary to observe, that the retention of urine is frequently absolute only before the retroversion of the *uterus*, or during the time it is retroverting; for, when the retroversion is completed, there is often a discharge of some urine, so as to prevent an increase of the distension of the bladder, though not in a sufficient quantity to remove it. There is also an obstinate constipation of the bowels, produced by the pressure of the retroverted *uterus* upon the *rectum*, which renders the injection of a clyster very difficult, or even impossible. But it appears that all the painful symptoms are chiefly in consequence of the retention of urine; for none of those parts, which are apt to sympathise in affections or diseases of the *uterus*, are disturbed by its retroversion.

The retroversion of the *uterus*, has generally occurred about the third month of pregnancy, and sometimes after delivery; it may likewise happen when the *uterus* is, from any cause, enlarged to the size it acquires about the third month of pregnancy, but not with such facility as in the pregnant state, because the enlargement is then chiefly at the *fundus*. If the *uterus* is but little enlarged, or if it be enlarged beyond a certain size, it cannot well be retroverted; for, in the first case, should the cause of a retroversion exist, the weight at the *fundus* would be wanting to produce it; and in the latter, the *uterus* would be raised above the projection of the *sacrum*, and supported by the spine.

The retention of urine has hitherto been supposed to be the consequence of the retroversion of the *uterus*, which has been ascribed to various accidental causes. But if we consider the manner in which these parts are connected, and examine the effect produced by the inflation of the bladder in the dead subject, so as to resemble, in some measure, the distension brought on, by a retention of urine in the living, we shall be convinced that the *uterus* must be elevated before it can be retroverted *. Now, as there appears to be no cause, besides the distension of the bladder, capable of elevating the *uterus*, and at the same time projecting its *fundus* backwards; and as such elevation and projection necessarily follow the distension of the bladder, it is more reasonable to conclude that the retention of urine precedes the retroversion, if we do not allow it to be a cause without which the retroversion cannot exist. Moreover, if the *uterus* be in a state which permits it to be retroverted, when the bladder is

* By repeated and strong inflations of the bladder, and then pressing out the air in the dead subject, I could give a very good idea of the retroversion of the *uterus;* and probably, if I could have had an opportunity of making the experiment in a state of pregnancy, I might have succeeded in producing an actual retroversion.

much distended, a retroversion is a necessary consequence, or it may be produced by a very trifling accident. If a woman, for instance, about the third month of her pregnancy, has a retention of urine continuing for a certain time, and producing a certain degree of distension of the bladder, we may be assured that the *uterus* is retroverted.

It would be vain and absurd to contend for the opinion, that, first a retention, and then a suppression of the urine are the causes of the retroversion of the *uterus;* for, were it not just, it would be contradicted by daily experience. But the matter no longer rests upon the foundation of opinion or conjecture: for, from the first case in which I thought I had reason to suspect it, I have so constantly observed it, either by the reserve of women of superior rank in life, or by the restraint of those in inferior situations, neglecting or being prevented from attending to the calls of nature, that there does not remain a doubt concerning it. The fact hath also been proved in a variety of cases by practitioners of the first eminence, who have supplied me with the most unquestionable testimonies of its truth; and, in this case, it is a matter of great importance to discover the cause of the disease, as the method of preventing it and relieving the patient with perfect safety is thereby immediately pointed out.

But the preceding retention of urine may be overlooked, as there is not occasion for it to be of long continuance in order to produce this effect; especially in a woman who hath a capacious *pelvis,* in whom the retroversion of the *uterus* is most likely to happen. It must also be observed, that, though the retention of urine gives to the *uterus* its first inclination to retrovert, yet the position of the *os uteri* is such, in the act of retroverting, and the tumour formed by the *fundus* is sometimes so large, when actually retroverted, as to become, in their turn, causes of the continuance of the retention of urine.

Should any doubt remain of the cause of the retroversion, it cannot, however, be disputed but that all attempts to restore the *uterus* to its natural position, before the distension of the bladder is removed, must be fruitless, as the *uterus* will be irresistibly borne down by the pressure of the superincumbent bladder. The first step then to be taken for the relief of the patient is, to draw off the urine: yet there is always in these cases great difficulty in the introduction of the common catheter, because the *urethra* is elongated, altered in its direction, and pressed against the *ossa pubis* by the tumour formed by the retroverted *uterus;* and many women, when the *uterus* was retroverted, have lost their lives from the want of expertness in introducing the catheter. But the attending inconveniences may be avoided or surmounted by the use of a flexible male or female cathe-

ter, slowly conducted through the *urethra*. I say slowly, because, whatever catheter is used, the success of the operation, and the ease and safety of the patient, very much depend upon this circumstance, For, if we affect to perform it with haste and dexterity, or strive to overcome the difficulty by force, we shall be foiled in the attempt, or it will be scarcely possible to avoid doing very great injury to the parts. The catheter should not be carried further into the bladder, when the urine, often collected in an immense quantity, and mistaken for some other disease, begins to flow, unless it ceases before the distension be removed; which, in some cases, happens in such a manner, as to give us the idea of a bladder divided into two cavities. External pressure upon the *abdomen*, when the catheter is introduced, will also favour the discharge of the urine, after which the patient is sensible of such relief, as to conclude that she is wholly freed from her disease. A clyster should then be injected, or some opening medicine given, and repeated if necessary, to remove the *fæces*, which may have been detained in the *rectum* before, or during the continuance of the retroversion.

But though the distension of the bladder is removed by the discharge of the urine, and all the symptoms occasioned by it relieved, the *uterus* will continue retroverted. It has been said that the state of retroversion was injurious to the *uterus* itself, and would soon produce some dangerous disease in the part; it has also been asserted, that, if the *uterus* were permitted to remain in that state, it would be locked in the *pelvis* by the gradual enlargement of the *ovum*, in such a manner as to render its reposition impracticable, and the death of the patient an inevitable consequence. On the ground of these opinions we have been taught that it is necessary to make attempts to restore the *uterus* to its natural situation, with all expedition, when the urine is discharged, and that we are to persevere in these attempts till we succeed. In case of failure by plain and common methods, the means we have been advised to pursue, many of which are severe, and some extremely cruel, as well as useless, would best describe the dread of those consequences which have been apprehended from the retroversion.

For both those consequences there cannot surely be reason to fear. If the uterus be injured, there will be no further growth of the *ovum;* and if the *ovum* should continue to grow, it is the most infallible proof that the *uterus* has not received any material injury. But it is remarkable, that in the most deplorable cases of the retroversion of the *uterus*, those which have determined fatally, the death of the patient has been discovered to be owing to the injury done to the bladder only. It is yet more remarkable, in the multiplicity of cases of this kind which have occurred, many of which have been

under the care of practitioners, who had no suspicion that the *uterus* could be retroverted, and who would of course make no attempts to replace it, that there should be so few instances of any injury whatever. Yet every patient under these circumstances must have died, if their safety had depended upon the restoration of the *uterus* to its proper situation by art; attention having only been paid to the most obvious and urgent symptom, the retention of urine, and to the prevention of the mischief which might thence arise.

Opinions are often vain and deceitful, but, with respect to the matter now under consideration, they have also been very prejudicial. For it has been proved in a variety of cases, many of which were attended to with particular care by unprejudiced and very capable witnesses, that the *uterus* may remain in a retroverted state for many days or weeks, without any other detriment, than what may be occasioned by the temporary interruption of the discharges by stool or urine: and, contrary to all expectation, it hath been moreover proved, that the *uterus*, when retroverted, will often be gradually, and sometimes suddenly, restored to its position without any assistance, provided the cause be removed by the occasional use of the catheter. It appears that the enlargement of the *uterus*, from the increase of the *ovum*, is so far from obstructing the ascent of the *fundus*, that it contributes to promote the effect, the distension of the *cervix* becoming a balance to counteract the depression of the *fundus;* for I have found no cases of the retroverted *uterus* admit of a reposition with such difficulty, as in women who were not pregnant, in whom the *uterus* underwent none, or no material change.

Allowing that we have the power of returning the *uterus* when retroverted to its proper situation; knowing also that it may continue retroverted without any immediate ill consequences; and presuming that it is capable of recovering its situation by the gradual exertion of its own power, at least that such recovery is an event which spontaneously follows the change which the part naturally undergoes; it is necessary to consider the advantages and disadvantages which may result from our acting according to either intention.

If the attempt to replace the *uterus* be instantly made after the urine is discharged, so much force will often be required for the purpose as will, notwithstanding all precaution, give much pain, induce the hazard of injuring the *uterus*, and often occasion abortion; which, in some instances, is also said to have happened when little force was used, and even when the *uterus* was actually retroverted: and of this I can no longer entertain any doubt. It must likewise be granted, that, in some cases, by passing two or more fingers into the *vagina*, the *fundus* of the *uterus* may be raised beyond the projection of the *sacrum* without much force, and the

patient be soon and altogether freed from the complaint and its consequences. But in other cases, repeated attempts, with various contrivances, and with the patient at the same time placed in the most favourable positions, have failed to procure success. It hath also been observed, when the *uterus* has been fully raised to its natural situation, that it has for some time afterwards, and from slight causes, been again retroverted.

If, on the contrary, we are persuaded, that the *uterus* will sustain no injury by its retroversion, and that there is no danger of its being locked in the *pelvis*, but that it will be gradually restored to its natural position without assistance, we have then only to guard against those inconveniences which may be occasioned by the distension of, or the pressure made upon the bladder and *rectum*. By the former of these we shall be reduced to the necessity of using the catheter daily or frequently, which is generally done without difficulty, except the first time it is introduced. This operation, it must be acknowledged, is, in all cases, very disagreeable and troublesome to the patient; and, in some situations, the necessity we are under of performing it so often, and for so long a time, is in itself a sufficient reason for our attempting to replace the *uterus* speedily. But the retention of urine does not always remain through the continuance of the retroversion of the *uterus;* for, when the distension of the bladder has been removed for a very few days, its power of action will be restored, the pressure upon it lessened, and the patient will become able to void her urine without further assistance, during the continuance of the retroversion.

We may then bring the matter to this issue: if the *uterus*, when retroverted, can be replaced by art, without the exertion of much force, or the risk of mischief, the immediate reposition, though not absolutely necessary, is at all times an event to be wished; as further apprehension and trouble are prevented, the safety of the patient ensured, and her mind quieted. But, when the *uterus* cannot be replaced without violence, it seems more justifiable to wait for its return, and to satisfy ourselves with watching and relieving the inconveniences produced by the retroversion. We shall also find, that the longer the attempt to replace the *uterus* is delayed, the more easy the operation will ultimately be, and the success more certain; though I have known many cases in which the *uterus* was repeatedly retroverted in a short time after its reposition, without any additional mischief.

To those who have been accustomed to consider the retroversion of the *uterus* as productive of immediate and urgent danger, it may seem strange to assert, that, when the urine is discharged, the patients are often able to return to the common business of life with-

out danger, and with very little trouble, if no essential injury has been done to the bladder by the greatness or long continuance of the distension. I do not mean that they will be as perfectly easy as if the *uterus* was not retroverted; but the inconveniences they may suffer will be trifling and of short duration, compared with those which might arise from violent attempts to replace it.

I shall conclude these remarks with two observations which will appear extraordinary. First, women who live in an humble situation of life, or in an unrefined state of society, are scarcely ever liable to this complaint, because they are free from the constraint of company; and those in the highest ranks of the most refined society, not being abashed to withdraw from company, are nearly in the same situation. But those who, in a middle state of life, with decent, yet not over refined manners, have not cast off the bashfulness of the former, nor acquired the freedom of the latter, are most subject to the retroversion of the *uterus*.

Secondly, from the time when the first accounts of the retroversion of the *uterus* were given in this country, which were written with great accuracy, but with too much apprehension, till within these few years, it was esteemed to be a case of great danger, and to require the most delicate management. But, at the present time, no practitioner of credit considers it as a case of any difficulty, or feels any solicitude for the event, provided he be called to the relief of the patient before any mischief is actually done. (See Medical Observations and Inquiries, Vol. IV. and subsequent volumes.)

SECTION II.

Another complaint, similar to that of which we have been speaking, and which has been called a retroflection of the *uterus*, has occurred in practice. By this term is implied such an alteration in the position of the parts of the *uterus*, that the *fundus* is turned downwards and backwards between the *rectum* and *vagina*, whilst the *os uteri* remains in its natural situation; an alteration which can only be produced by the curvature or bending of the *uterus* in the middle, and in one particular state; that is, before it is properly contracted when a woman has been delivered.

A suppression of urine existing at the time of delivery, and continuing unrelieved afterwards, was the cause of the retroflection of the *uterus* in the single case of this kind of which I have been informed by Dr. Thomas Cooper; and the symptoms were like those which were occasioned by the retroversion.

When the urine was drawn off by the catheter, which was introduced without difficulty, the *fundus* of the *uterus* was easily re-

placed by raising it above the projection of the *sacrum*, in the manner advised in the retroversion, and it occasioned no further trouble.

SECTION III.

That affection of the *vagina* and *perinæum*, which I have termed the *hydrocele*, or dropsy of the *perinæum*, is not an original disease of the part, but a symptom of the *ascites*, or of the encysted dropsy, occasioned by the pressure of the water contained in the cavity of the *abdomen*, upon the inflected part of the *peritonæum* between the *vagina* and *rectum*. The former, having no support from the adjoining parts, and being unable to sustain the weight of the column of water which rests upon it, after a certain time, begins to yield; and the pressure being continued or increased, the posterior part of the *vagina* is distended, pushed down, and at length protruded through the external parts, in such a manner as to invert the *perinæum*. A tumour is then formed at the posterior part of the *pudendum*, of which the *vagina* is the external coat, and the *peritonæum* the internal. This appearance occurs too rarely, or the instances recorded are too few, to justify the establishment of any general mode of practice; but, by the history of the following case, we may be enabled to make a distinction of this particular tumour, and of the method of treatment which it may sometimes be requisite and advisable to pursue. The only case likely to be mistaken for this which we are now describing is, when the *vagina* is protruded through the external parts, by a gradual distension from coacervated *fæces;* and this may be readily distinguished by passing the finger into the *rectum*.

In the year 1772, I attended a patient, who was then pregnant of her sixth child. She had a slight cough, some difficulty in breathing, and an obtuse pain in her right side. Her eyes had a yellow tinge, and she had an uneasy sensation, as if her stomach was swelled. Her urine, which was voided in small quantities, was high-coloured, and deposited a red sediment. Her pulse was quick, she had a constant thirst, and very little appetite. She reckoned that she was in the seventh month of her pregnancy.

Six ounces of blood were taken from the arm, a saline draught was given, with a few grains of rhubarb, twice daily, or occasionally. She was advised to drink whey or ground-ivy tea with milk, and sweetened with honey, for her common drink, to live chiefly upon fruit and vegetables, and to go into the country. There she resided two months, during which time little alteration was made in her diet and medicines; but the *abdomen* was distended to an un-

usually large size. She then returned to her family in town in daily expectation of being delivered.

In the course of my attendance she had often mentioned a complaint, which was very troublesome, and occasioned great solicitude. This, from her description, I considered as a *prolapsus* of the *uterus;* and, expressing a desire to be more particularly informed, she permitted me to examine it.

I was surprised to find a tumour of the size, and somewhat of the form, of an inflated calf's bladder, rising from the *perinæum* internally, and passing forwards and outwards, so as perfectly to occlude the entrance into the *vagina.* By pressure the tumour lessened, and by a continuance of the pressure it entirely disappeared, leaving a loose pouch within, and on the back part of the *vagina.* When she stood up the tumour returned to its former size and situation; but when she lay down, and the pressure was renewed, it again disappeared. It had not the feel of *omentum* or intestine, but clearly contained a fluid, which must communicate with some other cavity. I afterwards examined the *abdomen,* and could readily perceive a fluctuation in it. A doubt then arose whether she was with child; but, by an examination *per vaginam,* I could discover the head of a small child resting upon the *ossa pubis.*

The peculiarity of this tumour, its recession when pressed, and its return when the pressure was removed and the patient stood upright, together with the assurance of there being water contained in the cavity of the *abdomen,* were presumptive proofs that there must be a communication between the tumour and that cavity; and this communication could not be explained so satisfactorily as by supposing that the water had insinuated itself between the *vagina* and *rectum,* and, by resting upon, had at length protruded the posterior part of the *vagina.*

If this opinion were just, it might yet be debated what was the most reasonable method to be pursued for the relief of the patient; or whether it would not be more prudent to defer all attempts till she was delivered. Several gentlemen of the first eminence in the profession were consulted upon the occasion, and it was agreed, that we should wait till she was delivered, before the treatment of her other complaints was taken into consideration.

About three weeks after this time her labour came on. The child being small, and presenting naturally, it was soon expelled, the tumour yielding gradually to the pressure of the head of the child; though it appeared that the expulsion was completed by the action of the *uterus* only, the abdominal muscles being too much distended to contribute any assistance. The *placenta* came away

with great ease, and she had no complaint till the fourth day after her delivery, when, after a few loose stools, her strength failed, and she expired.

After her death I was very desirous of knowing the truth of the opinion which had been entertained concerning her case; but her friends would not consent that the body should be opened. They however permitted me to examine the tumour. A trocar being pushed into it, upwards of a quart of water was immediately discharged. The water then came away more slowly; but I observed that the *abdomen* subsided in proportion to the water discharged through the *canula* of the trocar.

Mr. Watson, a surgeon of great experience and ability, who saw this patient, informed me, that he had met with a similar case in a woman who was not pregnant. He tapped the tumour with a small trocar, and left the *canula* remaining in the orifice for several days. The water continued to drain away till the *abdomen* was perfectly empty. This woman recovered, and had no return of the dropsy.

I once attended a patient, who had a tumour of the same kind as that above described, with Mr. Davison, surgeon in Chancery-lane. But as she had been many times tapped before in the common way with success, I was afraid to recommend his making the puncture in the tumour, less danger should be incurred by an attempt to procure more perfect or permanent benefit. But I now think my fears were groundless, and that this patient would have had a better chance of recovering perfectly, if a puncture with a small trocar had been made into the tumour at the posterior part of the *pudendum*. (See Medical Communications, Vol. I.) This protrusion of the *vagina* very frequently occurs in dropsies of long standing.

SECTION IV.

By the descent of the intestines, or *omentum*, between the *uterus* and *rectum* is constituted a particular kind of *hernia*, of which the cases recorded are very few*. The inconveniencies thence arising will depend upon the bulk of the tumour formed, and the compression which the parts thus situated must undergo. The methods by which relief can be obtained by art will immediately occur to every practitioner, as they consist in making all prudent and reasonable attempts to replace the disarranged parts, and keeping them in their proper situation when replaced. It is happy for the patient that no immediate bad consequences are likely to follow this complaint; though under

* Elytrocele. *Vogel.* ccccii. Hernia in vagina uteri eminens.

particular circumstances, it may prove fatal as in the following case, which was communicated to me by Dr. Maclaurin.

A servant in a gentleman's family, in a state of perfect health, was suddenly seized with all the symptoms of a strangulated *hernia*, though from the most accurate inquiry and examination, it did not appear that she then, or at any preceeding time, had a *hernia*. All the means used for her relief were ineffectual, and she died on the third day of her illness. Leave being obtained to inspect the body, a considerable portion of intestine was found lying between the *uterus* and *rectum*, in a gangrenous state; and it was confined and compressed in this situation by a membranous bridle, which passed from the *fundus* of the *uterus* to the opposite part of the *rectum*.

CHAPTER V.

SECTION I.

ON MENSTRUATION.

From the *uterus* of every healthy woman, who is not pregnant, or who does not give suck, there is a discharge of blood, at certain periods, from the time of puberty to the approach of old age; and, the periods or returns of this discharge, is called Menstruation.

There are several exceptions to this definition. It is said that some women never menstruate, their constitutions or structure not requiring or allowing of this discharge, of which I have known two instances: yet concealing the circumstance, they imprudently ventured to marry, and were sterile. Some menstruate while they continue to give suck, and others are said to menstruate during pregnancy; but of this I have never known an example. Some are said to menstruate in early infancy, and others in old age; but such discharges may, I believe, with more propriety, be called morbid, or symptomatic; for when the female constitution from any cause is disposed to or requires a sanguineous discharge, it is commonly made from the vessels of the *uterus*. There are also many varieties, as some have believed, in the part from which the discharge was made, whether from the *vagina* or *uterus*; and with respect to its periods and appearance from permanent causes or accidental influences; but the definition is generally true.

At whatever time of life this discharge comes on a woman is said to be at puberty; though of this it is a consequence, and not a cause. The early or late appearance of the *menses* may depend upon the climate, the constitution, the delicacy or hardiness of living, and upon the manners of those with whom young women converse. (Rousseau.) There seems to be some analogy between the effect of heat upon fruits, and the female constitution with respect to menstruation, for, in general, the warmer the climate the sooner the *menses* appear. In Greece, and other hot countries, girls begin to menstruate at eight, nine, and ten years of age; but advancing to the northern climates, there is a gradual protraction of the time till we come to Lapland, where women do not menstruate till they arrive at maturer age, and then in small quantities, at long intervals, and sometimes only in the summer. (*Linnæi* Flora Lapponica; article *Muscus*.) But, if they do not menstruate according to the genius of the country, it is said they suffer equal inconveniences as in warmer climates, where the quantity discharged is much greater, and the periods shorter. In this country, girls begin to menstruate from the fourteenth to the eighteenth year of their age, and sometimes at a later period, without any signs of disease; but if they are of delicate constitutions, and luxuriously educated, sleeping upon down beds, and sitting in hot rooms, menstruation usually commences at a more early period.

Many changes in the constitution and appearance of women are produced at the time of their first beginning to menstruate. Their complexion is improved, their countenance is more expressive and animated, their attitudes graceful, and their conversation more intelligent and agreeable; the tone of their voice becomes more harmonious; their whole frame, but particularly their breasts, are expanded and enlarged, and their minds are no longer engaged in childish pursuits and amusements *.

The difference in the time of life when the *menses* appear has been assigned as the reason why women in hot climates, are almost universally treated as slaves, and why their influence is so powerful and extensive in cold countries, where personal beauty is in less estimation. (David Hume; but I do not recollect in what part of his works.) In hot climates women are in the prime of their beauty when they are children in understanding; and when this is matured, they are no longer the objects of love. In temperate climates their persons and their minds acquire perfection at or nearly the same

* Nec minus notum est, quanta virginea alteratio contingat, increscente primum et tepefacto utero; pubescit nempe, coloratior evadit, mammæ protuberant, pulchrior vultus renidet, splendent oculi, vox canora, incessus, gestus, sermo, omnia decora fiunt.—*Harv. Exercitat. de Partu.*

time; and the united power of their beauty and faculties is supposed to be irresistible.

Some girls begin to menstruate without any preceding indisposition, but there are generally appearances or symptoms, which indicate the change that is about to take place. These are usually more disturbing at the first than in the succeeding periods, and they are similar to those produced by uterine irritation from other causes; as pains in the back and inferior extremities, complaints of the stomach and *viscera*, with various hysteric and nervous affections, often preceded by the discharge of a colourless *mucus* from the *vagina*. These commence with the first disposition to menstruate, and continue till the proper discharge comes on, when they abate or disappear; returning, however, with considerable violence in some women, at every period during life.

The quantity of blood discharged at each evacuation depends upon the climate, constitution, and manner of living, but it varies in different women in the same climate, or in the same women at different periods. Yet there is a common quantity to which, under the like circumstances women approach, and it may be estimated in this manner: supposing the quantity to be about eighteen ounces in Greece, and two ounces in Lapland, there will be a gradual alteration between the two extremes, and in this country it may amount to about six ounces.

There is also a great difference in the time required for the completion of each period of menstruation. In some women the discharge returns precisely to a day or an hour, and in others there is a variation of several days, without inconvenience. In some it is finished in a few hours, and in others it continues from one to ten days; but the intermediate time, from three to six days is the most usual.

There have been instances of infants, in this country, having sanguineous discharges, even in the month, or any time before they are seven years of age, but these are not to be considered as menstruous; nor do they indicate any thing materially wrong, ceasing when the state of the constitution which required or occasioned them, is altered.

There has been an opinion, probably derived from the Jewish legislator, afterwards adopted by the Arabian physicians, and credited by others, that the menstruous blood possessed some peculiar malignant properties. The severe regulations which have been made, in some countries, for the conduct of women at the time of menstruation, the expressions used (*Isaiah*, chap. xxx, and *Ezekiel*), the disposal of the blood discharged, or of any thing contaminated with it, the complaints of women attributed to its retention, and the effects enumerated by grave writers, indicate the most dreadful apprehen-

sions of its baneful influence. Under peculiar circumstances of health, of states of the *uterus*, or in hot climates, if the evacuation be slowly made, the menstruous blood may become more acrimonious or offensive than the common mass, or any other secretion from it; but in this country and age, no malignity is suspected, the menstruous woman mixes in society as at all other times, and there is no reason for thinking otherwise than that this discharge is of an inoffensive nature *. It is probable that the true reasons for the laws relating to this subject were political, though those which were assigned were physical.

At the approach of old age women cease to menstruate, but the time of the cessation is commonly regulated by the original early or late appearance of the *menses*. With those who begin to menstruate at ten or twelve years of age, the discharge will sometimes cease before they arrive at forty; but if the first appearance was protracted to sixteen or eighteen years of age, independently of disease, such women may continue to menstruate till they have passed the fiftieth, or even approach the sixtieth year of their age. But, in this country, the most frequent time of the cessation of the *menses* is between the forty-fourth, and forty-eighth year, after which women never bear children. By this constitutional regulation of the *menses* the propagation of the species is, in every country, confined to the most vigorous part of life; had it been otherwise, children might have become parents, and old women might have had children, when they were unable to supply them with proper or sufficient nourishment.

When women are deprived of the common uterine discharge, they are sometimes liable to periodical emissions of blood from the nose, lungs, ears, eyes, breasts, navel, and almost every other part of the body †. These, which are certainly very rare, have been deemed as deviations of the *menses*, and communicated with the most scrupulous exactness, as if some great advantage was to be obtained by our knowledge of them. They may proceed from an inaptitude of the

* Penis cum menstruata concumbentis excoriatur, si novella vitis eo tangatur, in perpetuum læditur, steriles fiunt tactæ fruges, moriuntur insita, exuruntur hortorum germina; si mulier prægnans alterius menstrua supergrediatur, aut illis circumlinatur, abortum facit; ei autem, quæ uterum non gestat, concipiendi spem adimit; purgantis spiritus, et vapor ab ore, specula atque eboris nitorem obscurat: gustatus hic sanguis canes in rabiem agit, homines vero diris cruciatibus affligit, comitialem morbum, pilorum effluvium, aliaque elephanticorum vitia: idcirco a veteribus inter venena relatus; pari malignitate existimatur, atque sanguinis elephantici potus.—*De Graaf*, p. cxxiv.

† Illa (menstrua) per vomitum, alvum, urinam, per oculos, nares, aures, gingivas, mammas, umbilicum, minimum manus digitum, ac alias insuetas corporis partes interdum promanare.—*De Graaf*, p. cxxix.

uterus, some defect in the organization of that part, or of the *ovaria*, or from some accidental cause, but the propriety of considering them in this point of view seems very doubtful. I suspect that they generally ought rather to be esteemed as discharges belonging to some disease under which the patient may labour, or to the state she is in; and that they often proceed from causes independent of those of menstruation; as hemorrhages of every kind, in either sex, are frequently observed to be periodical.

Some men also have had a periodical discharge of blood from various parts of the body, but generally from the hemorrhoidal vessels. We may suppose that such constitutions resembled those of women, though the essential peculiarity, independent of structure, may not be discovered without difficulty.

SECTION II.

The causes of menstruation have been distinguished into efficient and final; and though little has been said upon this subject which is likely to procure any practical advantage, sufficient attention has been paid both to the discovery of the cause and end of menstruation; and, where our senses have failed to procure evidence, the imagination hath been called to their aid. To unsophisticated observation and to a mere relation of facts, or the inferences plainly to be deduced from them, men are unwilling to submit, as the powers of the imagination by such proceeding would be checked or suppressed, the want of understanding concealed, and the parade of learning lost. Hence a multitude of opinions are formed and transferred by the writers of one age to be controverted by those of the next; and we are amused or perplexed, but not instructed. Of this truth there will not be a doubt, if we consider for a moment the number of opinions which have devolved upon us, with respect to menstruation and conception; the fallacy of which it would be the business of one man's life to confute. But, though we are not to be immerged in such inquiries, a cursory view of what has been said of the causes of menstruation seems necessary, to preserve the unity, as it may be called, even of a practical discourse.

It has been said after Aristotle, that the fluids of the human body were, like the ocean, influenced according to the phases of the moon, and that menstruation resembled the tides. This discharge has been attributed to a *plethora* of the constitution, or of the *uterus;* to a ferment generated in the *uterus;* or to some humour of the constitution, as the bile, producing this specific effect upon the *uterus*. (See Charlton, Drake, and many other writers.) Some have presumed that

it was a simple discharge of blood, others that it was a secretion; some that it was a constitutional discharge, and others that it was merely local.

That menstruation is not occasioned by the moon, or any external physical cause, is evident from the circumstance of women menstruating at every moment of its increase or decline; and if this reason were admitted, it would prove that men and animals should also menstruate. It is not probably occasioned by *plethora*, as the loss of several times the quantity of blood discharged previous to, or in the very act of menstruation, from the arm, or any other part of the body, does not generally prevent or interrupt the flowing of the *menses*, and in those complaints which arise from obstructions of the *menses*, greater relief is afforded by a few drops of blood from the *uterus* itself, than by ten times the quantity from any other part. There seems to be no reason for the opinion of any fermenting principle being the efficient cause of menstruation, no part of the *uterus* appearing fitted for its secretion or reception; and the idea of bile acting with any peculiar influence upon the *uterus* was assumed, because of the resemblance between the symptoms arising from an excess or defect of bile, and those depending on menstruation; together with the aggravated symptoms, to which those who are of bilious constitutions are liable at the time of menstruation. But this reason, like some of the former, would prove too much for the intended purpose, if it were admitted. We may be satisfied with saying that menstruation was ordained by the Almighty as an appertainment to the female human frame.

Among the early cultivators of anatomy, it seems to have been thought of great importance to decide from what vessels the menstruous blood was discharged, some contending that it was from veins*, and others strenuously maintaining that it was from arteries†. The opinion of there being receptacles in the *uterus* for its collection is of a modern date (Simson's System of the Womb); but this cannot be irue, as, from the examination of the *uteri* in women, at every intermediate period, such receptacles could not have been overlooked, if they had existed. From the appearance of the menstruous blood in a healthy woman, and from that of the vessels by which it is discharged, which evidently run in a tortuous manner during the act of menstruation at least, many have not hesitated to pronounce it arterial.

* Ex venis uteri patentibus, menstruas purgationes evacuari indubitatum est, at quomodo fiat, et per quas potissimum venas, &c., ambiguum.—*Vesalius*, lib. v. cap. xv.

† Sanguis exit de corpore per dilatatas tectas arterias naturaliter, in menstruorum excretione, in fœminis.—*Ruysch, Epistola ad Boerhaavium.*

The menstruous discharge has commonly been considered simply as blood, though of a different kind from the general mass, as it has been observed not to coagulate. (See *Dionis.*) All uterine discharges of blood, in which there were *coagula*, have therefore been distinguished from menstruation, and assigned to some other cause, as conception, or some uterine disease. Whether menstruation ought to be esteemed a secretion made in a manner similar to that by other glands of the body, and does not coagulate because it is essentially different from blood, which I believe; whether it be a secretion from the *uterus* peculiar in its manner to that part, without analogy or resemblance to that of any other part, or whether the coagulation is prevented by a mixture with the discharge from the mucous glands, may be proved by future observations and experiments.

The various opinions of menstruation being a local or a constitutional discharge, may continue to be supported by those who think them of consequence. Every discharge is local, though its effects may be constitutional; but it does not appear that the symptoms of the suppression of the *menses* supply a stronger argument in favour of the latter opinion, than the regurgitation of bile upon the skin, or its discharge by urine, when the natural passage is obstructed.

SECTION III.

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 propagation of the species, have a discharge equivalent to menstruation, which is generally mucous; but in some instances, in very hot seasons, and climates, becomes in many of them sanguineous, as I have often observed.

Of the truth of the opinion, that the menstruous blood contri-

butes 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; which 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 a 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 menstruation. 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 it is regulated in such a manner, that the offspring will be 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.

SECTION IV.

All the common circumstances attending menstruation have been well and fully described by various authors, but having very often observed a substance expelled with the menstrual discharge, which has hitherto escaped notice, and apprehending the knowledge of this substance may be of use in practice, I feel it incumbent on me to describe it.

In the examination of that discharge, for the purpose of investi-

gating the state of the *uterus*, and the discovery of some complaints thereon depending, a membranous substance was often shown me, which was usually considered as the token of an early conception, or as the casual form of coagulated blood. But on examining this substance with more attention, I constantly found that one surface had a flocky appearance, and the other a smooth one; that it had in all respects the resemblance of that membrane, which Ruysch had called the villous, of the formation of which Harvey has given a very curious description, and which the late Dr. Hunter described with his usual precision, and called the *decidua*. To put the matter out of doubt, several years ago I requested the favour of Dr. Baillie to examine some portions of this membrane; and he agreed with me in thinking it an organized membrane, similar in structure to the *decidua*. As the first cases in which this membrane was discharged, were those of women who were married, a doubt arose in my mind, whether it was not really a consequence of early conception; but I have lately had the most undoubted proofs that it is sometimes discharged by unmarried women, and may be formed previous to and without connubial communication; and that the *uterus* has, occasionally, or constantly, in some women, the property of forming it, at, or in the interval between, the periods of the menstrual discharges. It seems particularly necessary to establish this fact, as the appearance of the membrane has more than once given rise to erroneous opinions, and unjust aspersions. Nor is this the only circumstance, in which some women, at each period of menstruation, have symptoms like those which accompany pregnancy or parturition.

In every case in which this membrane has been discharged, the women have menstruated with pain, and the discharge has flowed slowly and apparently with difficulty till the membrane was come away, which in some cases has been in small flakes, and in others in pieces equal to the extent of half the cavity of the *uterus* or more, of which they retain the shape. I suspect, but my experience does not enable me to decide, that this membrane is expelled in every case of habitual painful menstruation.

No woman in the habit of forming this membrane has been known to conceive while that habit remained; and this observation leads me to speak of the means which have been used for making such a change in the state of the *uterus*, that it should be divested of the property of forming this membrane at the time of menstruation.

There does not appear any external peculiarity of constitution, or disposition to any other complaint, in many of those who have been liable to the formation of this membrane, which is in fact a proper office performed at an improper time. Recourse has been generally had to preparations of quicksilver, chiefly to the *hydrargyrus submu-*

riatus given sometimes as an active purge, and sometimes in small quantities continued so long as even to raise a slight salivation. Together with this I have directed a large dose of the *tinctura cinchonæ ammoniata* to be given twice in the course of the day; the infusion of burnt sponge with bark; myrrh and the different preparations of iron, or the Tunbridge or Spa waters, and lately the *liquor potassæ* in gradually enlarged doses. In short all the medicines which could have the power of altering the state of the glandular system in general, or that of the *uterus* in particular, have been tried, but not constantly with success. I think I have in one instance known the use of injection, chiefly composed of the *aqua zinci vitriolati cum camphora,* remove this complaint, by its application perhaps exciting a new and distinct action of the part; and those with a solution of *antimonium tartarizatum* have been used. But this membrane not being uninterruptedly formed at each period of menstruation, the capability of conceiving may exist at any interval of freedom from its formation; but whether it be gradually formed through the interval between two periods of menstruation, or only from the time when the disposition to menstruate comes on, remains to be proved, though the latter opinion is most probable; and if just, its production might perhaps be prevented by such means as would at that time abate or suppress the extraordinary action of the *uterus,* as repeated bleeding in small quantities. I have only further to observe that this membrane has sometimes been excluded at two or three periods after parturition, and then entirely cease. But this subject ought to be more accurately investigated.

SECTION V.

It is a general opinion, that menstruation is to women a cause of diseases from which men are exempt; and their apprehensions of danger are chiefly confined to the times of the first appearance, and of the final cessation of the *menses.* It is not however proved, that more women suffer at the time of puberty than men, though there may be much difference in their diseases; nor is it decided that the very dreadful diseases which sometimes occur at the time of the final cessation of the *menses,* and which most commonly affect the *uterus* or the breasts, are more frequent and more dangerous than those, to which men are liable at an equivalent age; though I think it is lately proved that women are generally more subject to cancer than men. Some advantage seems to be derived to women from their natural capability to menstruate, especially to those whose constitutions or particular situations require discharges of blood for their relief: for such, at all periods of life, are usually made with great facility from the vessels of the *uterus;* whereas, in men, these evacuations often hap-

pen from parts which sustain much consequent injury. The circumstances attending menstruation are, however, sometimes such as to require medical assistance, and these I shall consider in the following order: first, obstruction of the *menses;* secondly, excess of the *menses;* thirdly, painful menstruation; and then I shall speak of the treatment which may be proper at the time of the final cessation of the *menses*.

By the term obstruction is properly understood the defect or failure of the appearance of the *menses* at a time of life when they might be expected; and by suppression, a total stoppage of the menstruous discharge which had before appeared *. But the terms are indiscriminately used.

These were generally esteemed original diseases, producing many troublesome, and sometimes dangerous consequences; but the moderns have, with more propriety, considered them as symptoms of some disease, with which the constitution was primarily affected. Yet, in some cases, the suppression of the *menses* seems to be an original affection, often, though not universally, succeeded by a certain train of untoward symptoms; for it appears, in some women, to be a simple interruption of the discharge, not necessary for the constitution at some particular times, and when the interruption happens to those who are married it sometimes gives fallacious hopes of pregnancy. The precise reason of this temporary suppression it would be difficult to investigate; but I have observed it to happen together with a reduction of the size of the breasts, in very chaste women, who have been under the necessity of living separate from their husbands.

As very different diseases may become causes of the obstruction or suppression of the *menses,* and as these may in different constitutions produce very opposite effects, it is not extraordinary that we should find those symptoms, which have been described as attendant on the suppression of the *menses,* so numerous and so unlike. But the two principal distinctions are to be made from the appearance of the patients, some of whom have a pale leucophlegmatic look, with every consequence and indication of want of power and energy in the constitution, and a fulness of vapid fluids; but others have a florid complexion, with signs of a hectic disposition. To either of these states may be joined any of the various symptoms, which arise from the uterine disturbance.

In the obstruction of the *menses* with a pale complexion, a variety of medicines have been given, which were supposed to possess the

* Chlorosis. *Cullen.* G. xlv. Dyspepsia, vel rei non esculentæ desiderium, cutis pallor vel decoloratio, venæ minus plenæ, corporis tumor mollis, asthenia, palpitatio, menstruorum sæpe retentio. Amenorrhœa. *Cullen,* cix. Mensium suppressio.

properties of immediately influencing the *uterus*, and of promoting the menstruous discharge by some specific operation, particularly all the preparations of iron. But speculative differences have been lost in the uniformity of practice; for those who have differed widely in their theories of menstruation, and in their opinions of the operation of the medicines prescribed, have agreed as to the individual medicines which they recommended; and it was of no importance to the patient, whether the effect was produced by some specific operation, or was secondary to an alteration made upon the constitution. Every medicine which has the power of strengthening or invigorating the habit, bitters, aromatics, and all the different preparations of iron, become eventually promoters of the menstruous discharge. But, previous to their use, it will often be necessary to give a gentle emetic and laxative medicines, for the purpose of freeing the constitution from a load of inactive fluids, and of cleansing the *primæ viæ*, by which the operation of such medicines will be rendered more effectual. Of these, the preparations of iron are justly supposed to be the most powerful and best adapted to the case; and they may be given in a variety of forms and quantities, alone or joined with bitters and aromatics, provided the patient has no fever. The chalybeate waters of our own country, or those of Spa, are universally proper. In some cases tepid bathing, or *pediluvia*, are of service; and in others, bathing in the sea: and I have observed that the guides to the ladies continue to go into the water during the time of menstruation, without any inconvenience.

Medicines of this class do not always produce the menstruous discharge, or its return, though they scarce ever fail to improve the health. In the constitutions of some women there is an idiosyncrasy, which withstands the effect of such medicines as are generally found to answer certain intentions; and yet the same end may be gained by some other medicine, in general less efficacious. Different preparations of quicksilver have sometimes been given with advantage in this complaint. The root of madder has been advised either in one or more large doses, about the time when the *menses* are expected, or to the quantity of half a dram twice or three times daily in the intervals. (See Riverius, and, before him, Sennertus.) Repeated, but gentle, emetics, which are supposed to operate, not by cleansing the *primæ viæ* only, but by agitating and calling forth the powers of the constitution to more vigorous action, are sometimes successively used. Electricity, directed to the region of the *uterus* and *ovaria*, has lately been practised and recommended by men of reputation; and often, I believe, with success.

In the suppression of the *menses* with a pale complexion, the diet should be generous, and wine may be allowed. Exercise of every

kind is proper; but it ought not to be more than the patient can bear without fatigue, as great exertions have sometimes produced immediately dangerous, and even fatal, effects. Such patients may often be invited by dancing, or riding on horseback, and these seem best adapted to their complaint, though I have lately seen some instances in which *swinging* answered better than any other exercise.

The suppression of the *menses* with a florid complexion is usually combined with symptoms very different from those which occur when it is pale, and a method of treatment reverse to the former is required; for the colour of the cheeks in these cases is often the flush of disease, and not the glow of health. Such patients frequently have a slight cough, pains in the breast, some difficulty of breathing, fever, and other signs of a consumptive tendency. In such situations, instead of pursuing the former intention, with the view of producing or promoting the menstruous discharge, we must regard the disease, and endeavour to give relief by repeated bleeding in small quantities, by antiphlogistic and emollient medicines, by a vegetable diet, and by repose, forbidding all exercise but that of the most easy kind, and when those symptoms are removed, the suppression of the *menses* may come under contemplation. The *tinctura melampodii* was strongly recommended by Dr. Mead; but the principal good which it does seems to be produced by its operation as a gentle laxative, its other effects being very problematical.

The *menses* are sometimes suppressed by sudden exposure to cold, or by violent exercise and agitation during the time they are flowing. Even in these cases the suppression is frequently subsequent to the attack of some disease; as a pleurisy, peripneumony, acute rheumatism, inflammation of the *uterus*, or the like; and under such circumstances the same treatment is to be advised as the particular nature of the disease may require, without regard to the *menses*. I have been informed that, in suppressions or deviations of the *menses*, injections *per vaginam*, in the composition of which there is some preparation of quicksilver, are of particular service; but of such I have not had any experience.

SECTION VI.

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 as-

* Menorrhagia.—*Cullen*, G. xxxvii. Dorsi, lumborum, ventris, parturientium instar, dolores; menstruorum copiosior, vel sanguinis e vagina præter ordinem fluxus.

signed for either of 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. Instances occur in practice in which women menstruate at each period a larger quantity than their constitutions are able to afford; yet those cases, which are usually reduced 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 the profusion of the *menses* are the same as those which are produced by hemorrhages from any other part of the body, with some peculiar affections of the *uterus*.

If there should be merely too large a quantity of menstruous discharge at each period, or too frequent returns, such medicines and regimen as strengthen the constitution, or amend the health, will be proper, particularly the cold bath; and when these complaints can be supposed to arise from the want of a due degree of contractibility in the blood vessels, gentle emetics, occasionally repeated, have been of great service. However, in far the greater number of cases of this kind which occur in practice, the discharge seems to be symptomatic, and dependent on the general feverish state of the patient, or that of the *uterus* in particular; so that at the time when the *menses* are expected, she should be kept very cool and quiet, and confined to an horizontal position, and perhaps such medicines as slacken the circulation of the blood may be given with advantage. But if astringent or strengthening medicines be given in the first instance, they are so far from removing the complaint, that they often increase it, and the discharge will continue as long as such medicines are administered; not to mention that a difficulty of breathing, and other dangerous symptoms, are often produced by too hasty or too liberal a use of astringent medicines. But, if the feverish disposition be previously abated by bleeding and a proper regimen, such medicines as were before recommended for the suppression of the *menses* may then be given with propriety and advantage; or any of the class of astringents which have been before mentioned, beginning with those which are gentle in their operation, and advancing gradually to those which are most powerful. In many cases of hemorrhage from any part of the body, the natural balsams, as that of *copaiva* or *gilead*, or the *tinct. benzoin. comp.* or even the *oleum terebinthinæ*, given in small but repeated doses, have been found of great service; moderately astringent injections into the *vagina* may in some also be safely and properly used. In discharges of blood from the *uterus*, proceeding from diseases of the part, the treatment

must depend upon the nature of the disease, of which we cannot form any just opinion without an examination *per vaginam;* but this is not to be proposed, till all the usual means have been tried, and failed to answer our intention. See the chapter on Abortion.

SECTION VII.

The pain with which some women menstruate at each period is sufficient, from its violence and duration, to render a great part of their lives miserable*. Healthy, robust women, or those in whom the process is speedily concluded, seldom suffer much at that time: the pain is therefore to be attributed to an increased degree of irritability in the habit, or to the difficulty with which those vessels designed for the menstruous discharge become permeable. This pain, independent of the membrane before mentioned, is in general moderated, and sometimes altogether removed, by the use of such means as lessen uterine irritation, or facilitate the discharge; and these must be suited to each individual case. Bleeding in small quantities, previous to the period, gently purgative medicines, and opiates, of which the most efficacious is the *confectio Damocratis*, repeated according to the urgency of the complaint, may be occasionally directed with advantage. Soaking the feet in warm water, or receiving the steam of it upon the parts principally affected, will often do much service; but no remedy of this kind gives equal relief with the warm bath, which may be used every evening, when the symptoms preceding menstruation come on, and continued throughout the period. Electricity applied to the region of the *uterus*, before the expected discharge, has in some cases afforded much benefit. Many medical writers have advised, and it is yet a popular custom, to give medicines of that kind which have been called deobstruent, with the view of promoting the discharge by quickening the action of the parts concerned; and in some constitutions these may be proper. But as many medicines of this class disturb and increase the heat of the body, they are generally found by experience rather to increase than to abate the pain, which, in a few cases, I have found prevented by the daily use of the madder root, given without interruption for several weeks.

During the period of menstruation, some women, who are at other times disposed to be costive, have their bowels then much irritated; and others, who are in a common way disposed to be laxative, have then their bowels constipated. Perhaps the consideration of these

* Dysmenorrhœa. *Vogel.* clxx. Profluvium sanguinis uterini menstruum dolorificum.

circumstances may enable us to judge of the proper treatment; but in every case of this kind it is scarcely possible to abstain from the use of *opium* in some form or quantity at each period.

SECTION VIII.

At the approach of old age the *menses* disappear, the constitution of women neither requiring nor allowing a continuance of the discharge. It was before observed, that this event usually happens about the forty-eighth year of their age, though some instances have occurred of their final cessation so early as the thirty-fifth, or sooner, and of their duration to the sixtieth year of the woman's age; but these are very uncommon.

The *menses* seldom disappear suddenly; but, before their departure, they become irregular in their periods, or in the quantity discharged. These irregularities are not unusually accompanied with some disturbances of the constitution, particularly of the *viscera*, and those complaints which are called hysteric.

All women are alarmed at the time of the final cessation of the *menses*, and are persuaded that the ill consequences which sometimes ensue are to be prevented by proper care and management at the time. But it must be observed, that scarce one of a great number of women suffers more than temporary inconvenience on that account; and it is not reasonable to think that any disease should be a necessary consequence of the cessation of a discharge, which is as perfectly natural as its appearance or continuance. The most common circumstances which accompany or follow the cessation are, increased fatness of the person, a more full and stronger pulse, with more than ordinary heat. But if there be a disposition to disease in the constitution, especially in the *uterus*, a more rapid progress is made when the *menses* cease; not most probably because these give existence to, or promote disease by any malignant quality, but because the constitution, or the parts disposed to disease, are deprived of a local discharge, by which they were before relieved.

On the presumption that the *menses* retained became, by their malignant quality, the cause of diseases, many medical writers have advised aloetic, and other stimulating medicines, which were supposed to possess the power of continuing the discharge a longer time than the natural. As the principle is not just, this practice is also in general injurious; for I hardly recollect an instance in which such medicines did not evidently do mischief, by increasing all those complaints which were imputed to, because they occurred at the time of the final cessation of the *menses*. But the present mode of practice is far more reasonable and successful, it being now usual to

bleed occasionally, which women advanced beyond this period generally bear with more advantage and less inconvenience than at any other time of life; to give cooling and gently aperient medicines, avoiding every kind of diet and medicine which is heating or may occasion corpulence.

It is, however, a well known fact, that the *uterus*, breasts, and every part concerned directly or indirectly in the act of concubinage, is more liable to disease at or soon after the final cessation of the *menses* than at any other time of life; and that these too frequently terminate in *scirrhus* or *cancer*, with consequences the most painful and deplorable.

Of *cancer*, it is to be lamented we have at present neither a tolerable definition, nor a correct history, nor any accurate distinction of the several varieties, which are certainly known to exist. Nor is it yet proved whether *cancer*, of any part, has any specific quality, according to the structure of the part affected; nor have we, in fact, at present, any other idea than that it is an incurable disease. It nevertheless appeareth from a number of authorities, that, at different periods of time, much labour has been bestowed, and the most earnest endeavours used, to discover the nature of this disease, and a remedy for it, but unfortunately without success; perhaps because we were not in possession of some sound principle on which to proceed.

It may be doubted whether we shall ever acquire a knowledge of a cure for *cancer*, till a just foundation of principle is laid, from which legitimate inductions may be derived; though it is not impossible but we may gain a knowledge of the wished for remedy by some accidental discovery.

The seat of *cancer* is not confined to any particular part, almost every part of the body being liable to it; but those most generally affected in females are the *uterus* and breasts. When the former is the part affected, the first symptom is usually inflammation; and if this can be effectually removed by strict abstinence, by bleeding occasionally, by antiphlogistic medicines, and by constant repose in an horizontal position, I have often persuaded myself that the disease has been prevented or removed. But if the disease should resist these means, the part becomes swelled and enlarged, with an increase of pain, an accession of discharge gradually augmented, and a depravation of the general health of the constitution.

The discharges are in some cases purely serous; in others, frequently returning sanguineous ones, ichorous, or purulent, offensive in smell, and not unfrequently of such an acrimonious quality as to excoriate every part which it may touch. All the neighbouring parts become connected together into one mass. Then generally

begins erosion of the parts, a considerable portion of the bladder and *rectum* is destroyed, the urine flows continually over the ulcerated parts, the *fæces* are discharged into the *vagina*, and it is not possible to conceive a state of greater misery than that of a person in the last stage of uterine *cancer*.

Within the last few years, more than ordinary pains have been taken to discover a cure for this disease, and by several it has been asserted that one had been discovered; but I believe, on trial, all of them have been found nugatory and fruitless. If, therefore, the means used for putting a stop to the disease at its commencement fail, we are at length driven to the necessity of relying on the application and internal use of opiates in every form and of every kind, which are found to agree or answer best with each patient; as the *hyoscyamus*, *belladonna*, but chiefly of pure *opium*, or some of its officinal preparations.

It is necessary, however, to observe, that all enlargements of the *uterus*, though attended with pain, do not proceed from a cancerous cause, though in many respects they resemble that disease. These are sometimes scrophulous, and then they commence with a tumour between the *rectum* and *vagina*; and when the *uterus* is primarily affected, they often terminate in abscess of the part. These and such like cases, I apprehend, often give rise to unguarded assertions that *cancer* has by such or such means been perfectly cured.

When one of the breasts is affected, it usually commences with a circumscribed tumour of a large or small size. These tumours often come on with rapidity and a sudden increase of pain; but they will often lie dormant and inoffensive for a great number of years, and sometimes life is passed through without their ever being excited to morbid action. So long as these tumours remained unconnected with the neighbouring parts, it was formerly thought expedient and justifiable to extirpate them with the knife or by caustic. But the operations have so often failed, that is, the disease has so often returned, that the most experienced surgeons have hesitated to give their consent to performing them.

But, in a work lately published, a different mode of treatment of these tumours has been recommended, whether they were occult or open, that is chiefly by strong pressure. It is supposed that this pressure is in general equivalent to eighty or ninety pounds.

The effects I have seen produced in several cases under the care of Mr. Young, the author of the work, have really been surprising, not only from the evident good effects immediately produced, but from the reasonable hope they gave of a perfect cure of the disease. I may say with truth that my expectations of a cure for *cancer* are far more sanguine from the effects I have seen produced by Mr.

Young's method, than by any other means I have seen used or tried.

It is remarkable, that the cure of cancer affecting parts of the body, where applications could be made with the greatest facility and advantage, has not been attempted, when those of the *uterus* have been undertaken with great confidence. This may be among the instances in which the credulity of patients renders them liable to the impositions of empirics, who often pretend to cure a disease which never existed, or extol as a cure its mitigation. If it be, however, allowed that this disease is incurable, and that regular practice despairs of giving assistance, when the disease is arrived at a certain state, the trials of empiricism, under some restrictions, may not only be permitted but encouraged, with the expectation of some casual good; and if, by the expenditure of money, hope, though of short duration, can be procured, the purchase is cheap at almost any rate. Upon the principle of guarding against the cruel effects of despondency, honest men are sometimes obliged to equivocate, or to promise more than they are conscious they are able to perform. But as, by the favour of Providence, and the labours of men, remedies have been discovered for many diseases, which were once thought incurable, we may hope that one will at length be found for this most deplorable disease.

More than one case has occurred, of a diseased lip, considered by able men as cancerous, being cured by the constant application of a layer of the root of the common red onion. I tried a strong decoction of the same root internally, and as an injection in a variety of uterine cases, but without any apparent advantage.

A few years ago, some gentleman, now known to have been the late most benevolent and liberal Mr. Whitbread, who added to the merit of the donation by the concealment of his name, at the expence of more than three thousand pounds, formed an establishment for this purpose in the Middlesex Hospital, from which it is hoped much good will be derived, and great additions have since been made to its revenues. Very lately an institution has been founded professedly on the principle of investigating the nature and cure of cancer; but this is yet in its infancy, or is rather for the present suspended.

CHAPTER VI.

ON CONCEPTION.

SECTION I.

By the term conception is understood the formation of an *embryo*, or of the rudiments of a new being, in consequence of the mixture of the male and female *semen*, or of the operation of one or both of these, in or after the act of coition.

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, by the minuteness and complication of the objects to be described, and by 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 this 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.

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 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 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.

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.

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.

Aristotle denied the existence of semen in the female. He imagined, that the material parts of the *embryo* were formed by the menstruous 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.

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.

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 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 of 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 *.

* Videtur sane fœmina, post tactum in coitu spermaticum, eodem modo affici, nulloque sensibili corporeo agente prolifica fieri, quo ferrum a magnete tactum, hujus statim vi dotatur, aliaque ferramenta ad se allicit.—*Harv.* Exercit. de Concept.

The opinion of Hamme, of the credit of which he appears to have been unfairly deprived by Leuwenhoeck, was afterwards received with great applause, became 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.

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 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 being absorbed from the *vagina*, that it passed in the common course of the circulating blood, and was conducted to one of the *ovaria*, where it performed its proper office by the impregnation of 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*, which contained 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, from the mixture of which an effervescence arose. From some particles which subsided on the

* Vidimus cavum uteri, albo, naturali atque bono semine masculino repletum, utramque etiam tubam Fallopianam eodem semine plenam.—*Ruysch.* Adv. Anat. Dec. 1. See also *Cheselden's* Anatomy.

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 been proposed with a 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 are intended to answer, and the manner in which they are supposed to perform their respective offices, the imagination hath been indulged with a freedom not very consistent with the dignity of philosophy.

If we were able to discover the essential properties of the male *semen*, the precise share which the male and female contribute towards the formation of the *embryo*, the part where, and the manner how, the effect was produced, the advantages which would thence accrue in practice do not appear; though it is difficult or impossible to say, to what the discovery of any truth may lead, before it is discovered. But it is happy for us, that those things which are beyond the comprehension, or which elude the observation of men of plain understandings, are of the least importance in practice; Providence having ordained, that the honest and industrious application of common capacities should render us equal to the exigencies of life, and the duties we owe to society.

SECTION II.

A GENERAL history of the manner in which the succession of all natural substances is preserved, and of which we shall take a short view, might be a very useful introduction to an inquiry into the generation of animals. For, though there appears to be little resemblance between this and the principle by which inanimate bodies are continued, it is not very unreasonable to suppose, that there may be some common essential quality diffused through all nature, limited in its operation by the kind of matter on which it is destined to operate †.

Minerals constitute the lowest order of all natural bodies, every kind of which has its own peculiar quality and external mark of distinction. These have been thought to be increased by the mere as-

* Sicut lac mulsisti me, et sicut caseum coagulasti me.—*Job.*

Revera in illo tempore, cum embryones adeo exigui sunt, comperio rudimenta nostra, maximam haberi analogiam cum coagulo lactis.—*Ruysch.* Thes. vi.

† Naturalia dividuntur in regna Naturæ tria, Lapideum, Vegetabile, Animale.

Lapides crescunt, Vegetabilia crescunt et vivunt, Animalia crescunt, vivunt, et sentiunt. *Linnæus,*

similation or apposition of such homogeneous particles as were contained in the *matrix* or bed in which they lay. But many other causes have been assigned for the conversion of bodies into peculiar modifications; as the heat of the sun, of the central fire, cold, and alternate heat and cold, by which the ultimate determination of every mineral substance into a certain form was supposed to be effected. Some naturalist (Tournefort) has entertained more dignified opinions of the increase of minerals, believing that there was in these a germ or principle of generation, and that a grain of sand became a stone, by the operation of a cause, equal and similar to that by which a vegetable from a seed, acquired the perfection of a plant. Others are persuaded, that in mineral substances of every kind there are two properties, the one specific, the other general. To the first, to which the power of increase was attributed, the name of electrive attraction is given; and to the latter, by which its form was preserved, that of attraction of cohesion *. These, which are most powerful in the largest masses of matter, imply some property superadded to matter, which, though slow and obscure in their operation, are equivalent for the purposes of its increase and preservation, in all its various forms, with that of life, by which vegetables and animals are propagated and preserved. In this view, the term *spontaneous generation*, not allowed in vegetables or animals, though not in some instances disproved, may properly be applied to minerals. It is also worthy of observation, that by the time required for the formation of matter, under every individual modification, its continuance under such modification is regulated. For, if there had been no relation between the power of increase and the tendency to decay, the whole world, in a course of years, must have been composed of matter under one peculiar form.

Through all nature there is not found a single body which consists of materials lying in confusion. However small and apparently insignificant, every particle exhibits proofs of the majesty and wisdom of God; and it may be presumed, that the minutest elementary parts of every substance are originally composed and wrought up in the most regular order, into what is called form. Yet in mineral substances it is a form so immerged in matter, that it is ever restrained from the acquisition of the excellence of a living body, unless there be a previous destruction of its present form †. But the more re-

* That force by which the parts of bodies cohere is stronger than its gravity. That force, whatever be its cause, we shall call the attraction of cohesion. *Desaguliers.*

† That state in which all bodies are, during the time they are losing their present form, or undergoing any change, was by the ancients called fermentation. In this sense the term was applied to fevers; but many modern physicians have used

fined the matter, the more perfect is the form; and the more perfect the form, the more exquisite are the properties. Hence the common observation seems to have been made of the encroachment, as it may be called, of one order of natural bodies upon another; of the near accession of the first minerals to the lowest vegetables, and of the first vegetables to the lowest animals, in such a manner that they can scarcely be distinguished.

Of the mineral, vegetable, and animal kingdoms, there is to common sense a clear and precise distinction, though language may be insufficient to give a definition of vegetables, which will not in some measure apply to animals. It is not satisfactory to say, that vegetables have no power of locomotion, that they have less variety of parts, that their constituent parts are more simple, that they do not breathe, have no appetites, and do not digest food; that they have no sensation, and are only injured by such things as destroy their organization. For it may be replied, that vegetables do perform some operation equivalent to respiration, as they cannot live without air; that they are greatly affected by light which alters their colour; that they require, select, absorb, and digest food, or nourishment; that some of them move, apparently in search of nourishment, and others have a certain degree and kind of sensation.

Whatever may be the essential difference between vegetables and animals, it is probable, that they are both in some degree subject to the same influences; as in those seasons which are most favourable to vegetation, animals are generated in the greatest number and perfection; and there is evidently much resemblance in the manner of their propagation. The sexual distinction of plants is now fully proved; or it is allowed, that there is a distinction between two plants of the same kind, like to that between a male and female animal; and that those vegetables, in which such distinction is not observed, have both the male and female parts, and are therefore with propriety called hermaphrodites. For, though a female plant may produce seeds, to our view, in a perfect state, these without the intervention of the fecundating principle from the male plant, remain sterile, as hath been fully shown in the tribe of melons, the palm-tree, hemp, and many other vegetables. But a more satisfactory proof is afforded by hybrids, or mule-plants and flowers, which are produced when a female vegetable of one species hath had its seed impregnated by the *farina* of one of another species growing near it.

In the form and structure of the seeds of vegetables of every denomination there is some peculiarity. They all contain the rudi-

the same term in a more confined sense, and the application of it will not then bear examination.

ments of a future plant, with something added to their form, of equal efficacy for the perfection of the plant, and therefore as justly called life, as that principle by which animals are brought to their perfection; for we know nothing of life but by its effects, the *thing* not admitting of any definition. Any seed, berry, or kernel, would be an adequate example of this subject; but we shall select nuts, because they are equally curious with the rest, and more familiar.

A nut is contained in a foliaceous cup or husk, by the stem of which it is connected to the tree. The broad end of the nut is closely attached to the cup by small vessels, which, in the early state of the nut, are very numerous, but, as it advanceth towards maturity, these gradually wither away, till the few remaining ones becoming too feeble to support the nut, it drops to the ground. This may in one sense be called the birth of the nut, though it may with more propriety be likened to the separation of the impregnated *ovum* from the *ovarium* in viviparous animals, or to the expulsion of the egg in oviparous ones. When the nut is fallen to the ground, if the bed which receives it and other circumstances are favourable to germination, a new process begins, the shell softening by the moisture absorbed by that end of the nut which before adhered to the cup, and which is more porous than the other parts. The whole internal surface of the shell is lined with a flocculent substance for the prevention of injury to the kernel from the hardness of the shell, and for the reserve and preparation of the moisture already absorbed. The kernel has also two membranes, the inner of which is fine and pellucid, but the outer is of a coarser texture, resembling that substance which lines the shell. On the internal surface of the broad end of the shell there is a congeries of vessels, or a ligament, which passes between the kernel and shell to the *apex* of the kernel, to which it is attached, and probably serves the purpose of an umbilical cord. When the shell has continued in this situation for a certain time, it decays or bursts, and gives room for the expansion of the kernel. During this interval, the process of germination is going on in the kernel, which is not deprived of its coverings, so long as they are necessary for its protection. The *corculum*, or bud, begins to sprout; the outer membranes decay or burst, and, together with a great part of the kernel, serve as the first supply of nourishment. Then the radical and other parts of the little plant are unfolded; and when they have acquired a certain degree of strength, the kernel is divested of all its subservient parts, the root strikes into the ground, and the plant is perfected by the vigour of its own principle.

Between the production of vegetables from slips, and the multi-

plication of *polypi* from the section of their parts, there is at least an equal similitude with the mode of propagation of which we have already spoken. It is also deserving of notice, that, as the operation of the principle of life is often suspended for a very long time in the seeds of vegetables, without destruction, in very unfavourable circumstances, the same hath been observed in inferior animals, particularly in snails (*Annual Register*, vol. xvii.), though, in this respect, vegetables appear to have the advantage; and from the proofs which have been given, by philosophical men, of this suspension of the operation of the principle of life, divines have, by no forced construction, illustrated the doctrine of the resurrection of the human body after its decay *.

SECTION III.

Of the mode of propagation of all the inferior orders of animals, diversified and wonderfully curious as it is, particularly in the Surinam toad and the *kangaroo*, it is impossible to take notice. The greater part of these are oviparous, and it has even been asserted, that every living body was produced from an egg; but this is a very unjustifiable use of the term †.

It is probable, that the eggs, properly so called, of all animals, minute as many of them are, are composed of similar parts with those of the larger oviparous animals. We may therefore be permitted to take our next example from the eggs of birds, in which all the circumstances relating to the formation of the animal have been well described by many able men, but with peculiar accuracy by the illustrious Harvey.

The eggs of birds are composed of two principal parts, which, from their colour, are called the yelk and the white. The yelks only are found in the *ovarium*, to which they are attached, and where, it is presumed, such as are in a fit state are impregnated. They are of different degrees of magnitude, and that which is the most perfect first drops into the *infundibulum*, by which it is carried into the *uterus*, collecting in its passage the white. In the *uterus* it is

* See *Philosophical Transactions* for the year 1784, in which there is a very curious paper on this subject by Mr. John Hunter, by which that doctrine is supported.

† Diximus antehac ovum esse tanquam fructum animalium.—*Harv.* Exercitat. de Partu, and the plate prefixed to the English Edition.

In omni genere animantium quæ ex coitione nascuntur, invenies ovum aliquorum esse principium, instar elementi. Ovum vero digestio est feminis.—*Macrob. Saturnal.* lib. vii. chap. xiv.

clothed with its membranes and shell, after which it is expelled in a firm state *.

The texture of the shell is admirably calculated for preserving the contained parts, and for receiving and retaining that heat, which is conveyed to eggs by incubation. Immediately within the shell is the common membrane, which lines the whole cavity of the egg, except at the broad end, where there is a small space filled with air. Within this membrane, the white, which is said to be of two kinds, is immediately contained; and near the centre, in an exquisitely fine membrane, the yelk. The white is of the same form with the shell, but the yelk is spherical. At each extremity of the yelk, next to the ends of the egg, is the *chalaza*, a white firm body, consisting of three globules like small hail-stones. In the *chalaza* the several membranes are connected, by which means the various parts, in every position of the egg, are retained in their proper place. Upon the yelk, near the middle, there is a small, flat, circular body or vesicle, called the *cicatricula*, in which the rudiments of the chick are contained. In consequence of incubation, or of continued heat of any kind to a certain degree, the respective changes are produced with great exactness; but, previous to any organization of parts, the first observable alteration of importance consequent to incubation, is the formation of blood, which Harvey has therefore described as the *primum vivens, ultimum moriens*. The heart, which is soon perceptible, is in a short time discovered to be in motion, then the vascular system, and the other constituent parts of the animal in regular order. The white of the egg becoming thinner, supplies the growing chick with nourishment, as does likewise the yelk, till it is of too large a size to be contained in the shell, which bursting, the chick is set at liberty, and carries in the *ductus intestinalis* a part of the yelk for its future sustenance, till its powers are sufficiently vigorous, to enable it to take and digest extraneous food.

SECTION IV.

The regular disposition and connexion of the various parts of matter of which the world is composed, and of the various living bodies by which it is inhabited, are not more surprising than the circumstances by which they are distinguished. For, though there is an evident series of relations by which their connexion is pre-

* I cannot forbear quoting the following beautiful passage from *Harvey*.—"Columba, præsertim ea, quæ ad nos ex Africa advehitur, gaudium a coitu mirum in modum exprimit: saltat, caudam distendit, eaque imam verrit humum, rostro se pectit et ornat; quasi fœcunditatis donum summam in gloriam duceret."—Exercitat. xxxiv.

served, to each different being there is some outward mark or inward structure, by which it is separated from those which precede and follow it. Thus in every order of animals there is observed a difference in the structure of the parts concerned in parturition, and in the *ovum* or conception which they severally produce, by which each class might be arranged as justly as by the structure of any other internal or external part. The human *uterus* alone is pyriform, and the *placenta*, which is flat and circular, adheres to it by a broad surface. But animals have the *uterus* divided at the *fundus* into two branches, or horns; and the gradation from the human *uterus*, to that of an animal, debased to the lowest extremity of the viviparous class, makes a curious part of natural history. In the *pecora* the horns are convoluted, and terminated in a point, and the connecting substance between the *fœtus* and parent is divided into several portions called *cotyledons*, which adhere to as many temporary productions of the *uterus*, resembling glands. In the *feræ*, there is a variation in the horns of the *uterus*, and the connecting substance between this and the *fœtus*, though in one mass, surrounds the *uterus* like an internal belt. In the *belluæ*, the horns of the *uterus* are reflected and obtuse, and the *fœtus* has neither *placenta* nor *cotyledons*, but receives its nourishment by the very capacious vessels of the membranes. These and many other varieties in every class, to which it is not possible in this inquiry to pay attention, answer some very important purpose, in giving to each animal its distinguishing properties; and in the offices performed there is some peculiarity in manner, dependent upon structure; so that from the circumstances attending the parturition of animals of one kind, no inferences could be made, which would not be liable to many exceptions, if we compared them with those of any other.

SECTION V.

Of all viviparous animals man is the chief. The manner in which his race is propagated is the object to which we are now to confine our attention. But that succession of opportunities necessary for such an examination not being attainable in the human species, recourse hath been had to inferior animals, on the presumption, that there is not only a common principle by which viviparous animals are propagated, but also that common effects are produced by the operation of that principle. Great attention hath been paid to the cultivation of this subject; but in the detail of the circumstances, which are said to occur in the conception or production of the human *fœtus*, several are admitted which it would be extremely difficult to demonstrate or prove.

Previous to or during the act of coition, it is presumed, that one or more of the vesicles, or *ova*, contained in the *ovaria* is brought to a state fit for impregnation, and that the male *semen*, being transmitted into the cavity of the *uterus*, is thence conducted by one of the *fallopian* tubes to one of the *ovaria*, where it perfects the rudiments of the *fœtus*, or impresses them already perfected with the principle of life. The prolific *ovum*, having undergone its first changes in the *ovarium*, is then loosened from its connexion, grasped by the *fimbriæ*, and reconveyed by one of the *fallopian* tubes to the cavity of the *uterus*.

When the *ovum* is impregnated, and while it remains in the *ovarium*, the *uterus* passes through some peculiar changes, by which it is rendered fit for the reception of the *ovum*. The blood vessels of the *uterus* then appear to be enlarged, as in a slight degree of inflammation: the internal surface becomes softer and more spongy in its texture; and a white *mucus*, which has been likened, from the delicacy of its arrangement, to the web of a spider, is secreted; which gradually assuming a more solid form and becoming vascular, adheres or is closely united to the *uterus*, to the whole cavity of which it forms a lining, except at the orifices which lead to the *fallopian* tubes and the *os uteri*. (See Harvey, his Exercitatio sexagesima nona.)

To this membrane various names have been given, and various opinions entertained of its formation. (Villosam, flocculentam, pseudochorion, *spongy* chorion.) A justly celebrated anatomist of the present time, in whose accuracy and judgement I willingly confide, has considered it as the inner *lamina* of the *uterus*, cast off, like the *exuviæ* of some animals, after every conception, and has, from this circumstance, called it the *decidua;* and from the manner of its passing over the *ovum*, the *decidua reflexa*. (Anatomia Uteri Humani Gravidi Tab. Illustr.—Gul. Hunter.) It is, however, unnecessary to debate upon the manner in which this membrane is formed; all writers upon this subject agreeing that its formation is contemporary with conception, and that it precedes the time when the impregnated *ovum* passes from the *ovarium* into the *uterus*, as is found in the case of an extra-uterine *fœtus*. It may, therefore, be deemed an indispensably requisite preparation of the *uterus*, for the reception of the *ovum*, and the substance by which this is afterwards connected to the *uterus;* so that if it were to receive a name from its use, it would not be improper to call it the connecting membrane of the *ovum* *.

* Of the formation of this membrane Harvey has given the following very curious account.—Per mediam utriusque cornu atque etiam uteri cavitatem,

SECTION VI.

The contents of the human gravid *uterus* are comprised under the general term *ovum*, or conception, of which the component parts are, the *fœtus*, the *funis umbilicalis*, the *placenta*, the membranes, and the waters. Of these it is reasonable to think, that the *fœtus* is the only part immediately formed in consequence of the act of coition, and that the rest are previous or subsequent productions of the *ovarium* or *uterus*.

It has been thought that some of the parts of the *fœtus* were formed before the rest, and much labour hath been bestowed in ascertaining the order of their formation*. But as the skin of the smallest *embryo* which can be examined is perfect, it may be presumed, that what has been called addition or coaptation of parts, is, in fact, nothing more than the expansion or unfolding of parts already formed. Of this we have a curious example in the descent of the testicles into the *scrotum*, which happens only a few weeks before the birth of the child, though their prior existence in the *abdomen* is not to be doubted. This opinion is likewise illustrated by the seeds of plants, which must contain all the primordial parts of the plants, when they are first deposited in the ground, from which they can draw only the means of nourishment and increase.

Much industry hath likewise been used to determine the weight, length, and dimensions of the *fœtus*, at different periods of utero-gestation. The utility of this inquiry, if the truth be discovered, does not appear. But as children born of different parents, or those born of the same parents, at the same or different births, vary at all periods of pregnancy, it is reasonable to believe, that there is an original difference in their size and in other respects. Many of the varieties may also depend upon the state of the health either of the parent or child before its birth, so that it seems impossible to bring this matter to a fair conclusion.

During the continuance of the *fœtus* in the *uterus*, its internal structure is in many respects different from that of a child which has breathed; and the external figure of a child is very unlike that of an adult, in the proportions which the various parts bear to each other. Of those peculiarities, which give a disposition to particular diseases, we shall speak in another place.

From the time when the *fœtus* is completely formed the head is

mucosa quædam filamenta, tamquam aranearum telæ, ab ultimo sive superiore cornuum angulo ducuntur; quæ simul juncta membranosam ac mucilaginosam tunicam, sive manticam vacuam referunt.—*Harv.* Exercitatio sexagesima nona.

* Embryones dicendi sunt, quando membra non sunt absoluta.—*Ruysch.*

large, if compared with the body and extremities; and the younger the *fœtus* is, the greater is the disproportion. The superior weight of the head is supposed to be the cause of its general presentation at the time of birth; but there must be some other reason; for the same presentation is equally common in quadrupeds, in which the extraordinary weight of the head, if it existed, could not produce this effect.

The principal circumstances in which the *fœtus* and adult vary, are in the vascular system. In the heart of the former a communication is preserved between the right and left auricle, by an opening called the *foramen ovale,* which closes soon after birth. But a valve prevents the return of the blood from the left to the right auricle*. There is also a communicating artery between the pulmonary artery and the *aorta,* which is called the *canalis arteriosus,* and may be esteemed a branch of the pulmonary artery. This branch, which diverts immediately to the *aorta* a large portion of that blood which circulates in the lungs when the child has breathed, closes likewise soon after birth. In amphibious animals, the *foramen ovale,* and *canalis arteriosus,* are said to remain open during life.

The liver in the *fœtus* is very large, nearly filling up both the *hypochrondria,* and it has vessels peculiar to that state: first, the *vena umbilicalis,* which arises from the *placenta,* and, running through the *funis,* enters the *abdomen* of the child, and passes to the liver, which it penetrates on the inferior edge, terminating in the *sinus* of the *vena portarum.* This likewise closes soon after birth, and, with the assistance of the *peritonæum,* becomes a ligament called the falciform. Secondly, the *canalis venosus,* which, proceeding from the *sinus* of the *vena portarum,* passes across the liver to the hepatic vein, and thence to the *vena cava.* The *canalis venosus* is smaller than the *vena umbilicalis,* and only carries a portion of the blood brought by the latter to the liver.

The internal iliac arteries are very large in the *fœtus* in proportion to the external. From these, two branches arise, which, running on each side of the bladder and the sides of the *abdomen,* pass out of the navel of the *fœtus,* and form the two arteries of the *funis,* which, closing soon after birth, become impervious, as far as to the bladder.

These peculiarities in the vascular system of the *fœtus* are provided, to allow of that mode of circulation of the blood, which is calculated for the life which it possesseth during its residence in the *uterus.* When the blood is brought by the *vena cava* into the right

* See *Medical Transactions,* Vol. III. in which the imperfections in the construction of the heart, with their consequences, are very accurately described.

auricle of the heart, part of it passes by the *foramen ovale* into the left, and of course a smaller portion into the right ventricle. When the blood, thus diminished, is propelled by the action of the heart from the right ventricle into the pulmonary artery, a further portion of it is conducted by the *canalis arteriosus* directly to the *aorta*. It has been conjectured, that about the fourth part of the blood which circulates through the lungs of a child which breathes, passed through them while it remained *in utero*.

The two branches of the internal iliacs, which afford the arteries of the *funis*, conduct a great portion of that blood, which flows through the *aorta*, by the *funis* to the *placenta*; but when the child is born, that blood, which circulated through them, passes by the external iliacs to the inferior extremities, which therefore increase more speedily after birth than any other part.

The blood brought by the vein of the *funis* from the *placenta* is carried to the *sinus* of the *vena portarum*, from which it proceeds to the hepatic vein, and then to the *vena cava*.

The *thorax* is flatter and narrower in the *fœtus*, than in a child which has breathed, because it has not been expanded by the inflation of the lungs, which are then of a more compact and firm texture. This state of the lungs, which renders them heavier than water, is esteemed a proof that the child has not breathed; but when the lungs are found to be lighter than water, which is discovered by their floating on the surface when put into that fluid, it is supposed to be an equally strong proof that the child had breathed. These circumstances of the lungs were formerly produced in evidence in courts of judicature, and inferences of the utmost importance to the acquittal or condemnation of a presumed innocent or guilty person have been made from them. But it is well known, that the lungs of a child which has lived many months, or even of an adult, may be rendered heavier than water by disease; and the lungs of a child which has never breathed will become lighter than water by putrefaction; or if they have been inflated artificially, with the view of recovering a child born apparently dead. It is also to be observed, that some children just born will breathe two or three times, and then die, though every care be taken, and all proper means used for their recovery; yet the lungs will become lighter than water by this respiration, though of such short continuance. The appearance and state of the lungs may be altered by so many circumstances, that a judicious or an honest man would hesitate to put confidence in any opinion, which they have been supposed to prove; and accordingly juries are now, and have long been, directed to pay little regard to this kind of evidence. But when the murder of an infant by its mother can be clearly and positively proved, it deserves to be seriously

considered, on what principle extraordinary lenity ought to be shewn to one, who, in the first instance, breaking through the strongest ties and restraints of human society, afterward commits an irretrievable injury by the destruction of an innocent and helpless child, with the most powerful claims of nature to her protection and love, merely for the preservation of her own character.

This crime of destroying, or omitting the necessary means for preserving the lives of infants, formerly admitted only of capital punishment or acquittal by our laws. But lately Lord Chief Justice *Ellenborough* has with great humanity and distinguished knowledge, procured an act of the Legislature, in which neglect to make provision for the expected infant is made liable to punishment, which is in these cases allowed to be modified by the Judge, and many evils, both moral and political, may be thereby prevented, or, according to the degree of criminality, be corrected.

SECTION VII.

THE *funis umbilicalis* is that cord, which, passing from the *abdomen* of the child to the *placenta*, maintains the communication between the *fœtus* and *placenta*. In quadrupeds, the *funis* consists of two arteries and two veins, but in the human species it is composed of two arteries and one vein, the space between which is filled up with a gelatinous *mucus* contained in cells, which prevents any obstruction to the circulation of the blood from accidental compression, or even when a knot is casually made in it by the irregular changes of the position of the child. The *funis* is covered by the *amnion* or inner membrane of the *ovum*, and the vein is of a sufficient size to reconduct to the *fœtus* the whole or an equal quantity of blood, to that which is conveyed by the two arteries from it to the *placenta*. The arteries very often twist round the vein in a very curious and beautiful manner; sometimes they run in a parallel line with the vein; and in some instances the arteries are contorted in such a manner as to make, upon the *funis*, one or more large tumours, or bunches, resembling excrescences.

When the *embryo* can first be perceived, it is found adhering to what afterwards becomes the *placenta*, by a close connexion of the *abdomen*. In a short time the uniting part is elongated into a flat and then a conical form, and soon becomes a regular umbilical cord, the length and thickness of which are generally in proportion to the size of the *fœtus*; though every part of the *ovum* is larger according to the size of the *fœtus* in early than advanced pregnancy, when the proportions are inverted. The *funis* seems to be a production of the *placenta*; for, immediately after the birth of the child, there is a

line which distinguishes the fœtal part, where the spontaneous separation is afterwards made.

In the thickness of the *funis*, which depends upon the quantity of *mucus* contained in the cells more than upon the size of the vessels, there is much variety in different subjects; and in its length, it being in some not more than one foot, and in others exceeding three, four, or even six feet; but it is most frequently about two feet in length. It is thickest near the *abdomen* of the child, and gradually becomes more slender as it approaches to the *placenta*, into which it is usually inserted about one third from the edge. But there is much difference in this respect also, and in some instances the blood-vessels ramify before they reach the *placenta*, and when this happens it may occasion a difficulty in the extraction, or a separation of the *funis*, even when little force is exerted.

SECTION VIII.

The *placenta* is a circular, flat, vascular, and apparently fleshy substance, about six inches in its diameter, varying in different subjects *, and extending over about one fourth part of the shell or outside of the *ovum*. It is more than one inch in thickness in the middle, and becomes gradually thinner towards the circumference, from which the membranes are continued. The *placenta* is the principal medium by which the communication between the parent and child is preserved; but, though all have allowed the importance of the office which it performs, there has been a variety of opinions on the nature of that office, and of the manner in which it is executed.

That surface of the *placenta*, which is attached to the *uterus* by the intervention of the connecting membrane, is lobulated and convex; but the other, which is covered with the *amnion* and *chorion*, is concave and smooth, except the little eminences made by the blood-vessels. It is seldom found attached to the same part of the *uterus* in two successive births; and, though it most frequently adheres to the anterior part, it is occasionally fixed to any other, even to the *os uteri*; in which state it may become a cause of a dangerous hemorrhage at the time of parturition.

The *placenta* is composed of arteries and veins, with a mixture of pulpy or cellular substance †. Of these there are two orders, very curiously interwoven with each other. The first is a continuation of those from the *funis*, which ramify on the internal surface of the *placenta*, the arteries running over the veins, which is a circumstance

* In quibusdam placenta reperitur crassior, amplior, et sanguine abundantior. —*Harv.*

† Placentæ substantia non constat glandulis, sed mire vasculosa est.—*Ruysch.*

peculiar to the *placenta ;* and then sinking into its substance, anastomose and divide into innumerable small branches. The second order proceeds from the *uterus ;* and these ramify in a similar manner with those from the *funis,* as appears when a *placenta* is injected from the vessels of the *funis,* and from those of the parent. The veins in their ramifications accompany the arteries as in other parts.

There have been many different opinions with respect to the manner in which the blood circulates between the parent and child during its continuance in the *uterus.* For a long time it was believed, that the intercourse between them was uninterrupted ; and that the blood propelled by the powers of the parent pervaded, by a continuance of the same force, the vascular system of the *fœtus.* But many unsuccessful attempts having been made to inject the whole *placenta, funis,* and *fœtus,* from the vessels of the parent, or any part of the *uterus* from the vessels of the *funis,* it is now generally allowed, that the two systems of vessels in the *placenta,* one of which may be called maternal, the other fœtal, are distinct. It is also admitted, that the blood of the *fœtus* is, with regard to its formation, increase, and circulation, unconnected with, and totally independent of, the parent ; except that the matter by which the blood of the *fœtus* is formed must be derived from the parent *.

It is thought that the blood, which has probably undergone some preparatory changes in its passage through the *uterus,* is conducted by the uterine or maternal arteries of the *placenta,* to some cells or small cavities in which it is deposited ; and that some part of it, or something secreted from it, is absorbed by the fœtal veins of the *placenta,* and by them conveyed to the *fœtus* for its nutriment. When the blood which circulates in the *fœtus* requires any alteration in its qualities, or when it has gone through the course of the circulation, it is carried by the arteries of the *funis* to the *placenta,* in the cells of which it is deposited, and then absorbed by the maternal veins of the *placenta,* and conducted to the *uterus,* whence it may enter the common circulation of the parent. Thus it appears, according to the opinion of Harvey, that the *placenta* performs the office of a gland, conveying air, or secreting the nutritious juices from the blood, brought from the parent by the arteries of the *uterus,* and carried to the *fœtus* by the veins of the *funis* in a manner, probably not unlike to that in which milk is secreted and absorbed from the breasts †.

* Abunde me demonstraturum arbitror, viviparorum quoque fœtum, dum adhuc in utero continetur, non matris sanguine nutriri, spirituque ejus vegetari, sed animo viribusque suis frui, ut pullus in ovo solet, proprioque sanguine gaudere.—*Harv.* Exercitat. xxxiv.

† See a more particular account of the structure of the *placenta,* in Mr. Hunter's Observations on the Animal Œconomy.

The veins of the *placenta* are mentioned as the absorbents, because no lymphatic vessels have yet been found in the *placenta* or *funis;* nor are there any nerves in these parts; so that the only communication hitherto discovered between the parent and child, is by the sanguineous system.

The proofs of the manner in which the blood circulates between the parent and child are chiefly drawn from observations made upon the *funis.* When it was supposed that the child was supplied with blood in a direct stream from the parent, it was asserted that, on the division of the *funis,* if that part next to the *placenta* was not secured by a ligature, the parent would be brought into extreme danger, by the hemorrhage which must necessarily follow. But this opinion, which laid the foundation of several peculiarities in the management of the *funis* and *placenta,* is proved not to be true. For if the *funis* be compressed immediately after the birth of the child, and whilst the circulation in it is going on, the arteries between the part compressed and the child throb violently, but those between the compression and the *placenta* have no pulsation; but the vein between the part compressed and the *placenta* swells, and that part next to the *fœtus* becomes flaccid. But, if under the same circumstances, the *funis* be divided, and that part next the child be not secured, the child would be in danger of losing its life by the hemorrhage, yet the mother would suffer no inconvenience if the other part was neglected. It is moreover proved, that a woman may die of an hemorrhage occasioned by a separation of the *placenta,* and the child be nevertheless speedily born, after her death, in perfect health. But, if the *placenta* be injured, without separation, either by the rupture of the vessels which pass upon its inner surface, or in any other way, the child, being deprived of its proper blood, would perish, yet the parent might escape without injury.

SECTION IX.

By the *placenta* and membranes which are expanded from its edge, a complete *involucrum* of the *fœtus* and waters is made. They form at the same time a lining to the *uterus;* and, when expelled after the child is born, go under the common term of after-birth, or *secundines.*

In the description of the membranes of the *ovum,* given by different writers, there is great dissimilarity; and it appears, that much of that confusion which became the ground of controversy, arose from the ambiguity of the terms used, and from the examination of the *ova* at different periods of pregnancy; so that every description might have been just, though no two representations had been the

same. They have usually been mentioned as two, the *amnion* * and the *chorion* †; and the latter has again been divided into the true and the false. This third membrane, which from its appearance has likewise been called the villous or spongy ‡, and from the consideration of it as the inner *lamina* of the *uterus* cast off, as was before observed, like the *exuviæ* of some animals, the *decidua*, has been described by Harvey not as one of the membranes of the *ovum*, but as a production of the *uterus*. How far a very accurate account of the constituent parts of the *ovum*, with all the changes they undergo, may be wanted for the perfection of natural history, I cannot pretend to decide; but in the practice of midwifery it doth not appear necessary.

It is however requisite, that we should have a competent knowledge of the membranes of the *ovum* at the full period of utero-gestation, and the following explanation seems to be sufficient. There is, first, the outer, or connecting membrane, which is flocculent, spongy, and extremely vascular, completely investing the whole *ovum*, and lining the *uterus*; secondly, the middle membrane, which is nearly pellucid, with a very few small blood vessels scattered over it, and which forms a covering to the *placenta* and *funis*, but does not pass between the *placenta* and *uterus*; thirdly, the inner membrane, which is transparent, of a firmer texture than the others, and lines the whole *ovum*, making, like the middle membrane, a covering for the *placenta* and *funis*. With the two last the *ovum* is clothed when it passes from the *ovarium* into the *uterus*, where the first is provided for its reception. These membranes, in the advanced state of pregnancy, cohere slightly to each other §, though in some *ova* there is a considerable quantity of fluid collected between them, which, being discharged when one of the outer membranes is broken, forms one of the circumstances which have been distinguished by the name of *by*, or false waters.

Between the middle and inner membrane, upon or near the *funis*, there is a small, flat and oblong body, which, in the early part of pregnancy, seems to be a vesicle containing milky lymph, which afterwards becomes of a firm and apparently fatty texture. This is called the *vesicula umbilicalis*, but its use is not known.

* Quod fœtum amiciat et obvolvat. *Harv.*

† A venarum copia sive choro nomen obtinuit. *Idem.*

‡ Mihi liceat nominare membranam placentæ, villosam. *Ruysch.* Thes. Anatom. vi. 41.

§ Amnios et chorion sibi invicem leviter cohærent. *Ruysch.*

SECTION X.

All that fluid which is contained in the *ovum*, is called by the general name of the waters, or the waters of the *amnion* or *ovum*. The quantity, in proportion to the size of the different parts of the *ovum*, is greatest by far in early pregnancy. At the time of parturition, in some cases, it amounts to, or exceeds, four pints, and in others it is scarcely equal to as many ounces. It is usually in the largest quantity when the child has been some time dead, or is born in a weakly state.

This fluid is generally transparent, often milky, and sometimes of a yellow or light brown colour, and very different in consistence; and these alterations seem to depend upon the state of the constitution of the parent. It does not coagulate with heat like the serum of the blood; and, chemically examined, it is found to be composed of phlegm, earthy matter, and sea salt, in different proportions in different subjects, by which the varieties in its appearance and consistence are produced. It has been supposed to be excrementitious, but it is generally thought to be secreted from the internal surface of the *ovum*, and circulatory as in other cavities.

It was formerly imagined that the *fœtus* was nourished by this fluid, of which it was said to swallow some part frequently; and it was then asserted that the qualities of the fluid were adapted for its nourishment. But there have been many examples of children born without any passage to the stomach; and a few, of children in which the head was wanting, and which have nevertheless arrived at the full size. These cases fully prove, that this opinion is not just, and that there must be some other medium by which the child is nourished besides the waters. The incontrovertible uses of this fluid are to serve the purpose of affording a soft bed for the residence of the *fœtus*, to which it allows free motion, and prevents any external injury during pregnancy: and, enclosed in the membranes, it procures the most gentle, yet efficacious dilatation of the *os uteri* and soft parts at the time of parturition.

Instances have been recorded, in which the waters of the *ovum* are said to have been voided so early as in the sixth month of pregnancy, without prejudice either to the child or parent. The truth of these reports seems to be doubtful, because when the membranes are intentionally broken, the action of the *uterus* never fails to come on, when all the water is evacuated. A few cases have occurred to me in practice, which might have been construed to be of this kind; for there was a daily or frequent discharge of some colourless fluid from the *vagina* for several months before delivery; but there being no diminution of the size of the *abdomen* and the waters being regu-

larly discharged at the time of labour, it was judged that some lymphatic vessel near the *os uteri* was occasionally ruptured, and did not perfectly close again till the patient was delivered; yet without any other difference, except that in such cases the labours are usually premature, and the children born of a comparatively small size. I have also met with one case, in which, after the expulsion of the *placenta*, there was no sanguineous discharge, but a profusion of lymph, to the quantity of several pints, in a few hours after delivery; but the patient suffered no inconvenience, except from the surprise.

The diseases of the different parts of the *ovum* will be considered when we speak of the causes of abortion.

SECTION XI.

It hath been observed, that the state of the *uterus* is, in many respects, altered in consequence of impregnation. Besides the derivation of a greater quantity of blood to it and the neighbouring parts, on which the enlargement of the person chiefly depends in the early part of pregnancy, and the formation of the connecting membrane of the *ovum*, it becomes endued with the properties of distension and ascent into the cavity of the *abdomen*.

The *fundus* of the *uterus* is the part first distended, and afterwards the inferior parts in regular order; at length the *cervix* is obliterated, except the mere circle of the *os uteri*, and the *uterus*, which was originally pyriform, becomes nearly or completely oval. The distension is also more considerable on the posterior than the anterior part, which is one cause of the change of position and course of the *fallopian* tubes and ligaments. These, in the unimpregnated state, depart from the corners of the *fundus* of the *uterus* nearly at right angles; but, towards the conclusion of pregnancy, they go off from the fore part near the *cervix*, as was before observed. This distension is evidently not mechanical from the increasing size of the *ovum*, but from the accession of a new principle; for the *uterus* is never fully upon the stretch, like a bladder inflated with air, but relaxed in such a manner as to be apparently capable of bearing the further increase of the *ovum* without inconvenience.

The *uterus* is placed between the bladder and *rectum*, the *os uteri* being generally projected a little backwards, so that the *axis* of the cavity of the *uterus* corresponds with that of the *pelvis*. After conception, the weight of the *uterus* becoming greater, it subsides lower into the *vagina*, the shortness of which is therefore reckoned one of the equivocal signs of pregnancy. But, after a certain time, the *uterus*, though more increased in weight, begins to ascend, which it continues to do till it emerges out of the *pelvis*, acquiring support from the superior and anterior part of the aperture; in which dispo-

sition and state it remains, till the changes previous to labour come on. In the latter part of pregnancy the *vagina* must therefore be elongated, and the effects of the temporary abbreviation and elongation are readily discovered in those pregnant women who have a *procidentia* of the *uterus*, or a tendency to it, in whom the complaint is aggravated in the early, and lessened in the latter part of pregnancy.

In the first pregnancy the *uterus* rises almost directly upwards, because the integuments of the *abdomen* support it forwards; and the distension may be readily perceived on each side, but commonly on one side more than the other, from the position of the child. In subsequent pregnancies the *uterus* projects forwards, the integuments generally yielding with greater or less readiness, according to the number of children which a woman hath before had; but it always lies before the *viscera* of the *abdomen*, which are raised higher, and protruded backwards, in proportion to its ascent and distension.

Through the integuments of the *abdomen* the *uterus* may be felt springing out of the *pelvis*, about the fourth month of pregnancy; in the fifth about the midway betwen the *pubes* and navel; in the sixth as high as the navel; in the seventh half way between the navel and *scrobiculus cordis:* and in the eighth as high as the *scrobiculus cordis;* in the ninth month it usually begins to subside, so that, at the time of parturition, the *fundus* of the *uterus* is not higher in the *abdomen* than in the seventh, if the *uterus* be in a proper disposition to act; but when that is not the case, the *fundus* will be as high as the *scrobiculus cordis*, even when the woman is in labour.

At the time of labour a new principle supersedes those of distension and ascent*. This gives a disposition to the *uterus* to exclude whatever is contained in its cavity, and the effect produced is in proportion to the energy of the principle and the power of the *uterus*. A perfect intelligence of this principle, and of the mode of its operation, would probably be of infinite use in practice, as we might be enabled to suppress the action thereby occasioned when premature, moderate it when too violent, strengthen it when too feeble, and regulate it in a variety of ways conducive to the welfare of our patients. On the knowledge we at present have of the manner in which this principle operates, and the circumstances by which it is influenced, the assistance which science and dexterity can give in cases of difficult parturition, and in preventing abortions, very much depends.

But this expulsatory power, which takes place at the time of parturition, does not seem to be peculiar to the *uterus*, but to proceed from a general principle diffused through the whole body, which

* Expultrix uteri facultas insurgit et excitatur. Fœtus ab utero compressus, propulsatus atque expressus. *Fabr. ab Aquapend.*

acts in a like manner whenever an offended part makes an extraordinary effort to free itself from any offending body; and the mode of its operation is according to the general laws of the animal economy, as is usually the degree according to the difficulty. It is in common observation, that no violent action can be of long duration; and it might therefore be expected, that the efforts made by the *uterus*, for the purpose of expelling the child at the time of birth, would be periodical; and attended with pain, from the distension and pressure which the resisting parts undergo, as we shall have occasion to observe when we speak of natural labours.

It was said, that this expulsatory action was not peculiar to the *uterus*, but a property common to all parts of the body, when the longer continuance of any thing extraneous was likely to become hurtful. Their efforts on such occasions, like those of the *uterus* at the time of labour, are observed to be periodical, and accompanied with pain proportionate to the action and the sensibility of the part. Thus, in the case of a stone in the bladder, what is called a fit of the stone seems to be a consequence of an effort made by the bladder to expel the stone when injured by it; or when a small stone is passing through the ureters from the kidneys to the bladder. In the coacervation of the *fæces* in the *rectum* also, when the common action of the intestines is not sufficient for their expulsion, an extraordinary action is excited periodically, which is attended with pain, returning, like the action, at intervals, and proportioned to it. Perhaps a more apposite illustration of a labour may be taken from stones passing from the gall-bladder to the intestine. These may continue inoffensive in the bladder for a considerable time after their formation; but when an effort is made to exclude them, it is always accompanied with pain, periodical in its returns, and excruciating in its degree, from the sensibility of the parts immediately affected or drawn into consent; the effort continuing till the stone is forced into the intestine, or till the expulsatory powers are wearied, or cease to act, and the gall-stone returns to its primitive situation.

Of the primary causes of this general property we may justly be said to be ignorant, as we are likewise of that of the action of the *uterus* in particular, except from its effects. But the immediate causes appear to be different. First, there is the genuine, or original cause, which produces the action of the *uterus* at a proper time, and in a proper manner; secondly, adventitious causes operating upon the *uterus*, and producing that action to which it is disposed, at an improper time, and in an irregular manner; thirdly, sympathetic causes, when a disturbance originates in some part connected with or consenting with the *uterus*, and is transferred or spreads to the *uterus* from the part first affected.

We may search for the original or genuine cause of the action of the *uterus* in its structure, form, or qualities, or some peculiar, though inexplicable impression made upon it by the child at the full period of utero-gestation. The manner in which the effects are produced is much influenced also by the circumstances of the constitution, as its strength and disposition to act; and it appears, that the blood is of much importance in this respect; for, in hemorrhages, though there be a disposition in the *uterus* to act, there is no power of action; and in other cases, when there is apparently no want of strength, the disposition to act is wanting.

The action of the *uterus* is totally independent of the will, and therefore often comes on during sleep, having produced its effect before the patient is awake. But, if the whole frame be disturbed by any violent emotion of the mind, the action of the *uterus* may be induced, obstructed, or suppressed. The progress of a labour is therefore often retarded by such passions as depress the spirits; as, on the contrary, it is accelerated by cheerfulness, by resolution, and a certain preparation of the mind for enduring pain and fatigue.

Opinions were formerly much divided with respect to the state of the *uterus* during pregnancy; but it was generally imagined to become thinner in proportion to its distension. Later observations, however, have proved, that, if healthy, it retains its thickness through the whole period, to whatever degree it may be distended. By this thickness, which is the medium of its strength, the human *uterus* is capable of exerting infinitely greater power for the expulsion of its contents, than that of any animal. Had there been a necessity for an equal degree of force, animals would have failed to perform the office of parturition, because there is not the same medium by which that force could have been exerted. As greater proportionate force is therefore required and exerted in human parturition, than in that of animals, there must of necessity be a greater degree of pain, even if we allow them to have an equal degree of sensibility. But of comparative parturition we have yet a very imperfect knowledge.

The adventitious causes of the action of the *uterus*, which are numerous, may arise from the general state of the body, as a fever; or the particular state of the *uterus*, as a disease of the part itself; or some extraneous irritation of the *os uteri*, between which and the *uterus* there seems to be a consent similar to that between the *cardia* and the stomach. This was known to the ancients, who occasionally introduced irritating substances into the *vagina*, for the purpose of facilitating or accelerating the birth of the child. But with regard to adventitious causes of every kind, it appears that their effect continues only so long as they are applied, and the action of the *uterus* produced by them is less perfect, than when it arises from the ge-

nuine cause. Thus, if the premature action of the *uterus* be brought on by irritation of the *os uteri*, it proceeds only during the continuance of the irritation, unless it be urged till the natural cause of the action of the *uterus* should supervene. Hence the observation was made, that if the *os uteri* has been untimely dilated by any improper management, or any other cause, it will close again, and the woman often go on to her full time, if she be kept in a quiet state *.

The sympathetic causes of the action of the *uterus* may arise from the disturbance of any part, with which the *uterus* is connected or disposed to consent, as is the case with all the contents of the *abdomen*, especially with the lower part of the intestinal canal and the bladder, as in a *tenesmus* or strangury. On the removal of these, the action of the *uterus* caused by them will presently cease; but if the disturbance be violent, and of long continuance, the *uterus*, though the original cause be wanting, may assume that action, to which, by its structure, it is disposed, at any period of pregnancy; and the exclusion of its contents will of course follow.

From adventitious and sympathetic causes, the action of the *uterus* is often produced prematurely, at the latter part of pregnancy, and from the want of a just distinction they may be encouraged, to the great detriment of the patient. In such cases, the action of the *uterus* may go on during the continuance of the cause, or it may become regular, proceeding after the cause is removed, or it may cease entirely on the removal of the cause. Of all these there are frequent instances in practice: and seeing there is such variety in the causes of the action of the *uterus*, it is not surprising that there should be such difference in the effect produced, and so many deviations from the ordinary course of labours.

All the difficulties attending parturition may be reduced to two kinds; first, those which arise from the imperfect action of the *uterus;* secondly, those which are occasioned by the resistance made to that action when duly exerted. The regulation of, or best methods of assisting that action or power, when defective, and the removal of the impediments to its effects, constitute the chief objects in the practice of midwifery.

* See *Chapman's* Treatise on Midwifery, Chap. V. Case I.

CHAPTER VII.

ON THE SIGNS AND DISEASES OF PREGNANCY.

SECTION I.

Conception is succeeded by many important changes in the constitution, and usually by affections of various parts, which, in the beginning of pregnancy, are merely considered as *signs* that a woman hath conceived. In the more advanced state, the same or similar changes and affections increased in degree, together with some supervenient ones, have been termed the *diseases of pregnancy.* Yet, in either state, these evidently do not depend upon pregnancy as a specific cause, being often occasioned by irritation or disturbance of the *uterus* from other causes, especially during the act of menstruation. Nor do they commence with conception, and continue to the time of parturition; but are, in general, most frequent, and most troublesome also, soon after conception, or in the early part of pregnancy, gradually abating, and often wholly disappearing, as the patient advances in her pregnancy. The signs of conception must therefore be very ambiguous and uncertain; though from the common occurrence of the case, and the particular attention which is paid, a faculty of discriminating them is acquired, which generally prevents error.

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. The state of pregnancy is then an altered, but cannot with propriety be called a morbid state. But if the term *disease* be used on this occasion, with the intention of giving a more intelligible explanation of the temporary complaints to which women are then liable, or to denote their irregularity, or an excessive degree of them, it may be retained. With this view, the diseases of pregnancy may be divided into two classes; in the first of which will be included all those which occur in the early, and in the second, those in the latter part of pregnancy. The time of *quickening* may constitute the line of distinction between them, and we shall thus be led to the most useful method of proceeding, that of observing the complaints in the order in which they arise.

It appears that every part of a living body has two principles, or

performs two offices; one of which regards its own distinct preservation and ease; the other, by which each part contributes to and partakes of the harmony or disorder of the whole frame. The degree of disposition and ability to perform these offices, and the manner in which they are performed, vary in different parts, and for peculiar purposes; but it may be presumed, that they both potentially exist in every part, though not at all times actually exerted, as in the case of convulsions from an injury o some minute part. When these offices are executed in a manner and degree necessary for, and consistent with, the common purposes of *being*, they are called natural; but when they are irregular or excessive in their manner or degree, or are excited on extraordinary occasions, though the existence of the occasion may render them needful or unavoidable, they are not improperly termed violent or morbid. The disposition to act is called irritability, and the action, when produced, irritation. Irritation is described to be of two kinds. It may be confined to the part in which the cause exists, or it may be transferred and extended to some distinct or distant part. The first is called simple irritation, and the latter sympathy, or irritation by consent. Sympathy *, or irritation by consent, has again been distinguished into two kinds, primary or direct, as between the *uterus* and stomach; and secondary or intermediate, as between the *uterus* and the brain, by the intervention of the stomach. The modes of this consent between distinct and distant parts have been variously explained, and assigned to many different causes †: but with the propriety of the explanations, or the ingenuity of theories, we are not, on the present occasion, concerned.

The truth of no observation in medicine has been more generally acknowledged than that of the extreme irritability of the *uterus*, and of the propensity which the whole body has to be affected or disturbed by its influence ‡. Some parts are nevertheless more disposed to this influence than others, some by direct consent, and

* Distinguitur irritabilitas in primariam seu directam, et secundariam seu per consensum.—*Glisson, Tractat. de Ventric. et Intestin.*

† Quinque adminicula, quibus una pars alterius affectum sua naturali perceptione eousque cognoscat, ut eidem compatiatur, proposuero. Primum est immediata continuitas, præsertim fibrarum et tunicarum partium; secundum, nervorum a communi stipite derivatio; tertium, influxus per arterias mutatus; quartum, reductio per venas præpedita aut diminuta; quintum, contactus vel alia idonea vicinitas, qua una pars in aliam agat.—*Idem.*

Glisson, who was physician to queen Elizabeth, has a right to be esteemed the father of the doctrine of irritability. He often seems to use the word *perception* for irritability, and the word irritability for sympathy, or disposition to consent.

‡ Est enim uterus pars principalis, quæ totum corpus facile in consensum trahit.—*Harv. Exercitat. de Partu.*

some by the interposition of other parts. Those affections which occur most frequently during, or in consequence of pregnancy, it is necessary that we should understand, that we may be able to form a competent judgement of the subject; and for this purpose the following account will be sufficient either in the way of illustration or example.

Between the *uterus* and the breasts the consent is so intimate and constant, that it is scarcely possible for them to be affected separately. The enlargement of, and shooting pains in the breasts, are therefore not improperly enumerated among the symptoms of pregnancy; though they are also observed to occur at the time of the final cessation of the *menses*, when these are casually obstructed, and in some women in a slight degree at each period of menstruation.

The *areola*, or brown circle round the nipples, has been represented as an indubitable mark of pregnancy. This is not however suspected to be a primary consequence of a particular affection of the *uterus*, but of the preceding enlargement and alteration of the breasts: and, though it generally occurs in pregnancy, it may be produced by any cause capable of giving to the breasts a state resembling that which they are in at the time of pregnancy, of which it can only be esteemed a doubtful sign. The *areola* is therefore found in many of the complaints which resemble pregnancy, and though generally, not universally, I think, in pregnant women. Equally or more uncertain, for the same reason, is uneasiness in the region of the *uterus*, and about the navel, though frequently attendant upon pregnancy; yet the latter, as far as I know, is a symptom peculiar to affections of the *uterus*. The navel also according to the progress of pregnancy, is constantly emerging till it comes to an even surface with the integuments of the *abdomen*; and to this circumstance much regard is to be paid in cases of doubtful pregnancy.

There are few diseases of much importance in any part of the body in which the stomach is not affected; but the consent between this and the *uterus* is peculiarly frequent, and often violent. It is not therefore surprising, that the stomach during pregnancy should so generally be disturbed with *nausea*, vomiting, heartburn, loss of appetite, and indigestion; or that such complaints should, under certain circumstances, have been considered as symptoms of pregnancy.

In consequence of these affections of the stomach, and perhaps by direct consent with the *uterus*, any part of the intestinal canal may be disturbed during pregnancy; but the particular part may be casual, and the manner will depend upon some peculiarity in the constitution of different women, as the same cause may produce very different or contrary effects. Some women, who are at all other times constipated, have a *diarrhœa* at each period of menstruation; and

those who are at other times subject to a *diarrhœa* then become unusually costive; and similar changes often take place when women are pregnant.

The whole habit of the body may be disturbed by a certain state of the *uterus*, and yet no individual part be peculiarly affected. Hence, at the time of pregnancy, there frequently occurs a feverish disposition, with debility, emaciation, and many symptoms common to hectic fevers; by which the countenance becomes altered, the eyes appear larger, the mouth wider, and a sharpness is given to every feature. In consequence also of this general and perpetual irritation, the temper of pregnant women is sometimes rendered less gentle and patient than is consistent with their usual character, and this claims compassion instead of resentment.

The consent between the *uterus* and stomach seems to be of that kind which has been called primary or direct; but affections of the brain, heart, and lungs, appear to be secondary, or by the intervention of the stomach. Pain and giddiness of the head, dimness of the sight, sleepiness, convulsions, palsy, palpitation of the heart, and peripneumonic complaints, though they sometimes occur during pregnancy, are less frequent than such as are produced by the direct consent of any part with the *uterus*.

There are also many instances of affections of the *uterus* from its consent with other parts. A strangury, or *tenesmus*, may occasion a similar affection of the *os uteri*; and if it were to continue, a premature expulsion of the *fœtus*. Pain in the stomach or bowels, or of any part contiguous to the *uterus*, or with which it is prone to consent, may disturb it; and if extremely violent, or of long continuance, may produce the same effect. From these it appears, that, when an abortion is apprehended, there is not only occasion to attend to and moderate those circumstances which may arise from original affections of the *uterus*, but those also, which may be produced in some other part, and extend to the *uterus*.

From these observations it will not be inferred, that every complaint, which happens to pregnant women, is to be attributed to uterine irritation. For some appear to be caused mechanically by the pressure of the enlarged *uterus*, and all of them to be aggravated by the erect position of the body. The distinction which was made will nevertheless be equally proper; for, before the time of *quickening*, the complaints are generally owing to an increased irritability of the constitution, or to the admission of a new cause of irritation into the habit, and afterwards to the enlargement of the *uterus*. But, without a very strict adherence to any general distinction, we will recollect, that a small degree of enlargement of the *uterus*, with its consequent irritability, may become the cause of disease in early pregnancy;

and that such a degree of irritability may arise or continue towards the conclusion, as may create symptoms like those which might be peculiarly expected at the commencement.

SECTION II.

By the term *quickening* is understood the first sensation, which the mother has of the motion of the child which she has conceived. This happens at different periods of pregnancy from the tenth to the twenty-fifth week, but most commonly about the sixteenth after conception; yet the motion of the child is in some women so obscure, or such little attention is paid to it, that it is not perceived or regarded, and in others so indistinct as to be confounded with various other sensations. In cases therefore of supposed, but mistaken pregnancy, women often fancy that they feel the motion of a child; or, if the child has died *in utero*, when there is, after birth, the fullest proof that it must have ceased to move for a long time.

It is not unusual for women to have a few drops of blood discharged from the *vagina* at the time of quickening without any inconvenience; but the symptoms which attend are generally such as are occasioned by surprise or agitation from any other cause, as fainting or some hysteric affection. These being of short duration require no other means of relief than exposition to the open air, a glass of cold water, or some light cordial, and a short confinement to a horizontal position.

The changes which follow quickening have been attributed to various causes. By some it has been conjectured, that the child then acquired a new mode of existence; or that it was arrived to such a size as to be able to dispense with the menstruous blood, before retained in the constitution of the parent, which it disturbed by its quantity or malignity. But it is not now suspected, that there is any difference between the aboriginal life of the child, and that which it possesses at any period of pregnancy, though there may be an alteration in the proofs of its existence, by the enlargement of its size, and the acquisition of greater strength. It was before observed, that the notion of some pernicious influence from the retained *menses* seemed to have been admitted without foundation. Others have believed, that the changes ought to be assigned merely to the enlargement of the *uterus*, increased by the growth of the *ovum* to such a size, that it was supported above the brim of the *pelvis*; by which means all the inconveniences, which arose from the dragging or subsidence of the *uterus* in the *vagina*, were removed: and this seems to be the true reason. Because, in morbid enlargements of the *uterus*, not of a scirrhous or cancerous nature, there is an abatement of the symp-

toms, when they become of a certain size; which circumstance has often rendered patients an easy prey to empirics, who have availed themselves of the impressions made by the casual and temporary relief as the critical moment for imposition. But though this explanation may not be satisfactory, the changes are very important and certain; for whatever complaints women before suffered, in general after the time of quickening they decline or are wholly removed.

SECTION III.

A SUPPRESSION of the *menses* is one of the never failing consequences of conception, at least I have not met with a single instance of any woman continuing to menstruate when she was pregnant; though I know, that popular opinion is against the assertion, and that exceptions to it are frequently mentioned by men of science. What gratification the human mind is capable of receiving by the affectation of singularities of constitution, which do not depend upon our will or power, and from which neither reputation nor advantage can be derived, philosophers may determine. But it is well known, that in practice there is great occasion to be circumspect; for, either from the misrepresentation of patients, or the credulity or vanity of writers, many medical works are filled with the most useless and improbable histories, defective in the essential article of all records, truth; and this charge hath been made in the most pointed terms against many writers on the subject of midwifery. (*Plena erroribus fabulisque. Ruysch.*) Some who have said that women might menstruate during pregnancy, have supposed the discharge to be made from the vessels of the *vagina* or neighbouring parts; or they have considered every eruption of blood from the *uterus* as a regular menstruous discharge. But if menstruation, according to the definition already given, had continued in pregnancy, it is scarcely possible, but that abortion must often have followed, as a part of the *ovum* would necessarily have been detached from the *uterus* at every period; unless we conclude that by some subsequent process, their connexion had been occasionally re-established. As therefore, in cases in which pregnancy can be suspected, we have, in the suppression of the *menses*, the best proof of its existence, aad in their continuance, of the contrary; it will be wiser to leave the business to be determined by time, or to place our confidence in, and to form our judgement by this circumstance, as least liable to error; rather than to involve ourselves in doubt, by searching after equivocal appearances, which, deserting this circumstance, cannot lead to any satisfactory conclusion. But though it may be laid down as a general principle, that, when women continue to menstruate, they are not pregnant, it will not fol-

low, that in every case of the suppression of the *menses* women are certainly pregnant, though pregnancy is always to be suspected; as I have known many instances of young married women who have ceased to menstruate for several months, independently of any disease, when they were not with child.

SECTION IV.

All the complaints attending pregnancy, and perhaps the state of pregnancy, are accompanied with a febrile disposition or increase of heat, which, when duly regulated, is probably intended to answer some important purpose to the child. This seems to be proved by the blood of pregnant women, which, independently of disease, is always found to have what is called a sizy appearance, though of a peculiar kind, and evidently very different from that which is observed in cases of inflammation, and which may be considered as a consequence of some new and specific action. But if any inflammatory disease should occur in pregnancy, then the blood loses its pregnant appearance as it may be termed, and assumes that of the disease. An extreme degree of those symptoms which appertain to pregnancy may also produce the true inflammatory appearance of the blood. From this state of the blood, and from the relief which bleeding almost universally affords in the urgent complaints of pregnant women, even in constitutions which at other times do not well bear that evacuation, occasion hath been taken to attribute all the consequences of pregnancy to a *plethora*, of which the retained *menses* were thought to be the cause. But if it be true, that pregnant women have such feverish disposition, we have no reason to be solicitous about the investigation of the cause, as, by bleeding at proper times, in quantities suited to the constitution and indications, both the effects of uterine irritation and *plethora* are generally lessened or removed.

Particular kinds of diet are found to add to this disposition to inflammation, and to increase irritability. Of these the principal is animal food, though it is usually recommended, together with liquids of a cordial and nutritive quality, to women when pregnant, on the presumption that they are then in greater need of such support than at any other time; and because it was thought serviceable to the child. To some constitutions, and under particular circumstances, these may be necessary; but if it be justifiable to draw inferences from the appetites of pregnant women, or if we may judge from the common consequences of such diet, we shall soon be convinced, that it is often improper: for they have generally a dislike to animal food of every kind, and under every form, and if prevailed upon to eat it incautiously, are sensible of much inconvenience. What is improper for

the mother can hardly be supposed beneficial to the child. On the contrary, they usually prefer vegetables, fruit, and every thing cooling, which they eat and drink with avidity, and in which they indulge without prejudice; though in some constitutions a directly contrary method of treatment may be required.

SECTION V.

Pregnant women are not only encouraged to live more luxuriously, but more indolently also, exercise being thought improper, unless towards the conclusion of pregnancy, when it has been supposed to procure a more favourable delivery. Great and continued care may in some cases of pregnancy be absolutely necessary in order to prevent abortion or premature labour, but in general the contrary method of proceeding is the most eligible and proper: for the lower class of women, who are by necessity obliged to follow laborious occupations in the open air, and who are exposed to all the vicissitudes of the weather, not only pass the time of their pregnancy with fewer complaints than the affluent, but have also more easy labours. Much allowance must however be made to former habits of living; but those who are in possession of all the advantages of rank and fortune, which the eyes of inferiors are apt to look at with envy, must use them with the most cautious moderation, or they will suffer for every unreasonable indulgence. By every kind of habitual irregularity the constitution becomes loaded, or the activity of its powers lessened or perverted, and a disposition to disease is often given, or all sense of natural enjoyment is lost. We have been accustomed to consider parturition as a distinct act of the constitution, unconnected with any which precedes or follows; but there would be more utility in considering it as a part only of a process, which begins with conception, and terminates with childbed, or even with lactation. We should then presume, that such as the state of the body is at the time of conception, such will it probably be during pregnancy; and, according to the state in pregnancy, will be that at the time of parturition; and on this again will depend the recovery from childbed, unless there be some peculiar imperfection in the constitution, or some disease not dependent upon that state should supervene. On the due and regular exercise of all the functions and powers of the body, their disposition and ability to act, according to their original frame, must ultimately depend; and such as is their general condition at the time of labour, such will be that of the *uterus*, and of all the parts concerned in parturition, though the health of some women is always improved during pregnancy. But if there has been indulgence in

improper habits, or if exercise has been neglected at all other times, there is little cause to expect advantage from unfit and extraordinary efforts towards the conclusion of pregnancy; as no other end can then be answered by such conduct, but that of disturbing the frame, and bringing on premature labour. In quadrupeds, which apparently suffer little other inconvenience when they are with young, than that which arises from mere increase of bulk, their common pursuits are neglected, the gregarious disposition is suspended, and, if left to their own inclinations, they gradually lessen the exercise they use as they advance in pregnancy.

SECTION VI.

Vomiting is one of the most frequent complaints to which women are liable in the early part of pregnancy, and it sometimes continues to, or returns towards, the conclusion. If it should not be violent, and occur only in the early part of the day, though very troublesome, it is so far from being detrimental, that it is generally found to be serviceable, by exciting a more vigorous action of the *uterus*, and by bringing the stomach into a better state; for the vomiting of pregnant women is not always a mere effort of straining, or a discharge of the food and common humours of the stomach. The matter evacuated sometimes shows a very much disturbed, or a morbid secretion of such a kind as to be offensive to the stomach itself; and besides correcting or evacuating the offending humours, it is necessary that we use our endeavours to change, or to appease the present action, before the indication to vomit be suppressed.

In plethoric habits the act of vomiting may render bleeding necessary, though the disease or state of which it is a symptom might not require this evacuation. For that reason, and because it lessens the general irritability of the habit, bleeding will be necessary in some cases of incessant vomiting, though in others it may not be either requisite or proper. But medicines of any kind are not wanted to restrain the vomiting, except it should be extreme, so that the strength of the patient is reduced, or other untoward consequences follow. Then the common means used for the relief of this symptom in other cases may be safely and properly advised for pregnant women; as the saline draughts in the state of effervescence, or mixed with some absorbent earth, in the manner of the *mistura corallata* of Fuller; or magnesia in simple peppermint-water; or the Seltzer water, natural or artificial, whilst it effervesces with a mixture of lemon juice and sugar, or ice; or small doses of the acid of vitriol in cold or mint water; or small quantities of *colombo* root; or chamomile flowers, joined with some aromatic, in substance or

infusion. Moderate cordials are sometimes required; and of these the most grateful is the *confectio alkermes,* in simple mint or cinnamon water. Many other medicines of the same kind may be directed, in such forms as are found to be most acceptable to the patient.

In cases of excessive vomiting *opium* in tincture or substance is generally given, and often with great advantage. Perhaps no well grounded objection can be made to the occasional use of opiates, when violent pain, or any other urgent symptom demands them. But I have persuaded myself that their habitual or very frequent use is prejudicial to the *fœtus,* either by debarring it from a proper supply of nourishment, or by depraving that with which it is actually supplied; but of this opinion I begin to have some doubt. The same observation hath been frequently made on spirituous liquors, and probably the effect of both may be explained upon the same principle.

Local applications of various kinds have been recomended, to abate excessive vomiting; and consent is readily given to their use, though without the expectation of great advantage, because no harm is apprehended from them. But a physician of great experience and strict veracity (Dr. Heberden) informed me, that he had in these cases seen the application of a piece of folded cloth moistened with *tinctura opii* to the region of the stomach do much service when internal medicines of the highest estimation had proved ineffectual.

It is a general observation that the vomiting of pregnant women is most frequent and importunate in the morning; and the circumstance evidently depends on the change of position which then takes place, and not the peculiar time. When the position is horizontal, the patient may not have the least sense of uneasiness or disturbance of the stomach; but the moment she rises from her bed, these come on, and continue till she again reclines, unless she is careful to bring the body erect by rising slowly. Confinement to a horizontal position is therefore found both necessary and useful, not only when the stomach is violently disturbed in consequence of pregnancy, but from many other causes.

When there is a nausea or inclination to vomit without any evacuation, a gentle emetic is the best remedy: and this may be repeated, whenever the urgency of any symptom requires it; experience having fully proved, that emetics may be given to pregnant women with perfect safety; but a glass of lukewarm water, or a little weak chamomile tea usually answer the purpose.

SECTION VII.

INDIGESTION, and depravity or loss of appetite, proceed from the same cause as the foregoing complaint, of which they are only different modifications; and the treatment commonly enjoined for their relief will be suitable for pregnant women. Of that depravity of the appetite, which in pregnancy has usually gone under the name of *longing*, the instances recorded in books and those formerly reported in conversation are incredible, and too absurd to deserve, or, at least at this time to require a serious refutation. *Longing* was not supposed to depend upon the fancy or other circumstances of the mother, but to be a peculiarity in her appetite, produced by the influence of some cause existing in the child. Nor was it supposed, that the effect was confined to the simple refusal or gratification of the appetite however extravagant it was, or however unnatural it might appear; the *longing* of pregnant women was to be indulged, not merely through kindness to the parent, but for the interest of the *fœtus* also. If her wishes and inclinations were not gratified she might suffer; but the worst consequences were to be apprehended on account of the child, which would either be retarded in its progress, or bear the mark of the thing longed for on some part of its body; as if there were a connexion between the two beings incomprehensible by us, and infinitely more exalted than is observed under any other circumstances. Nor was the observation of similar accidents in animals, or even in plants, considered as a valid argument against this extravagant opinion.

In times and countries barely civilized, can we suspect, that it was thought necessary to adopt and support the opinion of the power of the imagination, in order to secure to pregnant women that indulgence and tenderness of treatment, which their situation was supposed to require? Or does there really exist any mysterious consent between the parent and the *fœtus in utero* in the human species? I believe, that the opinion originated in the former cause; but that in the course of time, and by the habit of thinking and acting in a certain manner, a general conviction did take place, that some consent of an inexplicable and perhaps of a divine nature, not to be defined or illustrated, really existed. An opinion which might have been useful and necessary at the time when it was first adopted, continued when there was no longer occasion for it, and became a source of real disadvantage. For the minds of women were frequently disturbed, and themselves rendered miserable, by the dread of an effect, the cause of which was wholly imaginary; sometimes also sinister purposes were intended to be answered by the pretence.

It then became necessary to examine the opinion, and it was proved to be groundless. In the early part of my own life nothing was more common, than to hear of innumerable examples of the dreadful events which were caused by disappointed *longing;* or to see instances of the great confusion and distress in families, from a persuasion of its importance. But at the present time, and in this country, the term *longing* is seldom mentioned, except among the lowest class of people; though the cause, if any had existed, must have produced its effect at all times and in all situations. Something is, however, to be granted to *longing*, considered as an appetite depending upon the constitution, of a certain state of which it may be esteemed an indication. If we believed the doctrine, that diseases and tendencies to them were produced by an excess of acid or alkalescent humours, we might readily understand, why one pregnant woman prefers the most savoury and high-seasoned food, and another acid fruits and cold water; and why they might both be indulged, not only without prejudice, but with advantage, as has been frequently observed, in these cases, and in the delirium of fevers for a similar reason. The appetite, unsophisticated by bad habits, will probably never mislead us as to the quality of our food. It may rather be esteemed a guide implanted in us by nature, which we shall never err in following, if we act with discretion as to the quantity.

SECTION VIII.

The heart-burn is a painful sense of heat in the throat and *fauces*, with sudden regurgitations of thin sour or acrid saliva in the mouth. In some cases it seems to be a mere sensation arising from the consent between the stomach and *uterus;* and in others to be caused by an accumulation of sharp humours, secreted in the stomach by wrong action. There is often reason to think that it is occasioned by food, which is salt and high seasoned, or otherwise hard of digestion, and by fermented liquors; and perhaps by sleeping in an erect position after a full meal. The medicines usually directed for this complaint are given with the intention of abating or removing the sensation, of altering the properties of the fluid collected in the stomach, or of evacuating them. These generally consist of the various kinds of absorbent earth, as the testaceous powders, or magnesia, alone, or mixed with rhubarb; or lime-water, or small doses of saline medicines, of which perhaps the best is the *aqua kali*, to the quantity of twenty drops in a large glass of cold water. But my highly respected friend, Dr. John Sims, has published the following, as a form of medicine which seldom fails to give immediate relief; and

many trials have convinced me that his opinion of the efficacy of this medicine is just.

℞ Magnes. ust.
Aq. Amon. pur. a ʒj.
—— Cinnamon. ʒiij.
—— Puræ ʒvss. M.

Sumat cochlearia ij vel iij ampla, sæpiùs in die, urgente cardialgia.

When the complaint is violent, a gentle emetic is the most essential remedy; and should the disposition to it originate in the debility of the powers of digestion, such means are to be used, and such medicines given, as promise to restore and invigorate them.

SECTION IX.

Costiveness is another troublesome complaint to which pregnant women are liable. It is often hurtful in its present effects, and sometimes in its consequences, being not uncommonly the cause of headach, fever, tenesmus, pain in the bowels, and abortion. Care must therefore be taken to obviate costiveness by the cautious, but occasional use of manna, magnesia, senna, electuary of senna or of cassia, *oleum ricini,* soluble tartar, Jessop's well water, and the like medicines. But I was formerly much more assiduous in preventing costiveness than I am at the present time, having observed, that all women who go on properly, especially in the early part of pregnancy, are liable to this state of the bowels, which may have some relation to the strong action of the *uterus* at that time. Costiveness may therefore be considered as a state of the bowels corresponding with that of the *uterus;* and we can never believe that to be injurious, which occurs so frequently as to be esteemed a common consequence. Experience has proved that abortion most frequently happens to those who are subject to too relaxed a state of the bowels.

The more gentle the means used for the removal of costiveness, the more eligible they are, provided they answer the intention. Aloetic medicines are forbidden during pregnancy, lest they should do mischief by their supposed deobstruent qualities: but they are in common use among the lower class of people, because they are cheap, and conveniently given in the form of pills, and I have not observed any bad effects from them. The stomach of pregnant women is often in such a state, that no internal medicines can be retained; and we are obliged to have recourse to clysters, which are generally efficacious and always safe. It is remarkable, that small doses of the *sal catharticus amarus,* dissolved in plain water, or simple mint-water, or in common emulsion, will often be kept

upon the stomach, when things less obnoxious to the taste are immediately rejected.

SECTION X.

By long continued costiveness the *fæces* are sometimes collected in so large a quantity, and by long confinement in the *rectum* and lower part of the *colon*, become indurated to such a degree that they cannot be voided by the common action of the intestines; and the medicines usually given, and the means used to procure stools, prove insufficient for the purpose. This complaint is not peculiar to women when pregnant, being found to occur indiscriminately in either sex, if compelled by disease or accident to remain for a long time in a horizontal position; and it is not unfrequent in children, or even in animals. It has often been mentioned by medical writers, though no proper name has been given to it. It is vulgarly called the *ball-stool*.

There is reason to believe, that this complaint has often been overlooked in practice; for though the column of indurated *fæces* is sometimes enormous, a small quantity in a liquid state, escaping between the column of hardened *fæces* and the side of the intestine, may be daily discharged; so that no suspicion of the real nature of this case may be entertained, unless the stools be inspected, or the patient be examined *per anum*.

When it has continued for a certain time, and the common efforts of the intestines, though repeatedly excited, are not equal to the expulsion of the *fæces*, their extraordinary action is raised, which is attended with pain, periodical in its returns, and violent in its degree. This action continues till the difficulty is overcome, or by the effect of the long and fruitless action, the parts adjoining to the *anus*, and perhaps the internal parts, become inflamed; and, if proper and timely means were not used to prevent the mischief, this complaint has sometimes proved fatal, by bringing on a sphacelation of the parts.

Purgative medicines rather increase this complaint, by impelling a greater quantity of *fæces* into the lower part of the intestinal canal, when they cannot be discharged. Suppositories and clysters, at least in the way in which they are commonly administered, cannot be received on account of the greatness of the obstruction, to the removal of which they are not equal. Effectual relief is only to be obtained by dividing the indurated *fæces* into smaller pieces by manual assistance, or by some convenient instrument conducted into the *anus*, and used with circumspection, and then by washing them away with repeated clysters. In women there is less difficulty in the management of these cases, because the column of *fæces* may not only be

broken by the finger passed into the *vagina*, but their exclusion very much assisted.

SECTION XI.

Perhaps women are by constitution, and by the sedentary lives they lead, more subject to the hemorrhoids than men. They are generally esteemed as indications of too great fulness of the habit, or as critical depositions of something noxious, had it remained in the constitution: they are also an ordinary consequence of long-continued costiveness, and, during pregnancy, they may be caused or increased by the derivation of a greater quantity of blood to the parts, or by the pressure made upon the vessels by the enlarged *uterus*. When this complaint is in a moderate degree, the patient is soon relieved by gently purgative and diuretic medicines; and those composed of sulphur are, in this case, usually preferred; though some physicians have suspected their propriety. Cooling applications are also advised, and of these the best is a weak solution of the *cerussa acetata* frequently renewed. Should the patient be feverish, or the hemorrhoids much tumefied and painful, bleeding, in quantities suited to the constitution and the exigence of the case, is necessary; or one or more leeches may be applied to those which are most prominent, if they do not discharge spontaneously. Emollient fomentations and cataplasms are sometimes proper. In general, unctuous applications do not agree; but ointment of elder flowers, mixed with an equal quantity of brown sugar, or a small quantity of some lixivial salt, is thought, in some cases, to have done much service. When the hemorrhoids are very numerous, and tumefied even to strangulation, immediate relief may be obtained by firm and gentle pressure, between the finger and thumb, of each distinct hemorrhoid, till they are all compressed, and reducible within the *anus*, scarce any tumour remaining but the external covering, like the empty husks of grapes.

SECTION XII.

The skin of women with child is often discoloured in spots or blotches, especially about the neck and face, which, though disagreeable to those who are solicitous about such matters, is not otherwise important. Women have sometimes also a true jaundice, and, whether we attempt to remove the obstruction to the due secretion of the bile, by emetics, purgatives, or deobstruents, as they are called, there appears to be no reason why pregnant women should not bear their operation, when they are necessary. Men of discretion will readily see the impropriety of giving a medicine, the operation of which might be more dangerous than the disease which it is intended to

cure; and the necessity of accommodating its quantity to the state of the patient, as well as its quality to the disease.

SECTION XIII.

Women with child are chiefly subject to those complaints of the intestines, which may be supposed to arise from their inert action; but they are sometimes liable to those, which are occasioned by too much irritability. Yet the latter are far less frequent than the former, though a tenesmus, a diarrhœa, or dysenteric complaints, may happen at any period of uterogestation.

When these affections of the bowels are of sufficient consequence to require medical attendance, the common mode of treatment is equally efficacious and consistent with the safety of a pregnant woman, as under any other circumstances. When there is a feverish disposition, bleeding is proper; and when there are signs of disturbance in the stomach, from offensive humours, or preceding crapulous complaints, gentle emetics may be given, and the repetitions, if necessary, may be unlimited. If there be much pain in the bowels, or frequent efforts to go to stool, with little or insufficient evacuations, purgative medicines, of which perhaps the best is the *magnesia vitriolata* (See Cleghorn's Treatise on the Diseases of the Island of Minorca) alone, or joined with rhubarb, ought to be given, and occasionally repeated, according to the continuance and pain, in any stage of the disease. Should the complaint remain after the evacuations, opiates are proper, mixed with some mild astringent medicines, as the *mistura cretacea* with *tinctura cinnamomi*. In some cases *ipecacuanha* in small doses, not exceeding a grain, or even half a grain, mixed with some absorbent powder or two or three grains of *rhubarb*, and given every six hours, answers the purpose of quieting the disturbance of the bowels, without procuring any evacuation. The free and frequent use of opiates is in many of these cases indispensable. Clysters, composed of a decoction of linseed, or of flower and water boiled to the consistence of thin starch, or of mutton broth, are both comfortable and useful; and to any of these thirty or forty drops of the *tinctura opii* may be occasionally added. The introduction of two or three grains of the *opium purificatum* in the form of a pill into the *rectum* affords great relief in all cases of painful disturbance of the *uterus*, *rectum*, or bladder, especially during pregnancy.

Tenesmus, and also diarrhœa are common attendants on abortions, of which they are justly esteemed to be sometimes the cause. In these cases it appears, that the existence of the irritation in the *rectum* is unfavourable to the proper action of the *uterus*, and may directly, or by consent, become the cause of abortion. Emetics, by relieving the

present inconvenience, and by changing the seat of the irritation, will often prevent any ill consequences, but the greatest reliance in such cases is to be placed on *opium*, in any of the usual forms, especially in clysters.

SECTION XIV.

The strangury, which is a frequent inclination to void the urine, and a painful discharge of it in small quantities, is not an unusual complaint in pregnancy, in the early periods of which it seems to be occasioned by the consent between the *uterus* and bladder; but, towards the conclusion, by the mere pressure of the enlarged *uterus*. It is frequently caused also by the restraint, which women sometimes dangerously impose upon themselves, from motives of delicacy, when they are engaged in company. Under any of these circumstances it always produces much inconvenience, and may terminate in a suppression of urine, which, when the *uterus* is of a certain size, that is, about the third month of pregnancy, becomes the cause of its retroversion.

For the relief of the strangury, it is in some cases necessary to bleed, and in all to procure stools by clysters, or very gentle aperient medicines. A small quantity of oil of almonds, with manna, in the common emulsion, and the addition of a few grains of nitre, is a commodious and often an effectual remedy. The common emulsion with the *spiritus ætheris nitrosi*, or barley-water with gum arabic, may be drunk at pleasure; opiates are also frequently necessary. In a retention of urine the catheter must be introduced; and of the retroversion of the *uterus* we have already spoken very fully.

At the latter part of uterogestation it is not uncommon for women to have an incontinence of urine, not perpetually but occasionally, when they stand upright, or make any sudden though slight motion, especially if they have a troublesome cough. As far as either the strangury or incontinence of urine depends upon the pressure of the enlarged *uterus*, it will only be in our power to alleviate them, for the cause must remain till the time of delivery; and the peculiarity of the complaints may be owing to the compression being casually made upon the neck or *fundus* of the bladder. It is some comfort to women to be informed, and I believe the observation is almost universally true, that affections of this kind are never produced, except in those cases in which the presentation of the child is natural.

SECTION XV.

The *fluor albus* was before mentioned as a complaint, to which women were at all times liable; but in pregnancy the discharge is

sometimes exeeedingly profuse, and has very much the appearance, as if it was caused by, or accompanied with, inflammation. It may then be occasioned by some extraordinary fulness of the parts adjoining to the *uterus*, or by more than usual irritation. It does not appear that any bad consequences, either to the mother or child, follow this complaint, or that it requires any particular treatment. Perhaps, by the relaxation of those parts, which are to be dilated at the time of parturition, they may then make less resistance; at least it is commonly observed, that women who suffer much from this symptom during pregnancy have easy labours. It is also proper to observe, that, in women who with a profuse discharge of this kind are subject to miscarriages, an injection of the *zincum vitriolatum* two or three times a day, into the *vagina*, has great power in preventing them.

SECTION XVI.

No complaint happens more frequently to pregnant women than pain in the hips, with numbness of the inferior extremities. This seems to be occasioned by the untoward pressure made by the enlarged *uterus* upon the ischiatic nerves, and those which pass through the perforations on the anterior part of the *sacrum*. As it is found to be increased in certain positions of the body, especially when the patient is accustomed to sleep on one side, a change of the position generally affords temporary relief. At all events it is not in itself of sufficient importance to require any medical assistance, and is entirely removed soon after delivery; the application of a mixture of the white of egg and *laudanum* is a very common remedy in these cases.

Erratic pains in various parts, especially about the face, ears, and teeth, so often occur in pregnancy, as to be thought certain indications of that state. They are evidently occasioned by uterine irritation; and although they will sometimes be eased by *æther*, by solutions of *opium*, or other such local applications, or by blisters applied behind the ears, yet these commonly afford only temporary relief, and in some instances they aggravate the pain. The same observation may be made of the cramp, whatever part of the body it may affect. This is a very pertinacious symptom, and often exceedingly troublesome, especially in the night; but being void of danger has too little attention paid to it. In either of these cases, real benefit is to be obtained only by bleeding, and the use of such means as abate irritation in general, or that of the *uterus* in particular, such as small dozes of *tinct. opii*, of the *syrup. papaver. alb.*, the inspissated juice of *cicuta*, and other medicines of that class. However, in cases of

violent and repeated cramps, it is not unusual to meet with unfavourable separations of the *placenta* after the birth of the child.

SECTION XVII.

The veins of the legs, thighs, and *abdomen*, frequently become varicose in the latter part of pregnancy, to such a degree, in some instances, as to exhibit a strangely tortuous, and a very alarming appearance. *Varices*, which are both elongations and enlargements of the veins, may be reasonably supposed to proceed from the pressure of the *uterus* preventing the reflux of the blood by the veins; and perhaps they may often be esteemed as consequences of the general fulness of the habit. They are usually accompanied with the cramp; but which of these is the cause or effect has been much disputed. No detriment has been observed to follow this very painful and troublesome complaint; but if any thing is required to be done, it should be with the intention of emptying the vascular system, as moderate bleeding, gentle purging, and a spare diet. In some cases it may be judged necessary to give support, by moderately tight bandage, to the veins of any part which are particularly distended; or sometimes to tie the vein above and below the tortuous part; but the time of pregnancy is not to be chosen for this operation.

SECTION XVIII.

Inquietude and want of sleep are very troublesome complaints towards the conclusion of pregnancy. They are also frequently attended with slight pains in the region of the *uterus*, hardly to be distinguished from the pains of labour, and other feverish symptoms. These are most grievous in the night, the patient being restless, in spite of a strong disposition to sleep, and obliged to rise frequently, and expose herself to the influence of the cool air; yet I know not for what reason, after a short repose at the dawn of day, she appears as much refreshed as after the most quiet night.

Perhaps the confinement of the air of the room, and the heat of the bed, may be the immediate causes of these complaints; but I have generally considered them as arising from the constant and strenuous demands for nourishment made by the child upon the constitution of the parent; for it is remarkable, that those women, who suffer most on this account, though reduced in appearance, bring forth lusty children, and have easy labours. But if the mother has little uneasiness, and grows corpulent during pregnancy, the child is generally small; and if the child should die before the time

of parturition, the inquietude entirely ceases. In the first case, the absorbing powers of the child seem too strong for the parent; but in the latter, the retaining powers of the parent are stronger than the absorbing ones of the child; so that, on the whole, it appears natural, that women should become thinner when they are pregnant.

Nothing affords more effectual relief to patients troubled with this inquietude than bleeding in small quantities, with the occasional use of cooling and laxative medicines. Hoffmann's anodyne liquor, to the quantity of thirty or forty drops, given in some common emulsion, or in cold water, every night at bed-time, has been found useful. Preparations of *opium* have little effect, unless they are given in large quantities and often repeated; but a persuasion that these are ultimately injurious to the *fœtus*, or to the parent, has long deterred me from using them on these occasions. A glass of cold water drunk at bed-time is not a contemptible remedy; or a towel dipped in cold water, and wrapped round the hand, with one corner hanging over the edge of the bed, has many times been serviceable in procuring sleep, by lessening the general heat of the body as a conductor.

There is another cause of much uneasiness during pregnancy, which sometimes occurs in very irritable habits; that is, the painful and almost constant motion of the child. For the relief of this, it is usual to rub gently over the whole *abdomen* some unctuous or sedative application, and to give occasionally a few drops of *spiritus ætheris vitriolici composit.* or of *tinct. opii,* in any suitable vehicle.

SECTION XIX.

Very few women, even those who are on other occasions patient and resolute, pass through the time of uterogestation without using expressions which indicate some degree of apprehension for their safety. This solicitude or discomfort may proceed from the mere dread of what they expect to suffer at the time of labour; or from reports inadvertently made of untoward accidents, which have happened to some of their friends or acquaintance, who were in the same predicament with themselves. In some cases there seem to be strange impressions made in the mind from some affection of the body, not then obvious, but showing itself at the time of labour, or after delivery.

It is sufficient, in the first instance, to contrive amusements for them, or to inspire them with confidence, by pointing out the fortunate event of the generality of these cases, and to impress them with favourable sentiments of the skill or good fortune of the person who is appointed to attend them. This apprehension of danger

may arise from another source, and be caused by uneasy sensations, which they feel, but cannot well describe. Then it is really a symptom of disease, and may be ranked with the terror which attends the commencement of some dangerous diseases, of which it is one of the worst indications. Instead of considering it as an hysteric affection not worthy of regard, we shall find, on inquiry, that the patient has some degree of fever; as increased heat, a white tongue, and a quick pulse, and frequently a fixed pain in some part of the *abdomen;* or peripneumonic symptoms; or some marks of local or general disturbance in the habit, though not in a degree sufficient to denote any particular disease. By bleeding in small quantities, by cooling or appropriate medicines, by repose and a well-regulated diet, both the sensation and the apprehension may be removed before the time of delivery, and a happy recovery from childbed ensured. If, however, the complaint be not properly considered, but slighted or ridiculed merely as lowness of spirits, the event may prove unfavourable; and on the recollection of the circumstances there may be room to lament that it was misconstrued or disregarded.

SECTION XX.

The functions of the brain are often disturbed in the time of pregnancy, by which headaches, drowsiness, and vertiginous complaints are occasioned; and sometimes pregnant women have a true *hemiplegia,* as well as many other nervous symptoms. These have usually been ascribed to a fulness of blood in the vessels of the brain, caused by an obstruction to its descent into the inferior extremities, by the compression of the enlarged *uterus.* But these do not more commonly happen to those women who are of full habits of body, than to those who are of different constitutions; and if that was the cause, the effect must be pretty generally produced when women have arrived at a certain time of pregnancy. The palsy is always preceded by such symptoms as indicate an uncommon degree of uterine irritation, on which it is reasonable to consider it may depend; more especially as, though relieved, it is never cured during pregnancy, and scarcely ever fails to leave the patient perfectly free within a few months after delivery, as has been proved in a variety of cases.

The blood of those women who become paralytic whilst they are pregnant, is always found to have the same appearance as in the most inflammatory diseases; and the other symptoms indicate the like disposition. It is not therefore surprising, that heating and stimulating medicines are observed to increase the complaint; or

that it should be relieved by bleeding, by gentle purging, by a cooling regimen, and by such means as abate uterine irritation; not regarding the palsy as an idiopathic disease, but as a symptom occasioned by pregnancy.

SECTION XXI.

It was before observed, that anasarcous swellings of the inferior extremities often occurred in pregnancy, and that those sometimes extended to the groins and sides of the *abdomen*, and, in some cases, to the external parts of generation, which become extremely painful, and tumefied to such a degree, that the patient is unable to walk or sit without much inconvenience; and that it has been necessary to scarify them. They appear to be occasioned in some instances by too much, and in others by too little, exercise; but more frequently by the pressure made by the *uterus* upon those lymphatic vessels which are intended to drain the fluids from the inferior extremities. They have sometimes been unjustly supposed to indicate such a general hydropic tendency as might deter us from bleeding the patient, even in circumstances which would otherwise demand it; but when there is a general leucophlegmatic appearance, it certainly requires attention.

But in many of those abdominal complaints which occur in pregnancy, it has been observed, that the patient was sensible of much relief when the legs begin to swell: so that in some cases this swelling may be esteemed as a critical deposition upon the inferior extremities of something superfluous or injurious to the constitution. Of the particular treatment which this complaint may require we have before spoken.

SECTION XXII.

There have been a few instances of women with child who have had a true *ascites;* and those who have an *ascites* sometimes become pregnant. Some cases are recorded, and many reported, in which the mode of treatment enjoined has been founded on an erroneous opinion of these two situations; that is, of a dropsy being mistaken for pregnancy, and pregnancy for a dropsy. The former is not productive of mischief in any other way than by delaying the use of such means as might be considered likely to cure the disease, if administered in its early state. But the consequences of the second error have been deplorable. For, if any active remedies are used on the presumption of a dropsy, the child will of necessity be often destroyed, and an abortion or premature labour occasioned; and when the operation of the *paracentesis* has been performed, it hath

been known to prove fatal to the mother and child, always reflecting great discredit both upon the operator and profession. It therefore seems necessary to establish this general rule, that no woman at a time of life, or under circumstances which, in the most distant manner, subject her to a suspicion of pregnancy, should ever be tapped, or otherwise treated for a dropsy, till, by examination *per vaginam*, or by waiting a due time, we are convinced that she is not pregnant; even though she may have before undergone the operation.

It has been said, but whether upon sufficient authority I know not, that a dropsy has sometimes been cured by pregnancy or parturition; and certainly the quantity of limpid fluid discharged after delivery is, in some cases, not to be explained by any idea of its being contained in, or secreted by, the *uterus*.

SECTION XXIII.

The manner in which the *abdomen* is distended, with the usual degree of its distension at different periods of pregnancy, has already been described. This generally appears to be uniform, though often on one side more than the other; and sometimes there are partial distensions, which are popularly attributed to the head, elbow, or some other limb of the child, originally placed, or accidentally moved, out of the common situation. It appears, that this opinion cannot possibly be true, unless we presume, that there is at the same time a partial distension of the *uterus*, which could scarcely happen without some important and dangerous consequences. As this case most frequently happens when the *abdomen* is enormously distended, and as it has all the appearance of a ventral *hernia*, it is more probable, that it is occasioned by the starting of some of the abdominal muscles, or the partial yielding of the integuments, or by an occasional spasm of the *uterus* inclosing the *placenta*. But the explanation of the case is of less importance, as it neither requires nor admits of any assistance, either before or at the time of labour, and disappears before or almost immediately after delivery.

From the great distension of the *abdomen*, especially in corpulent women, an umbilical *hernia* is very frequently occasioned, which, depending wholly upon the degree of distension, does not admit of any relief before the patient is delivered; when the elastic truss, suited to the size and form of the *hernia*, seems a more easy and effectual remedy than any instrument of the kind which has hitherto been recommended; though some prefer a piece of ivory, formed like a section of a globe, and fixed upon the part by adhesive plaster or any of the usual bandages. Cases of this kind deserve more attention than is usually given them. This seems to be the

only kind of *hernia* produced by, or which remains during pregnancy; for unless the other kinds adhere to the *sac* in which they are contained, temporary relief is afforded by that ascent and support of the intestines, which necessarily follows the rise and enlargement of the *uterus*.

SECTION XXIV.

In some cases the whole *abdomen* is distended beyond what it is able to bear without inconvenience; the skin becomes inflamed, and sometimes cracks, so that there is a little oozing from various parts. The true skin also cracks when the outside is not altered, by which there remains upon the integuments of the *abdomen* of women who have had children, a number of small cicatrices, as if the parts had been scarified, or there had been slight longitudinal ulcerations. The same effect is also occasioned by extreme corpulence.

For the ease both of the distension and consequent soreness, some unctuous applications should be rubbed over the *abdomen* every night at bed-time. The ointment commonly recommended for this purpose is composed of rendered veal fat beaten up with a small quantity of rose water.

By the extreme distension of the muscles of the *abdomen* these are often the seat of pain during pregnancy, especially at their insertions: and it requires some attention to distinguish this from the pain which may arise from affections of the *symphysis* of the *ossa pubis*. When the weight of the *abdomen* in pregnant women is very great, and weakly supported by the integuments, it becomes pendulous, and occasions to the patient much pain and difficulty in walking, and many other inconveniencies at the time of labour. It will then be of service, by a napkin or broad bandage, suited to the purpose, passed round the lower part and middle of the *abdomen*, to support it with a moderate degree of firmness, and then by a scapulary to sling the depending weight over the shoulders, by which the patient will be enabled to move and walk about with infinitely less trouble, and any inconvenience thence arising will be lessened or removed. Immediately after the birth of the child, the application of a broad band drawn tight over the *abdomen* is very beneficial.

SECTION XXV.

Instances sometimes occur of pregnant women being affected with the venereal disease: and we have generally been advised to follow a mode of treatment, by which the disease was not intended to be perfectly cured, but moderated and restrained from further

progress; leaving the absolute cure to be completed, when the patient was recovered from the state of child-bed. This method of proceeding has been recommended, on the presumption that dangerous consequences would result either to the mother or child, if a quantity of quicksilver was used, during pregnancy, sufficient to root out the disease effectually from the constitution. If the patient has a *gonorrhœa*, there is clearly nothing in the medicines prescribed, or in the treatment, which can prove hurtful to either at the time of uterogestation. But if there should be a confirmed *lues*, as frictions with *unguentum hydrargyri* properly instituted and pursued, which, as it was one of the first, is yet acknowledged to be the most efficacious remedy; or if equal or greater confidence is placed in them than in any preparation of quicksilver internally given; it is reasonable to think, and the opinion is confirmed by experience, that women might at any time of pregnancy go through a due course of them with perfect safety. It is scarcely necessary to observe, that medicines composed of quicksilver, whether internally given or externally applied, are not at this time used with a view to promote a salivation, or any other profuse evacuation, but with the intention of filling the habit with that medicine, and retaining it as long as it is thought necessary for the extinction of the disease. The utility and propriety of this practice is allowed by those, who differ widely in their explanations of the mode in which quicksilver is supposed to operate. I may be permitted to observe, that the principal causes of the failure of this medicine to answer our purpose of perfectly curing the *lues*, are either the hurry with which it is at first used, the negligence and misrepresentation of patients, or a conclusion often though erroneously made, that the disappearance of the symptoms is a proof of a perfect cure of the disease; whereas it frequently happens, that, if the frictions are not continued many days, or even several weeks, or, in some cases, perhaps, months, after all the symptoms are gone, there will in a short time be new appearances, which prove the return or existence of the disease.

It has been supposed, that a child born of an infected parent could not at the time of birth be exempt from infection, and that the *virus* would be so intermixed with its frame that there would scarcely be a possibility of exterminating it. This is at least a very dubious point; because it has happened to every person engaged in practice in a city or large town, to attend patients of this description, who have nevertheless brought forth children which were perfectly healthy. I do not recollect one decisive instance of a child born with any symptoms of the venereal disease upon it; and the contrary, I am persuaded, is often suspected from a knowledge of circumstances, which give rise to the suspicion, exclusive of the

symptoms; though it must be allowed, that a child has a chance of receiving the infection in the act of parturition, by absorbing the *virus* in its passage over ulcerated surfaces. But, with regard to the first opinion, it may perhaps be justifiable to reason in this manner. If the infection is received, it must be at the time of conception, or afterwards. If the prolific particles, whether in the male or female, were mixed with the venereal *virus*, the prolific properties would probably by such mixture be destroyed; but if conception were previous to the infection, there seems to be no way in which the latter could be communicated to the child already conceived, all immediate intercourse being secluded by the perfect closure of the *os uteri*.

Children brought forth by parents infected with the venereal disease will often be born dead; but this event may commonly be imputed with more propriety to the severity of the means used for the extirpation of the disease, than to the disease itself; and the rank eruptions about the *podex* to which children in very early life are liable, certainly cannot be justly attributed to venereal infection, the infection first showing its power on the part which received it.

SECTION XXVI.

When pregnant women have the small-pox, there is much difference in the opinions entertained of the possibility of the child being infected. Some have contended that, if the mother has this disease, the child could not escape; whilst others are persuaded, that the child could not, according to the laws of the animal economy, receive this disease. Cases are recorded by various writers in confirmation of both the opinions; and many instances have been communicated to me by men of integrity and attention, with the view of deciding this point; but the cases are contradictory to each other, and therefore prevent any present decision upon the subject. When by the multiplication of well-attested facts, our knowledge is extended and corrected, should it be proved, that the variolous infection is generally received by the *fœtus in utero*, if the parent has the disease when she is pregnant, we may then consider whether the knowledge of the fact can be turned to any practical advantage. (Mauriceau says, that he himself was born with the small-pox upon him, but the weight of this assertion must depend on the opinion of others.) By the discovery of vaccination, the decision of this case becomes of little consequence.

It is an opinion almost universally received, that, if a woman with child should have the small-pox, and miscarry; or if, at the full time, her labour should come on during the continuance of the

disease, it would necessarily prove fatal to the mother. The event has too often proved the truth of this observation; yet it will probably stand upon more just ground, if it be stated in this manner. Should the attack of the disease be violent, and the eruptive fever run very high, patients may and have often escaped the danger, at any period of uterogestation, though the child were then expelled. But if a woman passes the time of the eruptive fever, and labour or a tendency to miscarry should come on towards the crisis of the disease, as far as my observation enables me to speak, she will then certainly die. She dies, in truth, not because she miscarries or brings forth a child, but she miscarries or falls into labour because she is already in a dying or very dangerous state, and by those circumstances the danger is infinitely increased.

When other diseases occur in pregnancy, the treatment to be directed must be such as the particular disease may require, making due allowances for that state, by not prescribing any violent means, unless the immediate safety of the patient may render them absolutely necessary. Every morbid alteration of importance which happens during pregnancy supersedes, if we may be allowed the expression, all the changes which depend upon that state; and whoever aims to establish the character of a successful practitioner in midwifery must pay attention to the health of his patients when they are pregnant. If there be no disease, or disposition to it, the process of a labour is generally uniform and safe. If any disposition to disease should exist at that time, the labour may be rendered irregular and dangerous, or the immediate cause of some disease peculiar to the child-bearing state, not by giving, but by diverting, such disposition to some part rendered by parturition more susceptible of its influence.

CHAPTER VIII.

ON UTEROGESTATION.

SECTION I.

It was formerly asserted and believed, that the proper situation of the child in the *uterus*, in the early months of pregnancy, was sedentary; with the breech resting at the superior aperture of the *pelvis*, and the fore-parts of the child turned exactly to the *abdomen* of the mother. At or towards the time of parturition it was thought

that the child, partly by the increased weight of the head, but chiefly by its own instinct and powers, made a revolution, and turned with its head downwards, in such a manner that the *vertex* was placed to the *pubes*, and the face to the *sacrum*. In this position it was supposed to pass through the *pelvis*. This change was called presenting to the birth, of which it was judged to be the signal; and, from the terms used in different languages to express the change, the opinion seems to have been universal. By the examination of women who have died at different periods of uterogestation, or in the act of child-birth, it is now ascertained, that such as is the situation of the child in the early part of pregnancy, such it will be at the time of labour, unless, which can very rarely happen, the position be altered by some accidental violence. Perhaps this opinion of the ancients was not founded on observation, but on the presumption that fatal consequences would result from the continuance of the *fœtus* with its head downwards for nine months. They did not know, that there was a circulation of the blood; and of course were ignorant that an order of vessels existed in the body, especially calculated, by preserving a particular communication between different parts, to prevent any injury to the *fœtus*, either from its confinement or situation.

The natural position of the *fœtus* in the *uterus* is such as to occupy the least possible space, so that the least possible inconvenience is occasioned to the parent, yet with the utmost ease to its own body and limbs. (Quasi in seipsum totus conglobatus.—*Fabric. ab Aquapend.*) In the positions which are esteemed natural there is an endless variety, but they are most commonly after this manner*. The knees are drawn up to the belly, the legs are reflected backwards, the feet crossed, and lying close to the breech; the elbows are in contact with its sides, and the hands turned up to its head, one of which is often placed upon the cheek or ear. The spine is incurvated, and the neck being bowed, the chin rests upon its knees. There is that inflexion of the body into which we spontaneously fall when we seek repose; and as it is our position before we are born, it is that also to which we have an inclination in the decrepitude of old age.

The situation of a child, presenting naturally at the time of birth, is with the head downwards, resting upon the *ossa pubis*, with one side of the head towards the *abdomen* of the mother, and the other

* Adductis ad abdomen genibus, flexis retrorsum cruribus, pedibus decussatis, manibusque sursum ad caput sublatis, quarum alteram, circa tempora vel auriculas, alteram ad genam detinet; spina in orbem flectitur, caput ad genua incurvato collo propendet; tali membrorum situ, qualem in somno per quietem quærimus.—*Harv. Exercitat. de Partu.*

towards the *sacrum*, or in a small degree diagonally. The bulk of the body of the child is not placed against the spine, but on one side, most commonly on the right, and the limbs turned towards the left, so that the *abdomen* of a woman with child is, in general, evidently distended more on one side than the other. When this circumstance, though a necessary consequence of the proper situation of the child, is observed, a suspicion, wholly groundless, is often entertained, that its presentation at the time of birth will be unnatural. A small degree of permanent enlargement may afterwards be perceived on that side on which the child has rested, in which also, for some time after delivery, the mother is subject to pains resembling those which are considered as rheumatic.

SECTION II.

The term of uterogestation is different in every class of animals, and the diversity has been attributed to the nature and properties of the parents or the offspring. Those, who were of opinion that it depended upon the parent, sought for the reason in the structure or constitution of the *uterus*, the heat or coldness, dryness or moisture of which, according to the doctrines of the old philosophy, were supposed to be the causes of the varieties: yet, if the term depended upon these, it would then remain to be proved, how it happened that one form or constitution was capable of bearing distension longer than the other. Those, who imputed the time of the event to the offspring, assigned to them the same properties. It seems to have been generally believed, that, by the long or short continuance of the *fœtus* in the *uterus*, the future size, duration, and qualities, of different animals were influenced; and that these were most perfect and permanent in those animals which had the longest period of uterogestation. It was also thought, and perhaps with truth, that the longer the time of uterogestation, the longer the animals were before they came to full growth; and that on this depended their continuance in the mature state, without any natural tendency to decay, one period of existence regulating another. (See *Lord Bacon's Histor. Natural.*) In oviparous animals the time of incubation necessary for the production of their young is not altered by the qualities of the bird by which it is incubated, but follows its genuine nature; as in a hen's egg incubated by a duck. This favours the opinion that the term is guided by the offspring, but it is by no means decisive: but the circumstances relating to the birth of oviparous and viviparous animals, though they may illustrate each other, cannot, with any intelligence be compared, before the egg is expelled.

If the time of uterogestation be not interrupted by accidental

causes, it proceeds in all animals with great, though not with exact regularity, as is proved by those who are employed in breeding cattle, by whom a correct account is usually preserved. But in the human species there was supposed to be a considerable latitude in this respect, and examples have been recorded with great confidence, by grave writers, of children born after a term much exceeding the common, and of others after a term far short of it, which were nevertheless in a perfect state. This opinion hath also been countenanced to a certain degree by the laws or customs established in different countries *.

The common time of uterogestation in women is forty weeks, or ten lunar months (See *Wisd. of Solomon,* Chap. vii.), and some men of ability and candour have been persuaded, that it is possible for them to proceed as far as ten calendar months. By the laws of this country the term is not precisely limited ; so that if any case should occur, in which this matter might be litigated, the decision would rather depend upon circumstances, or upon the confidence placed in the testimonies of the medical witnesses, than upon any positive proof or conviction of the nature of the thing to be decided.

There must in general be much difficulty in determining with absolute precision the time of uterogestation in individual women. But I have met with several instances of those who, from particular contingencies, such as the casual intercourse with their husbands, or their return to or absence from them for a particular time, have been able to tell exactly when they became pregnant ; and none of these have exceeded forty weeks. I am therefore persuaded, that the term of uterogestation is as accurately limited in women as in animals. I do not mean that it is completed to a minute or an hour, as has been surmised, because the birth of the child may be delayed or accelerated by a multiplicity of accidents. But parturition will be accomplished, or the parturient disposition will take place, before or at the expiration of forty weeks from the time of conception. Nor does it seem reasonable that a law of nature, which is not altered by the differences of age, by diet, by the extremes of climates, by the severities of slavery or the indulgences of luxury, should be changed by circumstances of less importance.

But the examples of women who have brought forth their children apparently in a perfect state, and of a proper size, before the full time of pregnancy, are innumerable. As there is no mark in the external appearance, or internal conformation, which enables us to determine with precision whether a child has remained in the *uterus*

* Spigelius Ulpianum juris-consultum immerito reprehendit, quod post decimum mensem editum neminem ad legitimam hæreditatem admiserit.—*Harv. Exercitat. de Partu.*

its full time, this must continue doubtful, except as far as we are able to judge by the general probability, or by the size of the child. So many accidents occur, which may give to the *uterus* its disposition to expel the child, that its premature expulsion can never be the occasion of surprise ; not to mention, that there is in particular women a specific time, as the thirty-seventh or thirty-eighth week, beyond which they never pass in succeeding labours.

Though it should be allowed that the natural term of pregnancy in women is forty weeks, there will be some difficulty in making the calculation. The disappearance of the *menses* is usually the first change, which occasions a suspicion of pregnancy ; and might therefore be esteemed the era from which we are to date its commencement. But, though women are more apt to conceive soon after than just before menstruation, they may become pregnant at any part of the time between the two periods, when they did, and when they were expected to menstruate. In order to avoid any great error it is customary therefore to take the middle time, and to reckon forty-two weeks from the last act of menstruation, by which method, if we are rightly instructed, we may avoid any egregious mistake.

Women who give suck, and who do not menstruate, sometimes become pregnant, and having no alteration by which they can make any reckoning at the time of their delivery, all is left to conjecture. But there is usually, in these cases, a short and imperfect menstruation, which denotes the time when the *uterus* was in a state fitted for conception. Some women also have conceived, who never did menstruate regularly, or in whom menstruation had been interrupted for many months. We can then only judge of the time when they conceived, by such symptoms and appearances as showed that they had acquired the disposition to menstruate, and would have menstruated if they had not conceived. All calculations founded on the time of quickening, the size of the patient, and the like circumstances, amounting only to conjecture, must be very liable to mistake.

Some inconveniences are produced by attempts to make exact reckonings for pregnant women; for when the time fixed for their delivery is past, the error creates much solicitude and impatience. When therefore it is necessary to give an opinion on this subject, it is better to mention some time beyond that which we really suppose; or, on the whole, it would perhaps be better that labour should always come on unexpectedly.

SECTION III.

At the expiration of forty weeks the process of labour commenceth, unless it be hastened or retarded by some particular circumstance,

and various opinions have been given with a view of explaining its causes. Of these opinions, which have been supposed to constitute a very important part of obstetric knowledge, we should not be ignorant, as it appears that the practice of midwifery has really been very much influenced by them.

It was said by all the ancient writers, that a child was born by its own efforts, which it was incited to make by the necessity it felt of breathing cool air, for the purpose of moderating that heat which was generated by its long confinement in the *uterus;* or by the want of nourishment, the sources of which failed, or were become depraved; or by the acrimony of the *meconium* and humours of its own body. By some the cause assigned for the exertions of the *fœtus* was the want of room for its further growth and enlargement; and that by its efforts it escaped out of the *uterus,* as out of a prison in which it had been constrained; by others it was presumed, that there was some analogy between the ripeness and falling of fruit, and the perfection and birth of a child. The peculiar cause was unimportant, but, from a general persuasion of the principle, it was presumed, that ease or difficulty with which labours were completed, depended upon the strength or activity of the child. Another conclusion certainly followed; when the child was feeble the labour must necessarily be slow; and in cases of unusual difficulty we might be assured, that the child was dead, or could not possibly be saved. Of course, whenever the assistance of art was required, there was less occasion to regard the child, the existence of the difficulty proving the death or impossibility of preserving the child. If we had no other circumstance, by which the practice of the ancients could be compared with that of the moderns, this alone would decide in favour of the latter. Many expressions are, however, in use at the present time, which are founded on this opinion of the ancients; and it is not clear, that practice is not, in some instances, yet influenced by it.

No fact is more incontestably proved, than that a dead child, even though it may have become putrid, is commonly born after a labour as regular and natural in every part of the process as a living one; and that children, after labours accomplished with the most extreme difficulty, will often be born not only living, but in perfect health. There must then be some other principle of birth besides the efforts of the child, which in fact appears to be passive.

It was by later writers supposed, that the child was expelled by the action of the *uterus,* aided by that of the diaphragm and abdominal muscles. This doctrine, which I believe was first advanced by Fabricius ab Aquapendente (Simul expultrix uteri facultas exemplo insurget, et excitatur.—See *Cap.* lxxxvi.), is the basis of many modern improvements in the practice of midwifery; and it is so indis-

putably proved, by the occurrences both in natural and difficult labours, that its truth is now almost universally admitted.

Ingenious men were not satisfied with the observation of the fact, but they endeavoured to discover the principle of the action of the *uterus*, and to assign reasons for its coming on at a particular time. It was surmised that this expulsatory action of the *uterus* depended upon its form or structure, or its inability to bear further distension; or upon its heat or coldness, dryness or moisture; or upon the distinction of its muscular fibres, which were said to be arranged in a peculiar direction; or to the effort to menstruate when the vessels of the *uterus* were incapable of containing a greater quantity of blood than was already collected in them. Of these and many other opinions it would be useless to debate; but, as all viviparous animals bring forth their young at regularly stated times, and by processes generally alike, it would not be judging according to any philosophical rule, to attribute as the immediate cause of parturition, or of parturition at any certain time, a circumstance peculiar to any individual class of animals.

The opinions of men upon the same subject are often in direct opposition to each other: and some, fearful that truth is not to be found in either extreme, have steered a middle course between the doctrines of the ancients and moderns. These have supposed that child-birth is not completed solely by the efforts of the child, or by those of the parent, but by the conjunction of their efforts; and it may often be perceived that the motion of the child precedes the action of the *uterus*. Of this opinion, which participates of the error of the ancients, there have been few supporters; and the arguments in its favour have been drawn from observations made in the first instance on vegetables and oviparous animals. How far the discovery of the particular cause of the birth of a child might lead to the improvement of practice it is impossible to determine. The knowledge of the fact, that children are expelled, has evidently been productive of much advantage; but the attempts to investigate the cause do not give us more satisfaction than old Avicenna, who, with great humility and devotion says, "At the appointed time, labour comes on by the command of God."

SECTION IV.

It was before observed, that pregnancy and parturition have usually been mentioned as distinct operations of the constitution. But it seems better to consider every change in the animal economy, from the time of conception to the birth of the child, as forming a single process, consisting of several parts, each perfect in itself, and

at the same time a cause of some subsequent change necessary for the completion of the whole; and though there is no precise line to the different parts of this process, they readily admit of distinctions, by which they are more easily comprehended, and more accurately described. Thus, previous to the act of parturition, many changes take place in the constitution, which indicate its approach; and these have been called the predisposing signs of labour. The time of their appearance is different, being, in some women, several weeks, and in others, only a few days, before the commencement of labour: but they universally take place, unless the labour be precipitated by some accidental influence: and the more perfectly these changes are made, and the longer the time of their preceding the labour, the more natural and kindly will the process generally be.

There is first, a gradual subsidence of the *fundus* of the *uterus*, and whole *abdomen*, so that women often appear, and really are, less in the ninth than in the eighth month of pregnancy; and the form of their size is different. This is a good indication, because it shows that the *fundus* and all the other parts of the *uterus* are disposed to act; and on the equality of this disposition the efficacy of its action will very much depend. When there is no subsidence of the *abdomen*, or but little, and the patient complains, even in the time of labour, that the child is very high, it is always unfavourable; being a proof that the *fundus* of the *uterus* is in an inactive state, or acting improperly.

There is secondly, a discharge of *mucus* from the *vagina*, which, in the beginning, is of the kind often observed in the *fluor albus*; that is, a mere augmentation of the secretion from the glands of the *vagina* and neighbouring parts; but, by a gradual alteration in some instances it becomes extremely viscid and tenacious, or that which was originally of such texture is discharged. This is very remarkable in some animals whose bodies are exposed to view, especially in cows; and it is a sign that the parts concerned in parturition are in a state disposed to dilate, which disposition is further improved by the discharge.

Thirdly, in early pregnancy, the external parts of generation are in a natural state, or, at some periods, rather more contracted than usual: but when the time of labour approaches, there is a gradual enlargement and relaxation of them, with some degree of protrusion. This change also is to be observed in animals only; but, from their complaints, and the representation of their feelings towards the conclusion of pregnancy, there is every reason to believe, that a similar change usually takes place in women.

Fourthly, it was observed that the breasts very readily and generally sympathize with the *uterus* in all its affections, and particularly

that they are enlarged before or immediately after conception. There is also a gradual change in them from that time to the approach of labour, when they are perfectly fitted for the secretion of milk; which, when secreted in a more mature state, or in an increased quantity, may be esteemed a sign that the time of labour is drawing near. Some animals, the *pecora*, for instance, though the quantity of milk has gradually declined, have continued to give suck during pregnancy, without any apparent alteration in the quality of their milk, till they approached the time of parturition, when it was found to be much changed in its consistence, colour, and properties, a new mode of secretion being evidently established.

Fifthly, by the insertion and disposition of the sacrosciatic ligaments the principal firmness is given to the connexion of the bones of the *pelvis*. In animals not with young, these ligaments are very strong and rigid, and make a resistance to any external pressure almost as firmly as if they were ossified. But when the time of parturition is at hand, their strength and rigidity gradually decline, and they feel scarcely more firm than a duplicature of the skin. In consequence of this relaxation of the ligaments, animals change their manner of walking, by projecting the weight of the body on each side alternately, rather than by advancing the feet. There is such an appearance as justifies the use of the popular expression; for they literally seem *falling in pieces*. In women, these changes cannot be so well observed; but there are many reasons to be drawn from their manner of walking, and from their representations, which would induce us to believe, that similar ones take place in them as well as in animals *.

Sixthly, all animals, wild or domesticated, assiduously endeavour to provide a safe and comfortable habitation for their young, when the time of bringing them forth draws near †. The actions of mankind are always attributed to, and usually proceed from, more dignified and commendable principles than those of animals. But in many natural actions, which are too powerful to be controlled, or not without great difficulty, by instructions, manners, or customs, they may often be observed to act instinctively; and this is in no case more remarkable than in such actions as relate to child-bearing and to children. From instinct, therefore, and not reason, it may be presumed, that the chosen and favourite employments of pregnant women are those, which in some way or degree relate to the ex-

* Sacri et pectinis ossium cum coxendice copula, quæ fit per synchondrosin, adeo emollitur et solvitur, ut dicta ossa facile exeunti fœtui cedant, et hiantia regionem totam hypogastricam ampliorem reddant.—*Harv. Exercitat. de Partu.*

† Accedente pariendi tempestate ad solita loca revertantur: ut stabula vel nidos suos tuto exstruant, ubi fœtus pariant, foveant, alantque.—*Harv.* eodem loco.

pected blessing; and an unusual solicitude about the preparation of such things as may be necessary or convenient to the child, in the advanced state of pregnancy, may be considered as a sign, that the time of labour is approaching.

SECTION V.

Before we proceed to the history of labours, it is necessary that we should speak of the operation, if it deserves the name, by which we are to acquire our information. This is described by the term examination, or examination *per vaginam*. When instituted at the time of labour, it is popularly called *taking a pain*, which explains the opinion entertained of it by women. Concerning this operation, two things are to be observed; first, the manner in which patients are to be examined; and, secondly, the information to be gained by the examination.

The position in which women are placed, when it is thought necessary to examine them, varies in different countries. In some, the examination is made when they sit in a chair or stool contrived for the purpose; in others, when they kneel by the side of a bed; and in others, in a recumbent position. But, in this country, at the present time, almost universally, women repose on a couch or bed, upon their left side, with their knees bent and drawn towards the *abdomen;* and this is by far the most convenient, as well as decent position. It is not requisite, or possible, to enumerate every circumstance, to which it is necessary to pay attention; but it must be an invariable rule, never to propose an examination *per vaginam* but as a matter of absolute necessity, and in the presence of some attending person. It is also to be performed with the utmost care and tenderness, and the strictest regard to decency; for, unimportant as the operation in itself really is, an opinion is formed, by the manner of doing it, of the skill and humanity of the practitioner, and of the propriety of his conduct.

An examination *per vaginam* may be needful to discover and distinguish diseases of the *uterus* and contiguous parts; to ascertain whether a woman be pregnant, or how far she is advanced in her pregnancy; to determine whether she be in labour, or what progress that has made; if the presentation of the child be natural; if the *pelvis* be well formed or distorted; and on other occasions.

The state of the parts examined, under all the incidents before recited, is different from the natural; but of the deviations of every kind, and in every degree, it is impossible to form a judgment, unless we have previously obtained an accurate idea of their natural state. This forms the true standard by which we are to judge of every

change, natural or morbid; and the faculty of discriminating the various diseases or alterations can only be acquired by frequent practice, no abstract rule being sufficient for the purpose. It may indeed be said, that, in some diseases of the *uterus,* especially those disposed to become cancerous, the *os* and *cervix uteri* is enlarged, or elongated, indurated, thickened, fissured, spongy, and uncommonly tender when touched; or patulous, or with the *labia* somewhat reverted; lying too low in the *vagina,* disengaged or firmly attached to the adjoining parts. But, in others, as the *polypus,* hydatids, inflammation, or a glandular enlargement of the *uterus,* the state of the parts (except the simple enlargement of the *uterus),* or the sensation they give, cannot be described by words, without an antecedent agreement what those shall be called which we have before felt or seen. We are often able to distinguish the changes made in the body of the *uterus,* by an examination *per anum,* more perfectly than by any other method; but this is not to be done without giving previous notice of our intention.

As it is extremely difficult, if not impossible, to determine, by an examination *per vaginam,* in the early part of pregnancy, whether a woman be with child, it is then prudent to evade the operation; because it is always expected, that we should afterwards speak with precision and confidence. For the fundus of the *uterus* being the part first distended in consequence of conception; and the *cervix,* which is the only part we can feel, not beginning to shorten in any distinguishable way before the termination of the fourth month of pregnancy; not to mention the natural varieties in the structure and size of the parts in different women, and the alterations which may be caused by the attachment of the *placenta* to different parts of the *uterus,* or by those diseases which resemble pregnancy, we shall see sufficient reason for putting off this kind of inquiry. A cautious practitioner will not therefore on any account, examine before a suitable time, because he cannot gain information, to supply him with proper ground on which to form the opinion required of him, that will not be extremely subject to error. Perhaps this limitation may not be sufficiently strict, and it is better to say, in general terms, that the longer we defer the examination, the greater probability there will be that we shall not be deceived, or disappointed of the information we want. In all cases likewise of doubtful prognostic, it is prudent to avail ourselves of every advantage which a knowledge of the collateral circumstances can afford, before we give our opinion.

Nor is there less difficulty, when we are assured that a woman is with child, in deciding, by an examination *per vaginam,* how far she is advanced in her pregnancy. An opinion of this must be formed

on the estimation we make of that portion of the *cervix uteri*, which we suppose should remain undistended at any individual period of pregnancy. But as the *cervix uteri* naturally varies in its length in different women, of course the portion which remains undistended at any precise time must vary; and all that can be justly said upon this subject will only deserve the name of conjecture. It is therefore more judicious not to hazard an opinion singly upon the information gained by an examination *per vaginam*, when any determination of importance is to be made; but, as in the former statement respecting the existence of pregnancy, to act with caution, and to collect all the information we can get from other circumstances, before we presume to give a decided opinion.

When a woman is at or near the full period of uterogestation, it may be determined whether she is in labour by the state of the *os uteri*. By the dilatation of the *os uteri* during the continuance, and not by its relaxation in the absence of a pain, we are to judge that the patient is in labour; for a considerable degree of relaxation of the *os uteri* is sometimes found to take place several days, or even weeks, before the commencement of labour; though it is generally in a contracted state, till it is distended in consequence of the pressure made by some part of the *ovum* urged upon it by the acting *uterus*. By the time which has been required to produce a certain degree of dilatation, we may guess with tolerable exactness the general duration of a labour, provided the action of the *uterus* should continue with equal energy; because on this, as well as on the state of the parts, the progress of a labour must depend. But so many unexpected circumstances occur, which may accelerate or interrupt a labour in its progress, that it will usually be a proof of wisdom to be silent upon this subject; at least not to advance our opinions with confidence, but to offer them, when demanded, with hesitation and reserve, as the circumstances of the case do not justify or in fact require our giving a positive opinion.

The manner in which the child presents may generally be discovered by an examination in the beginning of labour; for, though we should not be able to distinguish any part through the membranes, in the intervals between the pains (when only the attempt for this purpose ought to be made), if the head presents it may be perceived through the anterior part of the *cervix uteri*, resting upon the *ossa pubis*, in some cases so early as the fifth month of pregnancy. When any other part presents, we can in general only discover through the membranes that it is not the head, by its smallness and the want of that resistance which is made by the head; and if we can feel no part presenting, though it does not certainly follow, it is not amiss to conclude, that it is not the head; and then in our report to the

friends we shall express ourselves with some doubt, and be prepared to give assistance at the time when the membranes break, if the presentation should be such as to require it.

After an examination *per vaginam,* our opinion is constantly demanded as to the prospect of an easy or difficult labour. If the presentation of the child be natural, the *pelvis* well formed, the soft parts in a relaxed state, and the patient free from disease, we may safely assure her friends that all the appearances are promising, and that the labour will be finished, in all probability, with perfect safety both to the mother and child. But of the slowness or celerity of a labour great experience and attention can only give that maturity of judgment, which enables us to form an opinion with tolerable precision; yet the same experience having often shown the uncertainty of any determination, will point out the propriety of leaning rather to the side of doubt than of confidence. It is not a little extraordinary, how often we may observe labours, proceeding in regular circles of time, as four, six, twelve, or twenty-four hours, from the first alarm or token; or how frequently their progress is suspended in the day time, especially in very warm weather, as will be more particularly observed.

CHAPTER IX.

ON LABOUR.

SECTION I.

Having given a description of all the parts concerned in parturition, and shown the peculiarities of the female constitution, having enumerated the principal alterations produced in the constitutions of women during pregnancy, and having further taken notice of all the previous changes, we come in the next place to the consideration of a *Labour.* This term is generally used to signify every act performed with difficulty or pain; but by long established custom it has been appropriated in this and many other countries to parturition, the circumstances of which it is well suited to describe.

Before we proceed to the history of labours, it is requisite that we should divide them into classes or kinds; and, though objections might be made to very strict arrangement, some appears to be both convenient and necessary, for the purpose of enabling us to convey our sentiments with perspicuity to others, and for real use in practice.

With these intentions, labours may be divided into the four following classes:

1. Natural.
2. Difficult.
3. Preternatural.
4. Anomalous.

Under one or other of these distinctions every kind of labour which can occur may be reduced.

SECTION II.

Natural labours, which have had their denomination from their frequency, or from the shortness of the time required for their completion; from the regularity of the manner in which they proceed, or from their being accomplished by the unassisted efforts of the constitution, form a standard by which we are to judge of every other class. It is therefore necessary, that we should obtain as precise an idea of these as the subject will allow. We will then say, that every labour shall be called natural, if the head of the child present, if the labour be completed within twenty-four hours, and if no artificial assistance be required.

Should any of these three leading marks in the definition of a natural labour be wanting, it must come under some other denomination. Thus, if any other part except the head should present, the labour would be *preternatural;* if it should be prolonged beyond twenty-four hours it would be *difficult ;* and if the circumstances were such as to require assistance, though the labour might be completed within one hour, it would be *anomalous,* or must be referred to some other class.

The presentation of the head of the child constitutes an essential part of the definition of a natural labour ; yet this may happen in various ways. The most common position of the head, and that in which it is expelled with the greatest facility, is when the hind-head is disposed to turn towards the *pubis* and the face towards the hollow of the *sacrum.* But the face is sometimes inclined towards the *ossa pubis,* and the hind-head towards the hollow of the *sacrum ;* or there may be an original presentation of the face; or one or both arms may descend together with the head. These differences in the position of the head do not constitute labours of another class; but they are to be considered merely as varieties of natural labours, provided the other circumstances correspond; experience having fully proved, that, in any of these positions, the head may be expelled by the natural efforts with perfect safety to the mother and child, though not generally with such ease and expedition as if the hind-head was turned

towards the *pubis;* unless the head be very small. It must also be observed, though another part of the definition be taken from time, that it is possible for one woman to make greater efforts, and to undergo more pain, in two hours, than another may in twenty-four. Then the definition will be imperfect; as almost all general distinctions must be, when they come to be examined and tried by individual cases.

A natural labour was the last thing well understood in the practice of midwifery; because scientific men, not being formerly employed in the management of common labours, had no opportunity of making observations upon them. Practitioners were then engaged in qualifying themselves for the manual exercise of their art, whenever they might be called in to give assistance, and not in making nice distinctions or investigating the particular cases, in which only it might be necessary to exercise it.

SECTION III.

We have before given an account of the changes which precede labours, and are now to give a detail of the symptoms which accompany them.

The first symptom which indicates a present labour is anxiety, or that distress which usually arises from the apprehension of danger, or doubt of safety. This does not seem to be confined to the human species, but to be common to all creatures, as they universally show signs of dejection and misery at this time, though they suffer in silence; and even those animals which are domesticated strive to conceal themselves, and refuse all offers of assistance. This anxiety, which is probably occasioned by the first changes made upon the *os uteri*, and by the consent between the vital organs and that very irritable part, is often exceedingly increased by an original timidity of disposition, especially with first children; or by the discovery of untoward accidents happening to other women under the same circumstances, with whom a similarity of situation is the cause of a very interesting sympathy. From motives of humanity, as well as professional propriety, it is therefore at these times necessary, by steady conduct, and by arguments suited to the patient's own notions, or the peculiar cause of her fears, to remove her apprehensions; and, by soothing and encouraging language, and by attention to her complaints, though not indicatory of any danger, to afford her every consolation in our power. This anxiety is greatest in every woman in the beginning of labour, for the sharp pains which attend its progress generally excite other sentiments in her mind. But we are at all times to be on our guard, that her fears or supplications for relief do

not prevail with us to attempt to give assistance, when our interposition is not required, and when it must necessarily be productive of mischief.

2. At the commencement of labour, and sometimes on the return of every pain, women have frequently one or more *rigors*, with or without a sense of actual cold in their inferior extremities, or of the whole body. These are not to be considered as signs of the accession of disease, but as the effects of an increased irritability spread through the whole frame; or perhaps as proofs, that all the powers of the constitution are summoned to contribute towards the important process which is carrying on. These *rigors* are void of danger, and they are most apt to occur when the *os uteri* begins to dilate, and when it is upon the point of being fully dilated. But in the course of a labour, perhaps in all other respects natural, but more especially in those which are either difficult or very lingering, when there is one strong and distinct *rigor*, it is often followed by some disease dangerous either to the mother or child.

3. When the head presents, and scarcely in any other position of the child, women have generally some degree of strangury in the latter part of pregnancy; and this symptom is increased on the approach of labour, by the pressure of the descending head upon the *cervix* of the bladder. Should the pressure be very great, or of long continuance, a suppression of urine may be occasioned before or in the time of labour. To prevent the inconveniences which might arise from a distension of the bladder, either to the part itself, or by obstructing the passage of the head, it is necessary to urge the patient to void the urine frequently; and in case of a suppression, to give relief by introducing the catheter. On the other hand, should the pressure of the head be made upon the *fundus* of the bladder, there will be an involuntary discharge of urine at the time by her enduring every pain; or, if there should be any extraordinary agitation from a cough, or any similar cause, before delivery, there will be the same consequence, which is very disagreeable and troublesome, but not dangerous.

4. It is not unusual for patients to have a *tenesmus*, or one or two or more loose stools in the beginning or course of a labour. Both these symptoms may be occasioned by the consent between the *os uteri* and the *sphincter* of the *anus*, or by the pressure made upon the *rectum*, as the head enters into or passeth through the *pelvis*. There is in the minds of all women a popular prejudice and unreasonable dread of complaints in the bowels through every stage of pregnancy, parturition, and childbed; and of course there is never any objection, but, on the contrary, a willingness to use such means as are advised to suppress them, or restrain any disposition to a *diarrhœa*.

The error has arisen from their confounding the looseness which often accompanies the last stage of the puerperal fever with that which proceeds from any other cause. But the *diarrhœa* which attends the beginning or course of a labour is so far from occasioning or from indicating any danger, that the patient is evidently relieved by it; a greater freedom being given to the action of the *uterus*, more room made for the passage of the child, and any feverish disposition thereby removed or prevented. If, therefore, the patient should not at that time have stools spontaneously, it is very sound practice to direct one or more emollient clysters for the beforementioned purposes. Nor are these the only good ends which are answered by clysters; for they sooth and give a proper bent to the parts when too much or improperly irritated; and serve also as a fomentation, which, by its warmth and moisture, may give or amend their disposition to dilate. In very slow labours, when the head of the child has dwelt for a long time in one position, it is not unusual for the patient to have one or more copious and loose stools immediately before the advancement of the head, after which the labour is soon concluded.

5. The uncoloured mucous discharge from the *vagina*, which pretty generally occurs before labour, on its accession is usually tinged with blood, or a small quantity of pure blood is discharged. This sanguineous discharge, which varies in quantity and appearance in different women, is popularly called a *shew*, and it happens more particularly at two periods of a labour; when the *os uteri* begins to dilate, and when it is finally dilated. In the first instance, it is probably occasioned by the separation of a few of those vessels, by which the membrane which connects the *ovum* to the *uterus*, was originally bound; and, in the second, by the effusion of some blood before extravasated in the substance of the *os uteri;* for this part, in some cases, acquires an uncommon thickness from that cause, independent of any edematose or inflammatory tumefaction. In many cases, there is no coloured discharge in any period of a labour, and then the dilatation generally proceeds more slowly; for the discharge is a sign that the parts are in a state disposed to dilate, but it also improves that state. It is not only in colour or quantity that there is found much difference, either in the sanguineous or mucous discharge, but also in the consistence and tenacity of the latter; it being in some cases thin and watery, and in others thick and extremely viscous.

6. But all these symptoms are not positive proofs of the existence of labour; for we cannot consider a woman as being in actual labour, unless she has the usual pains. Nor does all pain in the region of the *uterus* certainly prove that a woman is in labour, because such

pain may be excited towards the conclusion of pregnancy by various causes besides the action of the *uterus*. These pains are therefore distinguished into two kinds, *true* and *false;* but the seat, the manner, and the degree of these pains, often resemble each other so nearly, that it is very difficult or impossible to distinguish them, unless by an examination *per vaginam*, or by waiting for the event.

The *true* pain of labour usually begins in the loins or lower part of the back, surrounds the *abdomen*, and terminates at the *pubes*, or upper part of the thighs; and it sometimes observes a quite contrary direction. In some cases, the pain is confined to one particular spot, as the back, *abdomen*, thighs, or inferior extremities: in others, the pain is seated in some part far distant from the *uterus*, as in the knees, heels, or feet. In some, the stomach is affected; in others, though very rarely, the brain; and then convulsions, or some derangement of its functions, are brought on. In short, the varieties of pain, as well as its effects, are innumerable; and these have been explained by what we really do know, or fancy we know, of the influence of the nervous system.

The pain attending a labour is periodical, with intervals of twenty, fifteen, ten, or five minutes, according to its progress, and as regular as the clock, but with a longer or shorter duration, according to the action of the *uterus*, on which it depends; and the more the pains are multiplied, the better it is for the patient. For, if an effect of great importance to the constitution is to be produced, the more slowly it is made, provided the slowness of the progress does not depend on any morbid cause, the more gradual will be the change, and of course the danger which sudden violence might produce will be avoided or lessened; the division of the pain being equal to the diminution, nearly in the same proportion as rapidity is an addition to force. It is an old observation, confirmed by daily experience, that after the completion of slow or lingering labours, patients usually recover better than after those which are quick; not to mention that they are less liable to the untoward accidents which precipitation may immediately produce.

Those who endure any kind of pain express their suffering by some peculiarity of manner, or by some tone of voice, which to a nice observer will generally discover the part affected, together with the kind and degree of pain, and the change it is effecting. Sharp pain is universally expressed by an interrupted and acute tone of voice; obtuse pain, by a continued and grave tone, unless the expressions are controlled by an acquired firmness of mind, which, on particular occasions, may enable it to rise above the infirmities of the body. The expressions of pain uttered by women in the act of parturition may be considered as complete indications of the state of

the process, so that an experienced practitioner is often as fully master of the state of his patient, if he hears her expressions, as by any mode of examination. He must, however, understand and make allowances for the peculiarities of different patients, or he will be deceived; because in tender constitutions, the sensations being quick, and the resolution faint, the mode of expression will be according to the sense, and not in proportion to the degree of absolute pain.

In the first stage of a labour, the change consists in the dilatation of the parts. Forcible or quick dilatation gives a sensation similar to that produced by the infliction of a wound, and it is equally expressed by an interrupted and acute tone of voice. These are popularly called *cutting, grinding*, or *rending* pains. When the internal parts are dilated, and the child or contents of the *uterus* begin to descend, the patient is, by her feelings, obliged to make an involuntary effort to expel; and the expressions are then made with a continued and grave tone of voice, or she is mute. These are called bearing pains. But there is an intermediate period of a labour in which there is in the first instance some degree of dilatation, and afterwards an effort to expel; and then there will be the expression which denotes sharp pain, combined, or immediately succeeded by a graver tone of voice. When the child first begins to press upon and to dilate the external parts, the expression becomes again acute and vehement; and lastly, the expulsion of the child is often accompanied with an outcry of suffering beyond what human nature seems able to bear; or the pain is endured with silence. The knowledge of these circumstances, though apparently trifling and contingent, is really of some importance in practice; and they are permanent, as far, at least, as the freedom or restraint of the breathing can operate. If, for example, on any principle the patient was induced, in the beginning of labour, to retain her breath, and to make strong efforts to expel, the order of the labour would be inverted, as it would also be when the parts were dilated, and the expulsatory power wanted, if she should exclaim.

The pains of labour or child-birth, and the action of the *uterus*, are terms used synonymously; but they are not exactly the same thing. The action of the *uterus*, by which its contents are compressed into a less space, and would be excluded if there was any opening for their passage, first takes place as a cause; and this does not seem to be attended with pain. When some parts resist the passage of the contents of the *uterus*, the exclusion of which is the effect to be produced, there will then be pain proportionate to the action, to the sensation of the resisting part, and the resistance made. There is no way by which we can estimate the degree of force but

by the resistance; nor the resistance but by the pain attending it; nor the pain but by the expression. Judging by induction of the force exerted, by the expression of the pain, we say in common language, a weak pain, a strong pain, or a woman is delivered by her pains; and the purpose of conveying our meaning is answered, though the expressions are not strictly logical. We may suppose the parts, through which the child must pass, so perfectly disposed to dilate, that they would make little or no resistance to the excluding force, and then a woman would be delivered with little or no pain. This observation will not only discover the reason of the great advantage obtained by a labour being slow and lingering; and why some women are delivered comparatively without pain; but, with this perfect disposition to dilate, if the patient should be asleep when the action of the *uterus* came on, of the possibility of her being delivered before she was quite awake.

In the conversation of those who attend labours it is often surmised, that women have much unprofitable pain. This statement is not only unfair as to the fact, but the language is very dispiriting; and it is often assigned as a reason for an interposition altogether unnecessary, and often injurious to the mother or child. No person in labour ever had a pain, depending on her labour, which was in vain. It may not be equal to the accomplishment of the effect we want, or at the time we wish, but every pain must have its use, as preparatory to, or absolutely promoting, the effect; and, as we are not able to comprehend every possible cause of every state, by endeavouring to remove what appears to be one slight ill, it often happens that we occasion many, and those of greater consequence. Therefore, whether the pains, which any woman in labour may have, produce an immediate effect or not, it is our duty to wait with patience, provided there be no tokens of danger; because the natural order of proceeding requires a succession of pains, and artificial attempts to dilate the parts would be injurious.

Though the pains of labour return periodically, the intervals between them are of different continuance. In the beginning the pains are usually slight in their degree, and have long intervals; but as the labour advances they become stronger, and the intervals are shorter. Sometimes the pains are alternately strong and weak, or two feeble and one strong; and there is reason to think, that every variety has its advantage, by being suited to the apparent or real internal state of every individual patient. In every circumstance, which relates to natural parturition, it is impossible not to see, and not to admire, the wisdom and goodness of Providence, in ordaining the power, and fitting the exertion to the necessities of the situation, with a marked respect to the safety both of the mother and child

This perfect coincidence between the cause and effect should afford a lesson of patience to those persons, who, when in labour, become intractable, and, by losing their self-possession, add to the unavoidable evils of their situation; and to those practitioners, who, being led away by popular errors, aim to add to the strength of the pains, or to quicken their returns, and act as if they thought there was no other evil but that of a slow labour; an opinion which, in its consequence, has done more mischief than the most skilful practice ever did good.

SECTION IV.

Though it was said, that pain was, properly speaking, a constituent part of the labour, it was also observed, that all pain in the region of the *uterus* near the full period of gestation, though periodical in its returns, was not a positive proof of the existence of a labour. For whatever disturbance is raised in the constitution, especially in those parts connected, or readily consenting with the *uterus*, or with which the *uterus* may reciprocally consent, towards the conclusion of pregnancy, it is very apt to induce the symptoms of labour, in a manner which makes it difficult to distinguish between *true* and *false* pain. Yet the good of the patient, as far as relates to the proper conduct of the ensuing labour, may depend upon the justness of the distinction; for if the pain, which is *false*, be encouraged or permitted to continue, the action of the *uterus* might follow, and premature labour be occasioned.

The causes of false pain are various; as, fatigue of any kind, especially too long standing; sudden and violent motions of the body; costiveness, or a *diarrhœa;* general feverish disposition; agitation of the mind, and a spasmodic action of the *abdominal* muscles. Very frequently also the irregular and strong movements of the child, in irritable constitutions, occasion pains like those arising from the action of the *uterus* at the time of labour. In some cases, there is such a close resemblance between the *true* and *false* pains, that they cannot be distinguished without an examination *per vaginam*. If, during the continuance of a pain, no pressure upon, or dilatation of, the *os uteri* can be perceived, we may conclude that the pain is not the consequence of the action of the *uterus;* and whatever likeness it may have, that it is not *true* pain. But if there should be pressure upon, or dilatation of, the *os uteri* during the continuance of the pain, we may consider it as proceeding from the action of the *uterus*, and be persuaded that the patient is really in labour. In a few cases, I have known the action of the abdominal muscles so regular and strong, that the whole volume of the *uterus* has been heaved up and down alternately, in such a manner, that it was scarcely possible to dis-

tinguish between this strange succussion and the proper action of the *uterus;* yet without any dilatation of the *os uteri.*

The means to be used for the relief of *false* pain must be guided by the cause. When it is occasioned by fatigue of any kind, immediate ease will often be gained by a short confinement in a horizontal position. In plethoric habits, or with a feverish disposition, it will be necessary to take away some blood; and, when the patient is costive, to procure stools by emollient clysters, or gently opening medicines. In every case, when means adapted to the apparent cause have been used, it will be proper to give an opiate proportioned to the degree of pain, or to repeat it in small quantities at proper intervals, till the patient shall be composed.

SECTION V.

It has been thought equally incumbent upon the practitioner to promote the power and effect of *true* pain, as it was to quit that which was *false.* This opinion is perhaps more universally popular than any other throughout medicine; and if it had infected the minds of practitioners, as it often has those of patients, it would be as injurious as general. From this source may be traced the opinion of the necessity, and the abominable custom, of giving assistance, as it is called, by dilating the internal and external parts artificially; of giving hot and cordial nourishment during labour, even in plethoric habits and feverish dispositions, by which the nature of the principle which should actuate the *uterus* is changed, the pains are rendered disorderly and imperfect, and the foundation of future mischief and difficulties, in one form or other, invariably laid. Hence also was derived the doctrine of the necessity of patients helping themselves, as it is called, by urging with all the voluntary force they are able to exert beyond the dictates of nature; as if a labour was a trick to be learned, and not a regular process of the constitution. Women may be assured that the best state of mind they can be in at the time of labour is that of submission to the necessities of their situation; that those who are most patient actually suffer the least; that, if they are resigned to their pains, it is impossible for them to do wrong; and that attention is far more frequently required to prevent hurry, than to forward a labour. In every thing which relates to the act of parturition, Nature, not disturbed by disease, or molested by interruption, is fully competent to accomplish her own purpose; she may be truly said to disdain and to abhor assistance. Instead therefore of despairing, and thinking they are abandoned in the hour of their distress, all women should believe and find comfort in the reflection, that they are at those times under the peculiar care of Providence;

and that their safety in childbirth is ensured by more numerous and powerful resources, than under any other circumstances, though to appearance less dangerous.

SECTION VI.

In order to give a full and distinct view of a natural labour, it is expedient to divide the process into three periods or stages. In the first will be included all the circumstances which occur, and all the changes made, from the commencement of the labour to the complete dilatation of the *os uteri*, the rupture of the membranes, and the discharge of the waters; in the second, those which occur between that time and the expulsion of the child; and in the third, all the circumstances which relate to the separation and expulsion of the *placenta*.

In the beginning of labour the *os uteri* is found in very different states in different women. In some it is extremely thin, and in others of considerable thickness; in some it is rigid and closely contracted, but in others it is much relaxed, and somewhat opened for several days, or even weeks, previous to the accession of labour. In some cases the *os uteri* remains so high, that it can with difficulty be reached, in the centre of the superior aperture of the *pelvis*, projected backwards or on either side; whilst in others it is spread thin, and pressed very low before it begins to dilate. There is, in short, every variety of state and position, which a part constructed and connected like the *os uteri* can be thought capable of undergoing.

The first part of the dilatation is generally made very slowly, the action of the *uterus*, on which it depends, being feeble in its power and slow in its returns; but the more perfect the state of relaxation is, with the greater facility, the dilatation will of course be made. This at the commencement is effected by the simple pressure of the contents of the *uterus* upon the *os uteri*, which is a necessary consequence of the action or contraction of the *uterus;* but when the dilatation is made to a certain degree, the membranes containing the waters of the *ovum* are insinuated within the circle of the opening *os uteri*, and form a soft pillow, which, at the time of every pain, acting upon the principle of a wedge, operates with increasing force according to the size it acquires; in consequence of which the latter part of the dilatation usually proceeds with more expedition than the former, unless the membrane containing the waters be previously ruptured.

There is no possibility of prognosticating how long a time may be required for the complete dilatation of the *os uteri* in any individual case; yet a tolerable conjecture, subject however to many deviations,

may be formed by a person who has had much experience. If, for example, after the continuance of the pains for three hours the *os uteri* should be dilated to the size of one inch, then two hours will be required for dilating it to two inches; and three hours more will be necessary for dilating it completely, provided the action of the *uterus* should proceed with regularity and with equivalent strength. But in some cases the *os uteri* will abide in nearly the same state for several hours; yet when the dilatation begins, it will soon be perfected. In others, after a certain degree of progress, the action of the *uterus* will be suspended for many hours, and then return with great vigour; so that all which could be said on this subject would in fact be conjectural.

With first children this stage often makes the most tedious and important part of a labour, both on account of the longer time required for, and the greater difficulty in completing the dilatation of the *os uteri*, and because the accompanying pain is more sharp and harder to bear, than that which is attended with the effort to expel; which never fails to inspire the patient with the hope of being soon freed from the misery which she endures. When the parts are to our apprehension in the same state, there will be a wonderful difference in the manner of, and the time required for, their dilatation, in first and subsequent children. There might be much difficulty in exploring and ascertaining the cause of this difference: but we may presume that a part which is accustomed to perform an office, or undergo a change, acquires a readier disposition to the office or change, according to the number of times it has performed that office, or undergone that change. Something of the kind may be observed in new-born infants, in which there is often a tardiness in executing what may be considered as the common functions of the body.

As a labour advances, the intervals between the pains become shorter, and their force is increased. At the time of each pain the patient is restless, and solicitous for the event; but when it ceases, by a happy oblivion she soon forgets it, and is unmindful of its return. In some constitutions the labour, instead of adding to the irritability of the habit, and exciting its powers to action, occasions a degree of insensibility; or the patient falls into a sound sleep the moment the pain begins to abate, from which she is awakened by its return. In others, the power exerted by the *uterus*, aided by that of the abdominal muscles and diaphragm, being insufficient for the purpose of dilating the *os uteri*, or that part becoming unusually irritable by the frequent impressions made upon it; then, by its consent with the stomach, extreme sickness or vomiting is brought on, sometimes after every pain, by which the labour is very much forwarded; one fit of vomiting, according to popular observation, doing more service

than several pains, partly by the increased pressure, and partly by the succeeding relaxation. But when the *os uteri* is dilated, patients have very seldom an inclination to vomit from any natural cause. Vomiting very often attends the passage of a stone through the *ureters*, or the *gall-ducts*, from the same cause, and with the same effect.

By regular returns of pain, or with the varieties before mentioned, with many others which it is impossible to enumerate, the *os uteri* becomes at length wholly dilated. Whether a short or a long time be required for this purpose, it is the duty of the practitioner to abstain from interfering in this part of the process. It may sometimes be necessary to pretend to assist, with the intention of giving confidence to the patient, or composing her mind. But all artificial interposition contributes to retard the event so impatiently expected, by changing the nature of the irritation and the action thereon depending; or does mischief by inflaming the parts, and rendering them less disposed to dilate; in short, by occasioning either present disorder or future disease. For these reasons we must be firm, and resolved to withstand the entreaties which the distress of the patient may urge her to make, as we must also the dictates of vehemence and ignorance in the bystanders. Others may be impatient, but we must possess ourselves, and act upon principle. The event will justify our conduct; and, though there may be temporary dislike and blame, if we do what is right, there will be permanent favour and reputation.

During the continuance of a pain the membranes containing the waters are turgid, pressed upon, and within the circle of the *os uteri*, according to the strength of each pain, by which the further dilatation is promoted; but in the absence of a pain the membranes become flaccid, and seem to be empty. These different states of the membranes are readily explained by the observations before made, by our knowing that when the *uterus* is in action its cavity is lessened, and of course its contents are compressed; but on the cessation of the action the cavity of the *uterus* is again enlarged, and the compression removed. Hence it becomes necessary, when an examination *per vaginam* is made during the time of a pain, that we should be cautious not to break the membranes; and if any accurate investigation be needful, either of the state of the parts or of the position of the child, it ought to be made in the interval between the pains, or protracted till the pain has ceased.

In a short time after the *os uteri* is wholly dilated, the membranes are usually ruptured by the force of the pains, and the waters of the *ovum* are discharged in one large gush or stream. But in many cases the membranes break spontaneously long before this period, without any material inconvenience. In some they are not ruptured

when the dilatation of the *os uteri* is completed, but are protruded by each successive pain lower down into the *vagina*, and then within the *os externum*, which they also dilate; and at length a small bag of water is formed without the *os externum*, which can serve no further purpose.

It is a commonly received opinion among the lower class of people, that the child should be born speedily after the rupture of the membranes and the discharge of the waters. This opinion is not founded on prejudice, but on sound observation; and was probably first entertained by those who were engaged in the care of breeding cattle, in which this is the order and usual course of parturition; and I believe it would more frequently happen in the human species, if the progress of the labour were not by some means or other disturbed or interrupted. But it has been a custom, which at the present time is not unfrequent with practitioners, urged by the distress and suffering of those whom they are attending, or by the concern of friends, or by a persuasion of its propriety and advantage, and sometimes perhaps by their own impatience, to break the membranes before the *os uteri* is dilated. If these are ruptured spontaneously or artificially before the *os uteri* is dilated, the child cannot possibly follow immediately; and all that is gained is by bringing the head of the child, instead of the membranes containing the waters, into contact with the *os uteri*. This cannot be considered as any advantage, as it changes a very soft and accommodating medium, provided by nature for the purpose of preventing any undue violence upon a very tender part, for the hard and unaccommodating head of the child. Nor is this the only ill consequence which follows: by such proceeding we occasion a general derangement of the order of the labour, which is never done with impunity, as it may afterwards become the cause of a laceration of the external parts, or even of an unfavourable separation of the *placenta*. Moreover, by this premature rupture of the membranes, we often defeat our own purpose; and, by disturbing, protract instead of hasten the labour. We will therefore agree in establishing it as a general rule for our own conduct, that the membranes should never be ruptured artificially, at least before the *os uteri* is fully dilated, and be persuaded that it is afterwards unnecessary, unless there should be some cause more important than the mere delay of a labour, or some reason of more weight than those which have been commonly assigned.

SECTION VII.

In the second period or stage of a labour will be included all the

circumstances attending the descent of the child, the dilatation of the external parts; and the final expulsion of the child.

Notwithstanding the definition of a natural labour, which was before given, it is not to be considered as a process going on in one unvarying line, nor is every aberration to be thought of sufficient importance to constitute a labour of another class. In this respect, the definition of a labour may be compared to that of health, which, however correct in general, would not correspond in all points with the state of any individual person, if submitted to a critical examination. In like manner, though a labour cannot come under the denomination of *natural,* without the three distinguishing features, yet we may probably never meet with any two labours in any respect exactly similar. There are perhaps more frequent deviations in the first stage of a labour than in any other, both with regard to the time and the manner in which the *os uteri* is dilated. Nor is the first stage concluded either by the dilatation of the *os uteri,* or by the rupture of the membranes and the discharge of the waters, but by the concurrence of these circumstances; and the further the labour is advanced before the membranes break, the better it afterwards terminates. For, before that event, there is less violence done to the mother, and less stress upon the parts; because, without much suffering, they every moment acquire a better disposition to dilate; and till that has happened, whatever may be its position, the child undergoing no compression is free from all chance of injury.

When the membranes break, if the *os uteri* be fully dilated, the child, though resting at the superior aperture of the *pelvis,* either sinks by its own gravity, if the patient be in an erect position, or is propelled by a continuance of the same pain by which they were broken; or, after a short respite, the action of the *uterus* returns, and the head of the child is soon brought so low down as to press upon the external parts; properly speaking, upon the internal surface of the *perinæum.* In its passage through the *pelvis,* the head of the child, which at the superior aperture was placed with one ear to the *ossa pubis* and the other to the *sacrum,* or with different degrees of diagonal direction, undergoes various changes of position, by which it is adapted to the form of each part of the *pelvis,* with more or less readiness, according to its size, the degree of its ossification, and the force of the pains. With all these changes, whether produced easily or tediously, in one or in many hours, the practitioner should on no account interfere, provided the labour be *natural.* If he attempts to correct and to regulate every slight deviation, or uses any artificial means for hastening the process, the events of his practice will convince him that he has exercised his art on unnecessary

and improper occasions. He will moreover be taught, though he may acquire momentary approbation by endeavouring to remove every little present inconvenience, that diseases then far distant will be attributed to his misconduct, and sometimes not without reason. In this state and kind of labour he may with confidence rely upon the powers and resources of the constitution, which will produce their effect with less injury either to the mother or child, and with more propriety than can be done by the most dexterous human skill.

The external parts yield in a shorter or longer time, and with more or less ease, according to their natural rigidity, the degree of disposition to dilate which they have assumed during the labour, the force and frequency of the pains, and the number of children which the patient has before had. But the prevention of any injury to the mother, when the child is passing through the external parts, being esteemed a circumstance wholly depending upon the care of the practitioner, this part of our subject deserves a separate and particular inquiry.

SECTION VIII.

When the head of the child first begins to press upon and dilate the external parts, every pain may be suffered to produce its full and natural effect, without the hazard of mischief; but when a part of the head is insinuated between them, and the anterior edge of the *perinæum* is upon the stretch, they are liable to be injured by the violence of the distension. Any of these parts may be injured; but the *perinæum* in particular is subject to a laceration, which may not only extend so far as to occasion much present uneasiness, but sometimes very deplorable consequences for the remainder of the patient's life. It is therefore our duty to inquire into the merits of the different methods which have been recommended for the prevention of this accident, more especially as it admits of very imperfect relief when it has happened.

Yet it is very remarkable that none of the ancient writers either advise any method by which this accident may be prevented, or any means to be used for its relief, excepting such as were generally recommended for inflamed, ulcerated, or fistulous parts. In the works of Eros, who lived in the thirteenth century, and which were published by Spachius, this accident is indeed mentioned, and an awkward method of preventing it recommended. We might therefore presume that it is an accident which did not frequently occur in their practice, or that it was esteemed of too little consequence to engage their attention. With respect to the former opinion, it may

be observed, that whatever event is the consequence of any cause, it must at all times have been produced whenever that cause and the same circumstances exist. But those who perhaps had not perfection in view, and formed no very nice rule for their own conduct, might not be sensible of, or pay due attention to, the deviations or accidents which occurred, and would not adjudge disagreeable consequences to their own error or mismanagement. They did not therefore advise any method of preventing this accident, because they were ignorant of the cause, or they undervalued it.

It may be further observed, that the oldest writers in midwifery lived before the Christian religion was established, and in countries in which polygamy was allowed; when the death or infirmity of one wife was comparatively of little importance to him who had many, equally, or in some degree, dividing or partaking of his affection. But, on the establishment of the Christian religion, by which the selfish and bad dispositions of the human mind were intended to be restrained or corrected, and its better qualities exalted, one wife only being allowed to one man, and she being supposed to possess the entire affections of her husband, every disease or infirmity, which might render her person less agreeable to him, became of infinite consequence to their mutual happiness. Those only who, in the present state of society, have had an opportunity of seeing the many evils which flow from this alienation of affection, the cause being perhaps unknown to the parties themselves, can be sufficiently aware of the importance of this and many other accidents and diseases, to which women are subject; and which are neglected and disregarded, because they are not attended with immediate danger.

Still the question remains to be decided, whether women are by any peculiarity of construction naturally or necessarily subject to a laceration of the *perinæum*; or whether this accident be the consequence of erroneous opinions, and of alterations in the frame, occasioned by the peculiar manners of society; or of any adventitious circumstance whatever, at the time of delivery. It was before observed (see chap. ii. sect. 6.), that none of the classes of animals are ever liable to a laceration of the *perinæum*, except when extraordinary assistance is given in cases of otherwise insuperable difficulty; and it is well known that the laceration in any important degree does not universally, or perhaps generally, happen to those women who are delivered before proper assistance can be given. It is also to be remarked, that, as far as relates to the state of all the internal parts, the changes which they undergo at the time of parturition are not only effectually, but most safely produced by the natural disposition assumed by the parts, or the instinctive efforts of the parent. From a general survey of the wisdom, order, and benignity,

so clearly apparent in all the designs of Providence, in every circumstance particularly which relates to the propagation of the different species of animals, and the coaptation, as it were, of that wisdom to the necessities of those of every kind, we might perhaps be justified in making this general conclusion, that women, in every circumstance which relates to their safety and well-doing in natural parturition, are not left in a more destitute state than animals; for though it were proved that women are more liable to natural evils and difficulties in parturition than animals, the proofs of these would equally satisfy our minds that they are also provided by nature with many peculiar resources, and with powers which are, in general, limited only by the degree of the difficulties which require their exertion.

Nevertheless, from the frequency of some degree of laceration of the *perinæum*, when women are delivered without assistance, and from the difficulty with which it is sometimes prevented, when the most judicious and skilful assistance is given, it is believed by many, that women must often be unavoidably subject to it, and that the prevention must ever remain an object of human skill. Now with respect to the first statement, that of the laceration happening when women are delivered without assistance, it does not follow that it is inevitable; for even then it may be the production of error in the patient herself, or her friends. Because, from the hurry and solicitude of their minds, and even by their fears, she may have been encouraged to make great voluntary efforts, when the head of the child was on the point of coming into the world, merely because she was not assisted; or, after the expulsion of the head, instead of waiting for the body to be expelled also, some officious person presumed to extract it without regard to time, or the direction of the *vagina*. As to the difficulty or impossibility of preventing the laceration in some cases, we are to consider, that what may happen in a state of society, might not have happened in a state of nature; that the foundation of the accident may have been laid by something done in the preceding stage of the labour; and that it may be very much doubted, whether some of the methods practised for the prevention may not in fact have been the cause of the accident.

But the conduct of the practitioner is not to be guided by reflections on what his patients might do or bear, with constitutions healthy and firm, and with minds untainted with prejudices; but by due consideration of what they are *now* capable of doing or bearing: and he must adapt his rules and his practice to the state in which he actually finds them. From some natural or adventitious cause the laceration of the *perinæum* in some degree certainly does often unavoidably hap-

pen; but as so much of the future happiness of a woman may depend upon its prevention, we will grant what in many cases seems true, that it is always to be prevented by our skill and care; as no harm can arise from the opinion, though erroneous, if the assistance we afford be judiciously given.

In the beginning of a labour, especially with first children, it is not unusual to find the external parts closely contracted, and void of all disposition to dilate; yet in the course of a few hours, even when they have undergone no kind of pressure or distension, but merely by a disposition assumed from their consent with the internal parts, they become relaxed and soft. The longer the time therefore which passes between the commencement of a labour and the birth of the child, the less liable to a laceration will the *perinæum* be; for it is scarcely ever lacerated in a very slow labour, whatever may be the size of the child. But if it was possible to hurry a labour in such a manner, that the head of the child should be brought into contact with, and pressed forcibly upon, the external parts, before they had acquired this disposition to dilate, they would be universally torn, unless the accident were prevented by art: and the chance of the accident would be according to the degree of precipitation, and perhaps many hours after the act, by which the labour was hurried, was forgotten.

When the head of the child is insinuated within the external parts, if these do not easily yield to the occasion, it has been customary to dilate them artificially, under the idea of preparing them, to allow of the more speedy passage of the head. During every pain, it is obvious that the parts undergo as much distension as they are capable of bearing without injury; and this preparation, as it is called, lessening in fact the native disposition to dilate, irritating, and causing also an additional stress upon them, nothing is more clear than that this method of proceeding contributes to their laceration. All artificial dilatation of the parts, all attempts to slide the *perinæum* over the head of the child speedily, are therefore to be forborne and avoided as pernicious.

When the external parts are very rigid, we have been taught, that it is of great service to anoint them frequently and unsparingly with some unctuous application, with the intention of giving or improving that disposition to dilate, which is wanting. If the parts are clothed with their proper *mucus*, as by the use of any application in the manner advised that would be absterged, we shall afterwards find ointments of any kind very poor substitutes for that *mucus*, and that there is little profit from their use, under any circumstances. But if the parts, from any cause, should become heated and dry, after the application of flannels wrung out of warm water, some soft and simple

ointment may be serviceable, by abating their heat, giving them a disposition to secrete their proper *mucus*, and of course favouring their dilatation.

In some constitutions the different parts concerned are not equally inclined to dilate. Sometimes the internal parts dilate in the most kindly manner, when the external are in a contrary state; and sometimes the internal are very rigid, when the external parts have the greatest aptitude to dilate, yielding to the first impulse of the head. There is in all infinitely more difficulty with the first than subsequent children, not from rigidity only, but, if we may be allowed the expression, from ignorance how to dilate; and, from a certain degree of re-action evidently perceived in the parts during the continuance of every pain and when it has ceased. It is therefore often observed, that the head of the child advances more, and with greater safety, when the violence of a pain begins to abate, because the re-action of the parts is not then so strong as while the pain continues in full force.

During a pain there is often reason to expect, that the head of the child would be excluded; but the moment the pain declines, the head is retracted a considerable way into the *vagina*, and the external parts close again. No other inconvenience arises from this cause than a little prolongation of the labour, which may be irksome, but cannot be injurious. If the parts do not distend favourably, should the head of the child abide within them in the absence of a pain, it may sometimes be expedient even to repel it in imitation of this natural occurrence, for the purpose of preventing the laceration.

When the head of the child is every moment expected to pass through the external parts, we have been advised by some, to forward the emergence of the head from under the arch of the *pubes*. Others have on the contrary assured us, that it is more eligible to prevent, for a certain time, this emergence, by which means not only time is given for the parts to dilate, but the head of the child is so disposed as to pass through them in its smallest *axis*, and less distension is thereby occasioned. Whoever has reflected upon this subject would hesitate as much to believe, that in the general dispensation of Providence, it should have been left to human skill, to guide the head of the child at the time of birth in a direction different from that in which it most commonly presents, as that it could have been intended for the generality of children to have been brought into the world by instruments, or by any human invention. As far as my experience enables me to judge, neither of these methods ought to be followed, nor any other which requires a complication of artifice; for, after a trial of them all, perhaps not always very justifiably, I am convinced, that the most effectual method of preventing a laceration, or any injury

to the parts, is to be founded on the single principle of retarding, for a certain time, the passage of the head of the child through them. This retarding may depend on the composure of the patient, and the skill of the practitioner; and those errors, of which the former might be guilty, the latter must endeavour to obviate and correct. The greatest degree of laceration, which ever occurred to me, was occasioned by the patient suddenly withdrawing herself out of my reach, beyond the possibility of my giving any assistance, or supporting the part at the instant when the head of the child passed over the *perinæum;* an accident against which I ought to have been guarded.

When the head of the child is nearly born, the effort to expel is made instinctively; and it is usually vehement, the breath being retained for the purpose of strengthening that effort. The patient may also, from a persuasion of its being necessary and proper, or at the instance of her friends, strive with much voluntary exertion to add to the force of the pain, for the purpose of expelling the child more speedily. If we presume, that the danger of injuring the parts depends chiefly upon the rapidity with which the head may be expelled, and that these are only able to bear without injury so much distension as is occasioned by the instinctive efforts, then all the additional voluntary force is beyond what is either needful or safe (see chap. ii. sect. 6). It is therefore requisite that we should do away this voluntary force, by convincing the patient of its impropriety, and dissuading her from exerting herself; or lessen at least the voluntary effort, by urging her to talk or cry out during the time of a pain, which will prevent her from retaining her breath; or, if her sufferings are so great that she cannot command her own actions, then the efforts she makes must be resisted on our part by the application of some equivalent force, in the manner we shall soon consider. When the patient has been outrageous, and the danger of a laceration very great, I have sometimes gained a respite by telling her suddenly, in the height of a pain, that the child was already born.

Every thinking man will endeavour to carry the principles he has considered and approved in his remembrance, through the whole course of his practice: but the methods by which his principles are pursued must be carefully suited to the particular exigences of every individual case. Yet when principles are acquired, there will often be considerable difficulty in applying them to practice; for it is not unusual to see them at variance in medicine as well as morality. On the subject of which we are now speaking there is a number of little circumstances, the knowledge of which can only be learned by experience, yet for these we should be prepared by reflection, when they occur in practice. But it will generally be sufficient for the operator to resist the progress of the head of the child, during the time of a

pain, by placing upon it the fingers and thumb of the right hand, so formed that they may bear upon many points; or, to apply the balls of one or both of the thumbs in such a manner that they shall at the same time support the *fourchette*, or thin edge of the *perinæum*. But in the first children, when, from the vehemence of the patient, the strength of the pains, and the rigid state of the parts, there is great reason to apprehend a laceration of the *perinæum*, then, occasionally calling in the other means to our aid, we shall be able to give the most powerful and effectual support, by applying the palm of the left hand, covered with a soft cloth, over the whole temporary (see chap. ii. sect. 6.) and natural *perinæum*, and the right-hand employed as was before mentioned, with a force competent to resist the exertions of the patient during the violence of the pain. In this way we are to proceed, till the parts are sufficiently dilated, when the head may be permitted to slide through them in the slowest and gentlest manner; and we are never to quit our attention, till it is perfectly cleared of the *perinæum*. Should there be any delay or awkwardness when the *perinæum* slides over the face, the fore-finger of the right-hand must be passed under its lateral edge, by which it may be cleared of the mouth or chin, before the support given by the left-hand is withdrawn. When the pains are exceedingly strong, and the patient restless in her efforts, the head will sometimes be expelled with wonderful velocity, in opposition to all the resistance we are able to make; but by this calm and steady proceeding we may be assured that we shall, under all circumstances, wholly prevent, or greatly lessen, all the evils to which she would have been liable, if our conduct had been different.

It is necessary to observe, that these attempts to prevent the laceration of the *perinæum* produce some effect upon the head of the child, and upon the parts of the mother. In the application, therefore, of the resisting force, we must not only be careful, that the position of the patient is proper, and such as will allow us to act with advantage, but that we do not make any injurious or partial pressure; because, if a partial support be given to the *perinæum*, the head of the child is projected against an unsupported part, and the danger of a laceration is increased. The support must be equally applied, and uniformly exerted, during the time of every pain; and then there will be no greater prejudice done to the child by the pressure we make, than what might have been occasioned by the mere rigidity of the parts.

When the head of the child is expelled, perhaps the consequences of an instant transition from extreme misery to total freedom from pain, and to positive joy, are in no case, to which human nature is subject, more conspicuous and interesting, though the delivery be not completed. It was formerly supposed necessary for the prac-

titioner to extract the body of the child, immediately after the expulsion of the head, lest it should be destroyed by confinement in this untoward position. But experience has not only proved, that the child is not on that account in any particular danger, but that it is really safer and better, both for the mother and child, to wait for the return of the pains, by which it will soon be expelled; and a more favourable exclusion of the *placenta* will also by this means be obtained. In the course of a few minutes after the expulsion of the head, the action of the *uterus* returning, the shoulders of the child advance, and the external parts of the mother being again brought upon the stretch, the practitioner must place the fingers of his right-hand on each side of the neck, and at the same time with the left support the *perinæum* with as much circumspection as when the head was expelled; he must then conduct the body slowly in the direction of the *vagina*, till it is wholly extricated, though two or three pains are sometimes required for the expulsion of the shoulders of the child, after the head is born.

The child is to be placed in such a situation, that the external air may have free access to its mouth, its head being covered; care being then taken of the mother, we must proceed to tie the navel-string in the manner recommended in the next section.

SECTION IX.

The operation of tying and cutting the navel-string when the child is born, though in itself of no great importance, was formerly thought to require so much skill and judgement, as to give a professional name to those, who are now called practitioners in midwifery. But every thing which relates to the treatment of the mother or child is of some consequence; and even in trifling matters there is a propriety of manner, the want of which may lessen the estimation of every person's character.

It seems to have been a practice with the ancients, to wait for a certain time after the birth of the child for the exclusion of the *placenta*, before the navel-string was tied or divided; and if the child was born apparently dead, or in a very feeble state, the *placenta*, when expelled, was laid upon its belly, as a restoring, or comforting application. When the child revived but slowly, or when the signs of life declined, it became a custom to lay the *placenta* on hot embers *, or to immerse it in hot wine; and the heat thereby conveyed was supposed to stimulate the weak or decaying powers of life to more vigorous action. It has since been the prac-

* See *Peu Pratique des Accouchements*, Livre I. Chap. xii. 18.

tice, to divide the *funis* immediately after the birth of the child; and the weaker this was, the more expedition it was thought necessary to use; for, the child being supposed to be in a state similar to that of an apoplectic patient, a certain portion of blood might by this means be discharged from the divided *funis*, and the imminent danger instantly removed. There is another method which I have seen practised, the very reverse of the preceding; for in this, the loss of any quantity of blood being considered as injurious, the navel-string was not divided, but the blood contained in its vessels was repeatedly stroked from the *placenta* towards the body of the child. In all these different methods, and many others founded on caprice, or on directly contrary principles, children have been treated in different times and countries, and yet they have generally done well; the operations of nature being very stubborn, and happily admitting of considerable deviation and interruption, without the prevention of her ends.

There is yet in all things a perfectly right as well as a wrong method; and though the advantage or disadvantage of either may be overlooked, the propriety and advantage of the right method must be evidently proved by individual cases, and of course by the general result of practice. In this, as well as in many other points, we have been too fond of interfering with art, and have consigned too little to nature, as if the human race had been destined to wretchedness and disaster, from the moment of birth, beyond the allotment of other creatures.

Perhaps the changes which take place in the body of the child, immediately after its birth, at least the manner in which they are produced, are not perfectly understood at this time*. But we know if the child is in a healthy state, that it usually cries lustily and continually, when the air rushes into its lungs, which are thereby expanded. This cry, which does not seem to be occasioned by pain but surprise, is in its consequences extremely important, as it is the cause of an exertion of all the powers of the child, and enables it to acquire a new manner of living, inconsistent with, and very different from, that which it possessed before it was born. But the change from uterine life, as it may be called, to breathing life, is not instantaneous, but gradual; and the uterine life continues till the breathing life is perfected, as is proved by the continuance of the circulation between the child and *placenta* for some time after it has cried. As the breathing life becomes perfected, the uterine

* See *Peu Pratique des Accouchements*, Livre I. Chap. xii. 18.; and An Essay on the Treatment of Women in Childbed; written by my very ingenious and indefatigable friend the late Mr. Charles White.

life gradually declines, and the manner of its declension may be proved by attending to the pulsation of the navel-string, which first ceases at the part nearest the *placenta*, and then, by slow degrees, nearer and nearer to the child, till at length it entirely ceases; so that the whole of the circulating blood ultimately resides in the body of the child, and the navel-string which was before turgid becomes quite flaccid. It seems reasonable to believe, that the continuance of uterine life after the birth of the child was designed for its preservation from the accidents of its state at that time; should the acquisition of its breathing life be by any cause retarded or hindered. If then the practice of tying or dividing the navel-string the instant the child is born be followed, though it were before vigorous, it will in some cases immediately decline, and never acquiring its perfect breathing life, may in a short time die: or, if the child were in a feeble or a dubious state, possessing only that life which it had during its residence in the *uterus*, as by tying and dividing the navel-string that life is destroyed before the breathing life is acquired, it must inevitably perish. We may therefore safely conclude, that the navel-string of a new-born infant ought not to be tied or divided, till the circulation in it has ceased spontaneously; nor would the child suffer, though the *funis* was never tied, if it was not divided.

With respect to the manner of tying the navel-string there has also been much difference of opinion, whether there should be one or two ligatures, and in what parts these should be fixed. Two ligatures were advised on the presumption, that by the end of the *funis* next the *placenta* the maternal blood might be discharged, and the parent brought into great danger, as if there were two currents of blood circulating in the vessels; and by some it was also supposed proper to use two ligatures, for the purpose of retaining the blood, presuming that the *placenta* would be cast off more commodiously, in the manner of a gorged leech. On the contrary, one ligature has been recommended, that we might have an opportunity of draining away as much blood as possible from the *placenta*, by the divided end of the *funis*, which was supposed to produce an advantage equal to the diminution of the bulk of the *placenta*, and to favour its expulsion. But, if the custom of deferring to make the ligatures till the circulation in the *funis* ceases be established, all this reasoning in favour of one or two ligatures will fall to the ground. Yet, as there is a possibility in the case of twins, with a single or communicating *placenta*, of the child yet unborn, losing its blood by the divided *funis* of that which is born, and from the habit of using them, on the whole, I prefer two ligatures, more especially as no harm can arise from them, even if one should be useless. As to the part where the ligature ought to be fixed, it is of no real consequence;

because the future separation of the *funis* will not be made at the ligature, wherever that is fixed, but at a line evidently marked at the time of birth, and close to the belly of the child; and as to the materials used, provided they are not so thick as to be cumbersome, nor so thin as to cut the *funis*, it is all that is required.

In the course of ten or twenty minutes, and sometimes longer, after the birth of the child, the circulation in the *funis* having ceased, and the *funis* itself become empty and flaccid, one ligature is to be fixed upon it about three inches from the belly of the child, and another at twice that distance, with so much force as to repress the circulation which may happen to return, and yet not so firmly as to divide it. The navel-string may then be cut with a pair of scissors between the two ligatures, and the child given to a careful assistant. It was formerly the custom to divide the *funis* under the bed-clothes; but, having once known a very deplorable accident happen from this cause, I make it a general rule decently to withdraw the child, that I may have an opportunity of seeing when I tie or divide the *funis*.

SECTION X.

Soon after the birth of the child, it is proper to apply the hand upon the *abdomen* of the mother, to ascertain whether there be another child; or whether the *uterus* be contracting in a manner favourable to the separation and exclusion of the *placenta*. Both the doctrines and customs of practice, regarding the management of the *placenta*, have been exceedingly different, even in common cases; and though one method of proceeding may be more generally preferred and followed than the rest, there is, in the management of the *placenta*, much diversity in the conduct of individual practitioners, who may be suspected to act sometimes in a manner contrary to their own judgement, in compliance with the prejudices of those by whom they are employed. The minds of all women are full of solicitous fears till the *placenta* is brought away; and the sooner this is done, after the child is born, the more they are gratified. But though the discovery of truth, and the fidelity of practice founded thereon, may not always be acceptable; yet in all practitioners, however desirous of obliging, there must be some firmness of mind, some determination to act upon principle, or they will be perpetually involved in error, and led to do what may be productive of immediate or distant mischief, in order to avoid the evil of present censure.

In the history which has been given of the former stages of a natural labour, it appears, that all the passive changes which the parts undergo, and all the active powers exerted for producing these

changes, are not only entirely independent of the will of the patient, but are fully equal to the end, which they were designed to accomplish, without any assistance; which is no more wanted for the purpose of forwarding a natural labour than for any of the ordinary functions of the body. When we have seen a child safely expelled by a process beautiful, and regulated by the greatest wisdom, there seems to be no reason, why we should be apprehensive of error or inability in those powers for the separation or exclusion of the *placenta*, which is but an inferior or secondary part of the same process; or why we should not in this, as in all other cases of medicine, be first convinced of the necessity of using art, before we attempt to give assistance. On the proper management of the *placenta* the life of the patient may depend; and it is therefore fitting and necessary, that our conduct should be guided not by prejudice, but by the dictates of reason and experience.

After a natural labour, especially with the first child, the pain which the patient has suffered, and the exertions by which the expulsion of the child was effected, will have occasioned a proportionate degree of temporary fever, and she will be in the same situation as if she had undergone some excessive fatigue. By the birth of the child she is freed from her suffering, and it must be our first employment to restore tranquillity to her mind, to calm the hurried circulation of the blood, to recover her from her fatigue, and to bring her as soon as we can into a natural state; and this is to be done by keeping her perfectly quiet, affording her at the same time some refreshment, suitable to the circumstances to which she may be reduced. In the course of ten, and not often more than twenty minutes, the action of the *uterus* is again excited for the purpose of expelling the *placenta*, which is indicated by pain, less in degree, but in other respects like that of which she complained when the child was expelled. It seldom happens that the *placenta* is either wholly separated or expelled by the first pain; but when that has ceased for a few minutes, it is again renewed; and, on examination, the *placenta* is often found descended, or descending, into the *vagina*, where it may with safety and propriety be suffered to abide, till it is wholly expelled by a repetition of the pains. But if the *placenta* should descend very slowly, or the patient be much disturbed, the practitioner may take hold of the *funis* *, and by gently pulling in the time of a pain, and in a proper direction, by the most

* When the young has been a short time expelled, carnivorous animals, apparently feeling pain, lay hold of the navel-string with their teeth, in order to extract the *placenta*. It is probable that a woman in a state of nature would, with her own hands, give something like the same assistance; and in the force I use to bring down the *placenta*, I generally bear in mind this circumstance.

moderate action favour its separation and descent. But whether the *placenta* should descend into the *vagina* spontaneously, or be brought down by the gentle assistance given, it should be suffered to remain there till it is excluded by the pains; at least it should not be extracted before the hurry occasioned by the labour is wholly composed, and the *uterus* has had sufficient time to contract in such a manner, as to prevent any undue, or alarming loss of blood. The *placenta* seldom remains more than one hour in this situation; but if it should not be excluded at the end of that time, we may again take hold of the *funis*, and, aiding the force of a pain, in the gentlest and slowest manner, bring the *placenta* through the *os externum*. We must even then be cautious to bring down the membranes very slowly, and as perfectly as we can, that any *coagula* formed in the cavity of the *uterus* may be enveloped in them, and one principal cause of after-pain be removed. Then the patient, being put in a comfortable state, and as little disturbed as possible, may be left to her repose.

In this third stage of a labour many inconveniences and many impediments to the exclusion of the *placenta* may occur; the generality of which require a longer time to be given, and some the assistance of art, for the removal or prevention of danger. But of all these difficulties, and the means of giving relief, we shall speak more fully when we come to the treatment of *Uterine Hemorrhages*.

I take this opportunity of speaking of a point upon which we may be called to give an opinion in a court of judicature; that is, whether a child be born living or dead. What is now considered as a legal proof of a living child I cannot ascertain. When a child cries aloud, there can be no doubt of its being born alive, however speedily it might afterwards die. But a child has been often known to breathe, which could never be excited to cry; and though a child may neither cry nor breathe, the circulation of the blood may be distinctly perceived both in the *funis* and heart, yet not be recoverable; and we can scarcely be allowed to say that a child which breathes is still-born, nor one in which the blood circulates. Of both these circumstances any person without medical knowledge may judge, and any corrupt evidence frustrated as readily as in other cases subjected to the enquiry of the laws.

CHAPTER X.

CLASS SECOND.

ON DIFFICULT LABOURS.

SECTION I.

From the foregoing history of a natural labour, and from the tenour of what has been on different occasions advanced in the preceding chapters, it appears, that parturition is a process of the constitution, which, generally, does not require any assistance; and that when it is natural, it should be suffered to have its own course without interruption, for the very same reasons which render all interposition with other natural operations unnecessary, improper, and frequently prejudicial. Whence then arises the necessity or expediency of establishing midwifery as an art for the relief of the human species? or in what respects has society profited by the establishment? Certainly not on the presumption that women are by nature destitute of those powers, which at the time of parturition are in all other creatures generally equal to the exigences of their situation; nor when those powers are fairly exerted, every cause producing its effect, in the order and in the manner which the parts by their construction were framed to perform and undergo; nor, when there exist no uncommon impediments, by which the effects to be produced by the natural causes are, or may be, obstructed; and when no circumstances threatening danger intervene. But as the aid of medicine becomes necessary, when from some defective, or irregular exertion of the native powers of the constitution; or, from some adventitious cause of obstruction; or from some infirmity in the constituent parts of any of the organs of the body, the functions of any part are suppressed, impeded, or in some way rendered irregular or imperfect, to the detriment of that part, or of the constitution, or to the prevention of any effect necessary to be produced: for the same reasons, and in like manner, the assistance of the art of midwifery, scientific or manual, may be required for the relief of such irregularities or difficulties as may occur in the act of parturition. *It must however be acknowledged, that all the errors of practice do not proceed from ignorance of the art. Some of them may*

justly be imputed to our entertaining too high an opinion of the art, or its application in practice, when it is not absolutely required, and when its application is prejudicial; to too much confidence in our own dexterity; and too little dependance on the natural efforts and resources of the constitution.

In all creatures in which there is a difference of structure, there must be a difference in the conduct or manner in which every function of the constitution will be performed, which is at all connected with, or dependent upon, such variety in structure; and a difference in the process of any function, especially if this should be rendered more complex, and of course more liable to aberration, may become the predisposing cause of such deviations from the natural course of that function, as may require the assistance of art: though the very same function, proceeding or being performed in a natural way, might be void of danger, and require no assistance whatever. The knowledge of the peculiarities in the structure of the human species, or of the specific circumstances in which the constitutions of women differ from those of all other female creatures, may therefore be considered as affording the only just and true basis on which both the theory and practice of midwifery ought to be founded. Before we proceed then to an inquiry into the particular cases, which may demand the assistance of art, or determine upon the manner in which that art can be exercised with the greatest propriety and advantage, a short review of those peculiarities will be necessary and useful; that we may be cautioned to avoid the abuse of the art, or the exercise of it, except in those cases in which that assistance which art can afford, is absolutely required.

The first and most obvious circumstance, in which women differ from all other female creatures, is the erect position of the body; of the consequence of which, with regard to the *pelvis*, and some diseases to which women are particularly liable, notice has been already taken. (See chap. i. sect. 5. and chap. iv. sect. 1.) In the original construction of the *pelvis* in quadrupeds, with a view to parturition there seems to be a necessity for regarding its capaciousness alone; because if even more than sufficient space were provided for the passage of their young, no attitude into which they put themselves, or into which they can be compelled by any accident, during uterogestation, would subject them to difficulty or danger on this account. But from the erect position of the human body, if the cavity of the *pelvis* had borne the same relative situation and proportion to the size of the *fœtus* as in quadrupeds, women would have been liable to many and great inconveniences. For the weight of the *ovum* and enlarged *uterus* must, in advanced pregnancy, have been occasionally sustained only by the soft parts,

which becoming thinner and less equal to that office according to the advancement, premature labour, as well as many other inconveniences, must often have been occasioned; with some degrees of which we often meet in practice. For this, and perhaps several other less obvious though probably equally important reasons, all of which it would be difficult to investigate, there undoubtedly is in human beings a greater difference between the dimensions of the cavity of the *pelvis*, and the head of the *fœtus* at the time of birth, than in animals; and this difference, consisting chiefly in a greater proportionate and relative size of the head, may eventually become the cause of more painful and difficult parturition.

As there is no effect throughout nature without some adequate cause, as well as some wise end, perhaps the most satisfactory proof of the existence of this disproportion may be drawn from the construction of the head of the human *fœtus*, which being incompletely ossified at the time of birth, is capable of having its form changed, and its size diminished, without any injury from the compression. These effects are produced in some degree in almost all labours, but very remarkably in those which are completed with difficulty; for in such, the sutures not only accede, but the edges of the bones will ride over each other in a very extraordinary manner, yet generally without any apparent prejudice to the child. From this original and comparative relation between the cavity of the *pelvis*, and the head of the *fœtus*, women therefore seem to be naturally more liable to difficulties in parturition than animals; which difficulties may be esteemed as an allay for the advantages obtained by the erect position; or because their offspring were so framed as to be capable of greater excellences than animals; which excellences may depend upon this construction and size of the head. Independent of this incomplete ossification and its consequences, great numbers of children must have been inevitably destroyed at the time of birth, or the parents must have died undelivered. Nor is this provision only sufficient to answer the end of mitigating those evils, to which women are by their structure naturally and necessarily liable, in common labours; but it is generally equal to the relief of those, which are rendered difficult by morbid alterations in the size of the cavity of the *pelvis*.

2. The intercourse between the parent and *fœtus*, while it abides in the *uterus*, though generally alike in all viviparous animals, has some variation in each class. The *ovum* is in all constructed for a temporary use, but in a very beautiful and perfect manner for the purposes for which it was ordained. The variations may exist either in the *uterus* or *ovum*.

In the *uterus* of the different classes of animals, the most obvious

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

The *uterus* in all animals may be considered as the bed or soil, in which the *fœtus* is conceived, nourished, preserved, and accommodated, till it arrives at a state of perfection, and the part by which it is ultimately expelled. For the completion of these ends, there must be a perfect coincidence, at least a correspondence, between the nature of the *fœtus* to be thus conceived, nourished, preserved, and accommodated, and the form and properties of the *uterus,* by which those offices are to be discharged, as is proved by hybrids; and if the case were otherwise, though there might be a forcible sexual intercourse, there would be no conception; and this clears us of an old but wholly unsupported opinion of the cause of monsters. The varieties in the form of the *uteri* in different animals are progressive, from those of the lowest tribe, which are horned or convoluted, to the human, which when unimpregnated is pyramidal, becoming more oviform according to the degree of its distension. On the form of the *uterus* not only the accommodation of the *fœtus* may depend, but the term of uterogestation also; or the power which every individual *uterus* of any given form, has of bearing distension only for a specific time. Yet if this were allowed, it would still remain to be proved, why a *uterus* of one form became capable of bearing distension for a longer time than that of another.

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

them a medium, by which such power could have been exerted, and the form of the *uterus* would also have been less favourable for its operation, had it existed.

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

In our present inquiry, the principal part of the *ovum*, which deserves attention, is the *placenta*, and of this there is an endless variety in the different kinds of animals, according to the nature and properties of each parent and the offspring. In the *belluæ*, the office of the *placenta* is performed by the whole membrane of the *ovum* being thickened, and becoming proportionably vascular; in the *pecora* the *placenta* is divided into many lobules, composed of long and vascular fibres, called *cotyledons* or cups, affixed to as many temporary eminences of the internal surface of the *uterus;* in the *feræ* it surrounds the *uterus* like an internal belt; and so on, with great variety, in the different classes of animals. But in the human species, the *placenta*, as the word implies, is in one flattened mass, commonly of a circular form, becoming gradually thinner towards the edge, and adhering to the *uterus* with a broad surface. When any portion of this is separated, the orifices of many of the large vessels of the *uterus* are opened, and a considerable quantity of blood is immediately discharged, far beyond what could possibly be lost in any animal, though of a much larger size; and if the *uterus* were to continue distended, the orifices remaining open, there would be a dangerous or a fatal hemorrhage. For not only the blood circulating in the *uterus* would be immediately poured out of its vessels, but all which is contained in the body might be drained, and the patient speedily perish, if she were not relieved by art; and yet no

animal (I believe) ever was or could be destroyed, or brought into danger, by this circumstance. From the same cause also, the uterine discharges continue a longer time, after delivery, in women than in animals; the irregularities and interruption of which may become the causes of disease, and are proofs that, independent of fashion or custom, there exists in their construction a necessity that women should for their own safety be separated from society for a certain time after delivery; or guarded against such conduct or accidents, as might cause a suppression of those discharges. On account also of the form of the *uterus*, and the peculiarities of its action, of the bulk, unity, and form of the *placenta*, and the manner of its connexion, it is more likely to be retained or untowardly expelled in women than in animals; and its retention or disorderly expulsion may be followed by worse consequences.

3. In the consideration of this subject, the passions of the mind are of too evident importance to escape attention. On a variety of occasions, these, in human beings to a certain degree in a natural state, and much more when heightened by all the refinements and perversions of society, are found to be capable of producing the most extraordinary effects; by suppressing or suspending for a certain time the action of any, or of all the powers of the constitution; by occasioning them to act with irregularity and at improper times; and in some cases also by exciting them to act with too great energy and force. But animals probably suffer neither from the recollection of the past, nor dread of the future; and acting according to their nature, the good or evil of the present moment in them appears to be the principal part of their existence. In the passions we may then discover sources of danger and disturbance in the pregnancy and parturition of women, from which animals are wholly exempt; and the observation is so general, that care is universally taken to prevent the communication of any intelligence to pregnant women, or to those who are in or about to be in labour, which can either distress, or much agitate them. To this principle or cause may also be referred the many nervous affections, to which women are subject in the state of childbed, and for some time after they are delivered, when the animal powers are reduced, and the sensations quickened. But it must be allowed, that the greater degrees of these evils, which are many and great, are not to be attributed to physical infirmities, but to moral errors.

A consideration of their unimpaired constitutions and less exquisite feelings will likewise discover to us the reason, why the lower orders of women have more easy and favourable births, than those who live in affluence; the frame of whose bodies, and the sensibility of whose minds are altered, and often depraved, by the indulgence

and mistaken opinions of parents, when they are infants, and by their own luxury and improper conduct, when they are adult. The constitutions of those who are hardy are better able to sustain the common accidents of child-bearing, and they suffer less because they are stronger and have less feeling and apprehension. When the Egyptian midwives were charged before Pharaoh with disobedience to his orders, because they preserved the lives of the Hebrew children, they pleaded in their excuse, that the Hebrew women were not like the Egyptian, " they were lively, and were delivered before they (the midwives) could come to them." Beside other motives, the Hebrew women were slaves, accustomed to labour and hard living, yet they had more children and easier labours than the Egyptian, who, we may presume, suffered all the evils arising from indolence and habits of indulgence *. The same observation will also explain the reason of many of those evils which women in the higher ranks of life suffer; particularly why fewer women die in childbed in the country than in cities, where even those of the lower class are often compelled to live in unwholesome situations, and, too often plunging into gross indulgences, therefore suffer the same or a worse fate than the delicately luxurious.

4. We are lastly to consider, that women are by constitution, and by habits of education and living, subject to diseases, to which animals are not liable; which diseases may create new causes of difficult parturition, by increasing natural evils, or by weakening those powers, by the operation of which these should be overcome. Every such disease, it is unnecessary, and perhaps hardly possible, to enumerate; but that, which by affecting the bones in general, and those of the *pelvis* in particular, has the greatest influence on labours, is deserving of especial notice.

By the *rachitis* is not only understood the disease of children, properly so called, but the *osteosarcosis*, or *mollities ossium* also; this being the only difference between them, that, in the former the bones in the infantile state are prevented from acquiring such a degree of

* Among many wise observations and judicious inferences, made by Adam Smith in his Wealth of Nations, there is one taken from the state of population in the northern parts of Scotland. He supposes, that women in the lower orders of society breed the greatest number of children; but that those in the higher rear more of those which are bred. The same observation has been made of the Russians. It has been attributed to the scantiness of provision; but I believe it is very much owing to the coldness of the climate, as, with equal difficulty of procuring the means of subsistence, in Ireland and many parts of England, for instance, children born in health seldom die. Mr. Gildemester, who was for many years the Dutch Consul in Portugal, assured me, that the children of the lower orders of the Portuguese, who live very miserably, which are born in winter, generally die, but such as are born in summer are as commonly reared.

firmness, as will enable them to sustain the weight of the incumbent body, without yielding and becoming distorted; which distortion may remain to adult age, even though greater strength may have been afterward acquired. But in the latter, the bones having been properly formed and ossified, become soft again, at any period of life, in consequence of the absorption of the ossific matter, by which the most extreme degrees and frightful kinds of deformity have been sometimes occasioned; the progress of the disease being sometimes indicated by the increasing difficulties of successive labours. (See chap. i. sect. x.) From distortion produced by either of these causes, the cavity of the *pelvis*, which in a natural state should measure upwards of four inches in its narrowest limits, may be reduced to two, or even to less than one inch; by which the reciprocal proportion between it and the head of the *fœtus* is perverted or destroyed, and it is absolutely impossible for the latter to pass through the *pelvis*. This softness and consequent distortion of the bones, from either of those causes, being peculiar to *, or infinitely more frequent in, the human species, occasions difficulties at the time of parturition, from which animals are almost universally free. Even if animals were liable to it, from their position, and the diminished weight which the *pelvis* supports in quadrupeds, it could not produce the same kind or degree of effect. From the frequency of the *rachitis* in cold and unwholesome climates, in crowded cities, extensive manufactories, and wherever the employments and manners of the human race weaken the constitutions of the inhabitants, especially in early life; and from its rarity in warm and healthy situations, or with rustic employments and simple manners, we may conclude, though we retain and act upon the same principles, that the events resulting from the practice of midwifery must be different in different places, and that the authority of the best writers must in some measure be local.

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

But to render these observations, with others diffused through this work, of greater utility, I shall endeavour to reduce them into propositions in the following order: submitting them at the same time with all deference to future consideration.

* I think the late John Hunter informed me that one of the old lions in the Tower had the *osteosarcosis*.

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

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

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

4th. By their construction, they are also endued with powers capable of overcoming all the difficulties, to which such construction generally renders them liable.

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

And 6th. From the very nature of their construction, and from their modes of living, unless they are perverted by domestication, they will not in general be liable to any material deviation from the ordinary process of their parturition.

7th. The construction of the females of the human species is different from that of the females of any order of animals.

8th. The construction of the females of the human species is such, as to render them unavoidably subject, in general, to greater pain and difficulty in parturition, than the females of any order of animals.

9th. But by the construction of the females of the human species, and by the original formation of the head of the human *fœtus*, provision is made for overcoming all the difficulties, to which the peculiarities of their construction may render them liable.

10th. With regard to the act of parturition, when natural, women are therefore to be esteemed on a similar footing with animals.

11th. But as women are by their construction, and by the customs of society, rendered subject to diseases and accidents, which increase the natural difficulties, and produce new causes of danger attending their parturition, from which the females of every order of animals are free.

12th. It will follow, that the occasions, which require assistance at the time of parturition, do and must, of necessity, occur more frequently in women than in the females of any order of animals.

From these premises, the expediency and necessity of establishing midwifery as an art for the relief of the human species will appear, and the art be directed to its proper objects.

SECTION II.

Many general circumstances and appearances have been mentioned, and considered as presumptive signs of difficult labours; and it

will not be improper to enumerate these, though I apprehend, that much stress cannot be laid upon them with a view to practice, or even to prognostic. If they were certain and invariable, or commonly just, it would be incumbent upon us to understand the degree and extent of their influence, and to apply ourselves to the discovery of some means, by which we might prevent or remedy the evils which are threatened.

1st. The kind of labour which any particular woman will probably have, has been supposed to be indicated, in some degree, by her complexion. Women with very fair, or very dark complexions, have been supposed equally subject to difficulties or inconveniences in parturition; whilst those of the intermediate shades were considered as having advantages in their favour. Now, as far as any particular complexion can indicate a general state of health, this observation is reasonable and true, with respect to labours; those who have the best health, usually passing through that process in the best and safest manner. But as those who are of complexions in either extreme may have perfect health, and easy labours, any inference drawn from this principle must be liable to many exceptions.

2d. By the general size of the body, it has been conjectured, that we might foresee whether an ensuing labour would be easy or difficult. This observation will stand upon the same ground with the foregoing; that is, it may hold good, as far as any particular size may be found best suited for performing all the functions of the body, and for the general purposes of life. Those who are very tall or of a larger make than ordinary, are not often very active, or capable of bearing much fatigue; and those who are very short, may have been cramped or become deformed in consequence of ill health in the early part of their lives: those, on the contrary, who are of a middle size, or rather below it, being presumed to be more generally healthy, and best adapted to the common occasions of life, may be expected to have the best labours, as they have sufficient power, and a readier disposition to act.

3d. The habits of life, and the dispositions of patients, have been supposed to have some influence in forwarding or retarding labour. Those women, who are indolent in their tempers and habits, perform all the functions of the constitution in a slow and indolent manner, and of course may be expected to have tedious labours, as far as depends upon the necessary action of the body at the time of labour. But those who are of lively dispositions and active habits, being in the constant exercise of their powers, have not only these powers strengthened and improved, but a readier disposition to act, and greater energy; and the activity of the parts concerned in parturition will partake of that of the body in general.

4th. The regularity, together with the ease or difficulty of a labour, may in some measure depend upon the strength or weakness of the faculties of the mind, or their disturbance by slight excitations. But this must be a very general observation, and can only hold good in that extensive way, in which it is admitted in other occurrences of life, in which weakness of judgement may pervert regularity into disorder, fancy evils that do not exist, or add to the weight of those which are unavoidable.

5th. Labours are generally affected by the climate, in which women are born and reside. In hot climates, all natural labours are said to be more easy, than in those that are cold; probably, because the disposition to relax and dilate is sooner assumed, and more perfectly accomplished. But in cold climates, from the native or acquired rigidity and firmness of all the parts of the body, there will be occasion for greater exertion, though there may be greater power; yet if the labours are slower, perhaps the feelings are less, so that they may terminate with equal safety, and probably, on the whole, without greater suffering. In the same climate there will generally be some variations in labour at different seasons; and I believe it is true, that in this country, women have easier labours, and that they are less liable to diseases in the state of child-bed, in summer than in winter.

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

SECTION III.

Without some settled form of distinction, it will not be possible for us to comprehend such a knowledge of *Difficult Labours*, as will enable us to conduct women safely and properly through them; or to communicate our knowledge to another person. It is therefore necessary, in the first place, that we should define what is meant by the term; and we will say that, every labour, in which the head of the child presents, which is protracted beyond twenty-four hours, shall be called *Difficult* *.

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

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

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

Fœtûs maturi enixus laboriosissimus.—*Linnæi Nosologia.*

This definition, which is chiefly taken from time, is liable to some objections, as there may be more pain endured, and greater difficulties surmounted by one woman in six hours, than by another in twenty-four; not to mention the uncertainty in determining when a labour does really commence; but on the whole, it will be found to apply to practice in an advantageous, and often in an unexceptionable manner. It will, in particular, afford a remedy for impatience, and guard the practitioner, in some measure, from premature attempts to give assistance, without incurring the danger of those evils which might be apprehended from too long delay.

Of those labours, which come under the denomination of *Difficult*, there is an almost endless variety in their causes or degrees. Some are occasioned by one cause alone, but more frequently by a combination of various causes, though one may be more obvious and important than the rest*. For the uses and purposes of practice, it is not sufficient to say, that all labours are rendered difficult, either from the greatness of the obstruction or by the insufficiency or debility of the power by which the obstruction should be overcome; or, that some depend upon the mother, and others upon the child. Such distinctions or references are too general. The particular causes of every individual difficult labour should be pointed out, as well as the conduct, which each specific cause may require. These are to be stated by every person who teaches the art, and received for the present by the student. But when students have gained experience, they will of course by that try and judge the doctrines which they have learned, and without some practical knowledge of a subject, we cannot fully or well understand the merit of any doctrine. For there are advantages accruing to every man's own mind from his individual experience, of which no doctrine or words can convey an adequate idea; and those who are in possession of such experience, seldom bend to, or submit to be guided by the rules or admonitions of others. Nor indeed is this to be expected, except in a very limited degree. It is therefore of the greatest consequence to those, who have not yet attained experience, that they should gain it, and exercise themselves in the custom of registering and arranging the particular knowledge they may have an opportunity of acquiring, in regular and systematic order, or they will lose the benefit of it; for it will otherwise either be forgotten, or recollected with difficulty, when they want to

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

apply an observation made in one case to the exigencies of another. It is also very possible that rules may be too refined for general practice; and it may not be proper or expedient for any writer on this subject, to describe every individual circumstance, to which he in the course of his practice, may have found it expedient to recur; though the true foundation on which the rules of practice should be formed, is the result of a number of individual cases. To lessen these deficiencies at the commencement of practice, and to point out a better method of preserving the advantages of experience, as well as to record, in the clearest manner, what my own had taught me, we will divide all *Difficult Labours* into four Orders or Kinds, and then enumerate the principle causes of each Order. As the knowledge of causes, and the management or removal of effects or difficulties, should accompany or immediately follow each other, the methods to be used for the relief of these will at the same time be pointed out.

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

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

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

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

Under one or other of these Orders may be arranged every labour which can properly be called *difficult*.

This kind of labour has by many writers been subdivided into slow or lingering and difficult; but as, by the former appellation, a less degree of difficulty only is meant, both with regard to cause and effect, the subdivision seems to be unnecessary.

SECTION IV.

ON THE FIRST ORDER; OR THOSE LABOURS WHICH ARE RENDERED DIFFICULT FROM THE INERT OR IRREGULAR ACTION OF THE UTERUS.

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

1. *The too great Distension of the Uterus.*

It was formerly believed, that the *uterus* was distended mechanically, by the increase of the *ovum* contained in it. With this opinion it was concluded, that, either from the size of the child or the quantity of water, the *uterus* might be brought into a state similar to that which takes place in the bladder, which, when distended beyond a certain degree, loses all power of action. But later observations have proved that the impregnated *uterus* is never completely distended, nor in any degree, by its contents, but by the operation of a principle which it acquires in consequence of pregnancy; which principle ceases to act at the conclusion of the term of uterogestation, and is immediately succeeded by another directly contrary, that of expulsion (see chap. v. sect. 11.). But though the *uterus*, when in a healthy state, cannot be distended beyond its power of action, occasion has been before taken to observe, that, from the slowness and smallness of the effect of the first pains of labour, the power exerted by the *uterus* is generally suited to the state of the parts, and the parts to that of the *uterus*, with a wonderful coincidence, and in some measure according to the quantity of its contents. Yet as every principle in nature may, in particular cases, alter or fail, so that of the distension of the *uterus* may prevail to such a degree, or may continue so long a time, that its possible expulsatory force shall be weakened, its energy lessened, and, of course, the progress of the labour be for the present retarded. This seems to be proved, not only by the slackness and feebleness of the pains in the beginning of all labours, especially in those cases in which there are two or more children, but by the increase of that action, when part of its contents are evacuated. It is, however, to be recollected, that the *uterus* cannot be distended beyond its power of action, though when greatly distended it is capable only of slow and feeble action, which is nevertheless then suited to the general state of the parts, and preparatory to that which is stronger. This slow or feeble action, from distension, is not therefore an object of art; and it is perhaps beyond the influence of any earthly power to give to the *uterus* its native or genuine disposition to act, before it is disposed to assume it; to add to its power; or in any material degree to increase its energy; though many applications and medicines have been recommended and tried for this purpose. Human art may put or preserve the constitution in a state best fitted for such action, or it may remove any impediments to its effect; but the principle is wholly independent of the will of the patient, or the skill of the practitioner. When, therefore, the pains of labour are in the beginning feeble and slow, as no harm can arise from this cause,

either to the mother or child, except that the former is under the necessity of bearing them for a longer time, though, on the whole, perhaps, not in an increased degree; and as some of the methods advised, and usually practised, for the purpose of accelerating labours rendered tedious from this cause, are either immediately injurious, or may lay the foundation of future mischief to one or both, it becomes our duty, under such circumstances, to wait with patience, leaving the business entirely to its own course, without any interposition. Even when a labour has made considerable progress, and there was reason to expect that it would have been concluded in a short time, there may be a suspension of the action of the *uterus* for many hours, without any mischief or hazard, as experience has often shewn, though the cause of such suspension may not be obvious to, or explicable by us.

With the ancients, it was a custom, in these cases, to introduce a stimulating pessary into the *vagina;* and lately, with a physician in France, to apply a mixture of the berries of the bay-tree and oil to the navel, in the time of labour, by which he was supposed to do some good, and certainly gained credit. It would not, however, be unreasonable to try the effect of various applications to the *abdomen* for this purpose. A dossil of lint, moistened with *tinct. opii,* applied to the navel, does certainly, in some cases, appease uterine pain.

Immediately on the cessation of labour, it has been the custom to confine women to their beds, or to some particular position, on the presumption that it would be thereby rendered more easy than in any other. By such conduct, expectations of a speedy delivery are often raised; and when these are baulked, the mind of the patient will be disturbed, and the process become irregular. But it will always be found more comfortable and useful to leave the patient to her own choice in these matters, and her inclination will be her best guide. Time is the safest and generally the only remedy for lingering and tedious labours, occasioned by the too great distension of the *uterus,* as well as by many other causes; and the patient will often find relief either by walking or standing, pursuing some amusement, or choosing that position which she herself prefers, because she will instinctively seek that which is proper. Under such circumstances, it would sometimes be well to persuade the patient that she is not yet in actual labour, or that no speedy change is to be expected. However, in many situations of this kind, the repeated exhibition of emollient clysters will be of service; and when the labour is far advanced, in some cases in which the action of the *uterus* is very feeble and slow in its returns, as if it were unwilling to come on, a clyster rendered stimulating by the addition of one ounce of culinary or

cathartic salt will often rouse the dormant powers into action, and the labour will be much sooner yet safely completed *, the very conclusion of these putting her into the most favourable position.

2. *Partial Action of the Uterus.*

It was observed, that, previous to labour, the *uterus* commonly subsided lower into the *abdomen*, and that the more perfect this subsidence was, the more kindly would the labour probably be; because the *uterus* would act with more advantage. But, in some cases, the *fundus* of the *uterus* does not subside before or even in the time of labour, the patient herself being sensible of, and complaining that the child is then very high in the stomach. Sometimes she will also complain of vehement and cramp-like pains in various parts of the *abdomen*, producing no good or adequate effect, which are afterwards proved to have been occasioned by the irregular contraction of the *uterus*. This irregular and partial action, which is properly called spasmodic, is capable of throwing the *uterus* into various forms; sometimes the longitudinal, and at others the hour-glass, with all their varieties and degrees, and such contractions may take place at the commencement of a labour, and continue through the course of it, and even become the cause of retaining the *placenta* at the conclusion. Every change in the form of the cavity of the *uterus*, from the genuine, will be productive of inconvenience, according to the peculiarity and degree of alteration; and it is to be wished that we could discover the means of altering the form of the *uterus* when thus irregularly contracted, of suppressing its action when too vehement or disorderly, and of strengthening it when too feeble, according to the necessities of each case, as they may arise. But as these things are beyond our power, at least any method of producing them is at present unknown; all that we can generally do must depend, not on commanding what we choose, but on making the best of such circumstances as do really occur; and it is necessary to consider, whether, by any previous management, it be possible to prevent this irregularity of action, or remedy its effects, when it is in such a degree as to be very painful or troublesome before, or productive of inconvenience at the time of labour. When there is any unusual kind of pain in the region of the *uterus*, greater than, or different from, that which may be considered as one of the common effects of pregnancy or labour, there is generally an increase of that feverish disposition which, in a certain degree, is perhaps natural to all wo-

* Clysteres injiciantur, quorum irritatione expultrix uteri facultas excitatur, et depleta intestina ampliorem locum utero relinquant.—*Riverii Prax. Medic. De Partu Difficili.*

men with child; and it will then be necessary to take away small quantities of blood, to give cooling medicines, to be very attentive that the regular course of the bowels be procured or preserved; and I think I have seen much good done by gently rubbing the whole *abdomen* with warm oil. At the time of labour, the same means may also be necessary and proper, on account of this irregular or insufficient action of the *uterus*, and of the concomitant pains, which most frequently happen to those who are naturally too irritable, or who lead inactive lives. To such women should be pointed out the necessity of acquiring a composure of mind, and of using exercise in the open air, as far as their unwieldiness will with propriety allow; even in the time of labour, if rendered tedious from this cause, in which the pains are very sharp yet ineffectual, it is of use to bear them when in an erect position, and to walk about as long and as often as they are able in the intervals, even till the labour is far advanced, or on the point of being concluded. The chief part of what can be further done is, to impress upon their minds the necessity of exercising that patience, which we, on our parts, ought never to want. In some cases of this kind, when the patient has suffered much and for a long time, after bleeding, if judged to be necessary, and the administration of a clyster, I have directed twenty drops of *tinct. opii* to be given, with the intention of suppressing the present pain, which was irregular, and with the hope that, when it returned, it would be with regularity and efficacy. But in general I have great objections to opiates on slight occasions for women in labour, being persuaded, that, by disturbing the order of labour, they frequently produce very untoward symptoms, and make that which was in itself natural become difficult or dangerous to the mother or child, as evidently as any other kind of unseasonable interposition.

3. *Rigidity of the Membranes.*

This has been mentioned by the generality of writers, as a cause of difficult labours; and I have observed, when a labour proceeds slowly, the membranes being unbroken, that their rigidity is usually assigned as the cause of the difficulty or delay. This subject has already been considered in the history of natural labours; but we cannot too often inculcate, as the observation is of the greatest importance, that neither the mother or child is ever in any danger, (excepting cases of hemorrhage and convulsion) on account of the labour, before the membranes are broken: and that there is infinitely more caution required, to avoid breaking them too early, than there is difficulty in breaking them when necessary. The true cause also, why the membranes do not break at the usual or proper time, is not

in truth from the rigidity of the membranes, so commonly as from the weak action of the *uterus;* because the membranes are scarcely ever so rigid, as to withstand the force of very strong pains, and if they were, the whole *ovum* might be expelled at the same time, a circumstance not unfrequent in premature births. More than one case has occurred in my own practice, to which particular attention has been paid, for the purpose of registering the observation, in which the labour has commenced properly, and proceeded with much activity, till the *os uteri* was fully dilated, and then ceased altogether for many hours or several days: at the end of that time the membranes breaking, the action of the *uterus* has instantly returned, and the labour been finished speedily, with perfect safety to the mother and child. (When the head of the child is born with the membranes unbroken, it is said to be born with a cawl or *silly-how.* To this cawl imaginary virtues have been attributed, and a fancied value has been set upon it. It was esteemed the perquisite of the midwife, and perhaps the whole was the contrivance of some intelligent man, to prevent her from interfering with any labour, which was going on in a natural way.)

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

4. *Imperfect Discharge or Dribbling of the Waters.*

This circumstance is a cause, or at least a frequent attendant on Difficult Labours, especially when the membranes have been broken designedly, or spontaneously, before the *os uteri* was dilated, though far more frequently in the former case. For if the membranes do not break, or be not broken, before the complete dilatation of the *os uteri,* the whole quantity of the water is generally discharged at once,

and the head of the child is speedily advanced by the succeeding pains. Sometimes indeed the head of the child is so placed, as to lock up a great portion of the water, which cannot escape, till the head is expelled. Should the water be imperfectly discharged, a further small portion of it is usually evacuated whenever there is a pain, and the pain is not immediately efficacious, or entirely ceases after the discharge. In this situation there are only two methods to be pursued; we must either wait till all the water is drained away by these repeated small discharges, or we must contrive some method, by which their evacuation may be hastened. If there be no particular reason against our waiting, it is better not to interfere, but to leave the business entirely to nature, explaining the state of the case to the patient or her friends, taking care to prevent their apprehension of danger from the delay of the labour, and not by our solicitude to raise their expectations or their fears unnecessarily. But when the water dribbles away in the advanced state of a labour, or there is reason for our wishing a speedy conclusion of it, either on account of the mother or child, it will be expedient to forward the discharge of the water, by raising the head of the child a little higher into the *pelvis;* by the introduction of the fingers and thumb of the right hand, which may be done without prejudice either to the mother or child, during the continuance of the pains; or by pressing the head towards the hollow of the *sacrum*, by which means more room will be made for the water to escape. However, the dribbling of the water is not a circumstance of much importance, when it is not combined with other causes of difficulty; and it may be again mentioned, that it is generally occasioned by the artificial or premature rupture of the membranes.

5. *Shortness of the Funis Umbilicalis.*

The *funis umbilicalis* seems to admit of a greater variety, both in thickness and in length, than any other part of the *ovum* when at its full growth, being in one subject several times thicker than in another, or perhaps three or four times as long in one as it is found in another. It may be naturally very short, or it may be rendered so accidentally, by its circumvolution round the neck, body, or limbs of the child. Whichsoever of these is the case, the inconvenience produced at the time of labour is the same, that is, the labour may be retarded; or perhaps the *placenta* may be loosened prematurely; or the child may, in a tedious labour, be injured or in danger of being destroyed by the tightness of the ligature drawn round its neck; or by the mere stretching of it, as this must necessarily lessen the diameter of the vessels, if not perfectly close their cavity. But the two latter consequences very seldom follow.

The shortness of the *funis* is always to be suspected, when the head of the child is retracted upon the declension of the pain; and it may sometimes be discovered, that it is more than once twisted round the neck of the child, long before it is born. It has been thought that far the greater number of children are born with one or more convolutions of the *funis* round the neck.

Various methods have formerly been recommended for preventing this retraction of the head, some of which are insufficient, and others unsafe*; and the inconvenience is usually overcome, by giving the patient more time. But if the child should not be born, when we have waited as long as we believe to be proper or consistent with its safety, or that of the parent, it will be requisite to change her position, and instead of suffering her to remain in a recumbent one, to take her out of bed, and raise her upright, to permit her to bear her pains in that situation; or, according to the ancient custom of this country, to let her kneel before the bed, and lean forwards upon the edge of it; or, as is now practised in many places, to set her upon the lap of one of her assistants. By any of these methods the retraction of the head of the child is not only prevented by its own gravitation, but the weight of the child will be added to the power of the pain; and it will likewise be expelled upon an inclined plane instead of a level. In the course of practice, I can with infinite satisfaction recollect a great number of cases, in which, by adverting to the benefits gained by an erect position, labours have not only been accelerated, but the use of instruments, which were before thought necessary has been avoided.

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

* Nocet obstetricis digitus ano immissus, item nimia festinatio.—*Ruysch.*

distension of the *perinæum;* the body making a shorter bend or doubling, on account of the confinement of the neck by the *funis.*

Instances have occurred, in which, though the head of the child was expelled, and the pains continued, the body has remained, not perhaps always from this cause, and could not even be extracted with all the force which could be exerted, for a long time, perhaps for several hours. Two things are then to be considered, first, whether, the child be living; secondly, whether it be hindered merely by the shortness of the *funis.* If a child in this position should show any signs of life, if the pulsation in the navel-string should be vigorous, or the child should breathe, though imperfectly, we have no occasion to be in a hurry, it being only requisite, that we should keep its mouth open, to allow of the free access of the air, till it is expelled, or can be more readily extracted; for the internal organs will accommodate themselves to that state, and the child will possess a species of life half uterine, and half breathing. But when it has remained in this situation as long as we think consistent with its safety, and it cannot without great violence be extracted; should it then be hindered by the shortness of the *funis* only, we have been taught *, that it is advisable to divide the *funis,* before the body is expelled. Previous to our doing this, it will however be expedient to tie the *funis* with two ligatures, and then to divide it between them, otherwise the child may be instantly destroyed by the sudden gush of blood; as happened in an unfortunate case under my own care, though it was living when I divided the *funis,* and was afterwards very soon expelled.

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

* See *Chapman*—p. 63, and 85.

waiting and giving more time, rather than by the exertion of much force. The case of one woman, who absolutely died under these circumstances, was related to me; but I could not satisfy my mind, that her death was to be attributed merely to the situation and retention of the child.

6. *Weakness of the Constitution.*

The health of women at the time of parturition is often impaired, either by some general indisposition, which may have continued through pregnancy, though not altogether dependent upon it; or, by some disease with which they are attacked, when they are perhaps in daily expectation of falling into labour. The more perfect their health is, the better fitted they are for childbearing, as the process will not only go on with more regularity, but they will also recover more favourably, as is well known to those who are engaged in practice. Because though it be allowed, that the state of childbearing is not a state of disease, yet experience has shown, that women are then more liable to be infected with contagious diseases than at any other time; and that all diseases, with which they are then affected, are not only apt to fall upon those parts which are left in a more irritable state, in consequence of the changes they have so lately undergone, but the progress of disease is also then more violent, and the event far more dangerous *.

But the case of which we are now speaking is, when the general health of women is reduced below its proper standard, by some previous or accompanying disease, not absolutely connected with a state of pregnancy; of which a consumption is a very fair example, as consumptive persons seem of all others to be in the most hopeless state. Yet though such are often in their own minds, and in the opinion of their friends, not able to go through the fatigue and other unavoidable consequences of childbearing, I do not recollect one instance of any woman, in that situation, being unequal to her delivery, or having her fate hastened by it. If such women have little strength, they have little difficulty to overcome; the state of the parts, which in a common way might require the exertion of much force to dilate, corresponding with the force which they are able to exert; and more time only is required. When a prognostic how-

* Hence at the time of any epidemic disease, women more frequently fail in child-bed, though they are managed with equal skill and care. In the history of the different plagues in London, there are sometimes two or three hundred women who are put down as dying in child-birth in one month. *Procopius* has also told us in his account of the plague at Constantinople—*Tres saltem puerperæ convaluere;* that is, I presume, of those who actually had the plague in childbed. On this subject we shall speak again in the chapter on the Puerperal Fever.

ever is made of the probable event of such labours, it is to be presumed, that no particularly untoward circumstance shall occur; for if there should, it cannot be expected, that with extreme debility there should be the same power or resources, as in great strength and good spirits.

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

The effect of diseases seems also, in many cases, to be suspended during pregnancy. Of the distinctions to be made in the opinion we may be called upon to give of the event of acute diseases, during which a patient may either be delivered at her full time, or suffer abortion, we shall speak when we come to the subject of uterine hemorrhages.

7. *Fever or Local Inflammation.*

On the accession of labour, there is usually some increase of heat, of the quickness of the pulse, thirst, flushed cheeks, and a general feverish disposition; and commonly these continue in proportion to the exertions required or made for the completion of the labour, with respect to which they are, properly speaking, merely symptomatic. But in some cases the excitement is too great, and, instead of helping the action of the parts concerned in parturition, it prevents their acting with regularity or energy. Whenever the pains of labour are feeble, it is a vulgar custom, without regard to the case, to give cordials very freely, with the view of accelerating their returns, or of strengthening them; though under many circumstances by such proceeding * we evidently add to the evils we mean to remove. In some cases also, from the acuteness and constancy of the pain which the patient endures with little proportionate effect, and from its situation also, it may be readily distinguished from that which is occasioned by the proper action of the *uterus*, giving us too much reason to suspect, that the *uterus* or some of the contents of the *abdomen* are already in a state of inflammation, which may require immediate attention.

* Lord Bacon seems to have had a clear idea of this, though, by the manner of expression, his meaning is rendered somewhat obscure; "To procure easy travails of women, the intention is to bring down the child, whereunto they say the loadstone helpeth; but the best help is to stay the coming down too fast."—*Nat. Hist cent.* x. 968.

It does not seem necessary to bleed every patient on the accession of labour. For some it must be highly improper. But whenever the feverish symptoms become violent, it is I believe universally proper, the quantity of blood taken away being suited to the degree of fever, and to the constitution of the patient; and much service will also be done by the frequent exhibition of emollient clysters, or even a common purging draught, by keeping the room cool and well aired, by giving cooling drinks and medicines, and by keeping the patient in a quiet state without company or any other cause of disturbance. When the fever is removed, the natural pains will come on, and perform their office with propriety and success. Independently of fever, when the exertions which the patient makes are vehement, if she be plethoric, there is on that account sometimes a necessity of taking away some blood; for during these vehement exertions, if the blood-vessels be distended, some of them may give way, and the patient be brought into the most imminent danger, before the delivery, then at hand, is completed. Of one instance I have been informed by the medical attendant, in which a patient, thus circumstanced, burst a blood-vessel in the lungs, and died immediately, in the exertions of the very pain by which the child was expelled.

8. *Want of Irritability in the Constitution.*

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

been laid by some error or accident in the beginning, perhaps by exciting the action prematurely, which will, of course, cease when the artificial cause is removed (see chapter vi. sect. 11); but sometimes these imperfections have evidently been occasioned by some specific affection or action of the constitution.

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

9. *Passions of the Mind.*

As the infirmities and particular state of the body have a powerful influence upon the mind, and as the affections of the mind have, on various occasions, a reciprocal effect upon the body, it might be reasonably expected, that the progress of a labour should sometimes be forwarded or hindered by the passions. It is constantly found, that the fear of a labour, or the same impression from any other cause at the time of labour, often lessens the energy of all the powers of the constitution, and diminishes, or wholly suppresses for a time, the action of the parts concerned in parturition. It is also observed, that a cheerful flow of the spirits, which arises from the hope of a happy event, inspires women with an activity and resolution, which are extremely useful and favourable in that situation. In the time of a labour proceeding very slowly or irregularly, doubts and fears in the mind of the patient having an evident and great influence upon the pains; when those are removed, and her resolution confirmed, she will go on with courage, and effects will be produced, which would have been impossible if she had remained in a state of depression. The intelligent practitioner, who should be the last person to despond, will avail himself of the knowledge of these things, and by his discretion will inspire his patient with sentiments

which will enable her to go through difficulties, that to her feelings, and perhaps to his own judgement, appeared insurmountable. He will also regulate the conduct of all her attendants and friends, and lead them step by step to co-operate in his views and intentions, which will at length terminate to the real advantage of his patient, the satisfaction of her friends, and the increase of his own reputation.

10. *General Deformity.*

Many women, who are gibbous or distorted in the course of the spine, have the *pelvis* well formed; and there are a few in general appearance perfectly straight, who have yet some defect in the *pelvis*. Of the ease or difficulty of labours, depending simply upon the capacity or form of the *pelvis*, we are to speak in another place. Those who are gibbous, are not unfrequently asthmatic, or have some infirmity which prevents their breathing freely, or retaining their breath; and such must suffer some inconvenience at the time of labour, though the action of the *uterus* may be proper, and all the parts concerned in parturition in a natural state. For as both the instinctive and voluntary force, especially the latter, are affected by the manner of breathing, and duly exerted only when the breath is retained, and this not being under such circumstances possible, of course the progress of a labour must be retarded. Should there be any reason to suspect inflammation about the *thorax*, particular attention must be paid to it, otherwise we have only to give more time for the completion of the labour, and to wait for that effect from a repetition of feeble pains, which, without this inconvenience, would have been produced by a smaller number. I have known one instance of a patient labouring under a fit of spasmodic asthma, who was immediately freed from the asthmatic symptoms on the accession of the pains of labour; but the contrary effect is more generally to be expected. Should there be, in such cases, an appearance of real danger, the labour must be accelerated or completed, by giving such assistance as the circumstances of any case may require.

SECTION V.

ON THE SECOND ORDER; OR THOSE LABOURS WHICH ARE RENDERED DIFFICULT BY THE RIGIDITY OF THE PARTS TO BE DILATED.

1. *First Child.*

Every woman is expected to suffer greater pain and to have a more tedious labour with her first, than with subsequent children, and the difference is not unusually in proportion to the number which she has had. "I have heard a voice as of a woman in travail,

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

The difficulty, with which first labours are often completed, not only depends upon the greater rigidity of the parts, or upon their re-action, but on the imperfection or irregularity of the action also, by which they are to be dilated; for this is generally far less perfect and regular in the first instance, than when the same office has been frequently performed, of which examples might be brought under many circumstances. But though there be a somewhat greater chance of women wanting assistance with first labours than in subsequent ones, there may be no specific cause of difficulty, and they generally require only more time to be given for their completion. We are to remember, that with a first child it would not be proper to denominate a labour *difficult*, till it had continued twenty-four hours, if the presentation were natural, and no other adverse circumstances should occur.

2. *Advanced in Age.*

If a woman be far advanced in age at the time of having her first child, the difficulty attending her labour may be expected to be somewhat greater. At a certain time of life, every woman arrives at maturity, or that period when she may be considered as having acquired the greatest degree of perfection of which her frame is capable; when the inconveniences of youth are passed, and those of age are not arrived. This state of perfection, the time of which will vary in different constitutions and climates, and which may be determined as the best fitted for the act of parturition, may include several years. But if a woman should first be with child before or after this time of perfection, she will be liable to some difficulties, as in the one case she would be scarcely able to bear without injury the changes she must undergo; and in the other, the firmness, which all the parts have acquired, might lessen their disposition or capability of dilating. Greater force will therefore be necessary, or the same degree of force must be continued for a longer time in the latter case;

in other words, she must have a sharper, or a longer labour. In this country there has seldom been any reason to suspect women to be pregnant, before they were able to bring forth children without any or much inconvenience on that account. For the prevention of such difficulties as may attend the first act of parturition in those who are advanced in age, we have been advised to order frequent and small bleedings towards the conclusion of pregnancy; that the patient should take some emollient laxative medicine, and sit over the steam of warm water every night at bed time, and afterwards anoint the external parts with some unctuous application. Perhaps there is not authority for saying, that no advantage can be derived from the use of these or such like means; but certainly the impression made upon the mind of the patient by the novelty and peculiarity of the method, will, in patients of a timid disposition, raise such apprehensions of danger and difficulty, as will overbalance the good which can possibly be derived from them. It is therefore better to omit the use of any such means on this account; at least, not to recommend them in a formal way, for the specific purpose of procuring an easy birth, more especially as it does not constantly happen, that the difficulty of labour is in proportion to the age of the patient when she has her first child; this being in many cases as easy at forty years of age or upwards, as if she were only twenty-five. In the worst labours arising from this cause, there is no peculiarity in the difficulties, but merely a general increase of those which are produced by the rigidity of the parts, and therefore a longer time only is commonly required for their completion.

3. *Too early Rupture of the Membranes.*

The premature rupture of the membranes, whether natural or artificial, has been often mentioned as the cause of much mischief, and of many tedious or difficult labours. If it be allowed, that the membranes containing the waters were intended to be the medium by which the *os uteri*, and other tender parts, ought to be dilated, some inconvenience must arise when these are broken and the waters discharged, the head of the child being substituted for them; and this, being a firmer and less accommodating body, cannot for a long time be admitted within the circle of the *os uteri*, which will of necessity be dilated more untowardly and more painfully. It should also be observed that in this state of the soft parts, the lives of children are sometimes brought into danger, merely from the violent or long continued compression which the head undergoes.

After the rupture of the membranes, many hours, or several days, sometimes pass before the accession of labour, and the difficulties arising from this cause, even in first labours, will then be very much

lessened or prevented if the patient have generally lain in a recumbent position, and we have deferred, as far as was in our power, the coming on of the action of the *uterus*, till the most perfect disposition to dilate was previously assumed by the parts. More pain may be endured, and a longer time will certainly be required for completing labours attended with this circumstance only, principally those with first children; but they may in general be more properly called lingering or tedious than really difficult, and they very seldom require the interposition of art.

The membranes generally lie in close contact with each other, but in some cases there is a quantity of water collected between them; and, though in the former case they break simultaneously, so that there is, on that account, no impediment to the complete discharge of all the water of the *ovum*. I have seen a few cases in which one membrane breaking, the labour has not ensued for several days or weeks; and the second membrane containing the proper water of the *ovum*, has broken in the ordinary course of the labour, without any additional derangement, provided we did not interfere, nor conclude that the second membrane ought to be broken, because the first had given way.

4. *Oblique Position of the Os Uteri.*

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

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

It must however be allowed, that some labours are procrastinated by the mere oblique position of the *os uteri*, and that it is often combined with other causes of difficult labours, though, singly, it may not be of sufficient importance to be the cause of truly difficult ones. But when it does retard a labour, or accompany a difficult one, it does not require any manual assistance, or that we should retract it to a central position with respect to the cavity of the *pelvis;* both the thing itself, and the difficulty thence arising will be obviated, without detriment or much trouble, if the patient be confined to a proper position. If, for example, the *os uteri* be projected to the left side, she ought to rest as much as possible on the same side, and so of the right; if it be projected backwards, which I think is always the case when we cannot reach the *os uteri* in the beginning or early part of a labour, she ought to lie upon her back. By this method the *fundus* of the *uterus*, constantly leaning or inclining to the side of the obliquity, will gradually but effectually project the *os uteri* more and more towards a central position.

Cases have been recorded, in which it was said, that the *os uteri* was perfectly closed, and in which it has not only been proposed with a pair of scissors, to make an artificial opening instead of the closed natural one, but the operation has actually been performed, the labour, it is said, being thereby accelerated, and the patient recovering without inconvenience. I do not know that I should be justified in saying, that such necessity has never occurred, because it has not occurred in my practice; but I am persuaded, that there has been an error in this account, and that what has been, in some cases, called a perfect closure, of the *os uteri* has not been such, though the opening may have been very small, but that the practitioner has, at perhaps an advanced period of the labour, been unable to discover it by reason of its obliquity: and with regard to any operation by which the *os uteri* is to be artificially opened, to common apprehension that cannot be void of danger.

5. *Extreme Rigidity of the Os Uteri.*

Difficult, as well as tedious and very painful labours, are frequently occasioned by the unusually rigid state of the *os uteri*. The manner of, and the time required for its dilatation, will depend upon two circumstances; first, the degree of disposition to dilate which it may have previously acquired; and secondly, the degree or force of the action exerted by the *uterus*. The former of these is, in general, far less perfect, or more slowly produced with first than with subsequent children, as well as in premature labours, even presuming it to be in its most natural state; but when the *os uteri* assumes from any cause a still greater indisposition to dilate, of course the labour will be both more difficult and tedious. In a first labour it not unfrequently happens, that the *os uteri* may not be dilated in less than twenty-four or even forty hours, when the rest of the labour may be completed in four, or perhaps a shorter time, yet the very same person may have the whole process with her next child completed within six hours, or even a shorter time.

We have before taken notice of the advantages arising from the changes in the state of the soft parts being perfected, before the accession of labour. But when these are as favourable as can be wished, by the very action of the *uterus* pressing its contents upon the *os uteri*, or by the re-action of the part, and much more frequently by attempts to dilate it artificially, this part may become inflamed, and indisposed to dilate according to the degree of inflammation. The inflamed state of the part is often indicated by its heat and dryness; but whenever it is extremely rigid, and there has been a long continued action of the *uterus*, with little or no advantage, the impediment to the progress of the labour being clearly occasioned by the resistance made by the *os uteri*, I believe it is always right to consider that part as inflamed, provided there be apparently sufficient pains. If this be allowed, instead of attempting to dilate it artificially, it is the proper object of art, to recover in the first place the natural disposition to dilate, and then the pains of labour will be equal to the purpose. With this view it will be necessary to take away some blood, to give cooling medicines and drinks, to direct emollient clysters to be frequently injected, and, instead of using any means with the intention of increasing the force of the pains, to confine the patient to a recumbent posture; to gain, if it were in our power, a suspension of the labour, till the inflammatory disposition be removed, when the dilatation will proceed more speedily, less painfully, and without danger of affecting the constitution.

When a labour comes on prematurely, or before the parts have acquired their dilatable state, as it may be called, the position of the *os*

uteri will at that time be very different. In some cases it begins to dilate when it is high up in the *pelvis*, but in others, especially when the *pelvis* is, in comparison with the child, very large, the *os uteri* may be protruded very low down before there is any degree of dilatation, though it is spread so thin over the head of the child, or the membranes, as to give the feel of the membranes alone. If, under these circumstances, the external parts should be much relaxed, and the pains at the same time strong, it is possible for the head of the child to be expelled, though enveloped in the *os uteri*, and much mischief may be thereby occasioned *. For the prevention of this accident, or any tendency to it, when there is reason to dread it, the patient ought to be confined to a horizontal position, and the practitioner to restrain the advancement of the head; or if the case should actually have happened before he was called, he must use all the means he safely can, to extricate the head, and to support or replace the *os uteri*. When the *pelvis* is large, and the head of the child, being moved from its resting place upon the *pubis*, drops by its own weight into the lower part of the cavity of the *pelvis*, bearing the *os uteri* before it, the accident often becomes a cause of a *procidentia* or *prolapsus* of the *uterus*, which cannot, as far as I know, be always prevented, and which is a grievous misfortune to all, especially to those who are obliged to work for their livelihood.

All that art dictates to be done at the time of labour, is to render this as slow and gradual as possible, and after delivery to confine the patient longer to her bed or to a horizontal position, using at the same time such applications as may strengthen the tone of the parts, without interrupting the customary discharges.

6. *Uncommon Rigidity of the External Parts.*

The state of the external as well as of the internal parts is very different in different women, both in the beginning and in the progress of labours. Even in first labours they readily yield in some women, so as to allow the head of the child to pass through them with great facility and safety, but in others they are extremely rigid and unyielding, and withstand the action of the *uterus*, though strong, for a very long time; and then do not dilate without great danger of laceration. A more difficult dilatation is always to be expected in first labours than in others, and more care is required to prevent a laceration. In the original structure or formation of these parts there is also a considerable difference, as well as in their state or disposition, which requires some attention in every labour. There ought to be, and usually is a correspondence between the state of the parts and

* Os uteri aliquando prolabitur.—*Ruysch, Obs. Anatom. XXV.*

the power of the pains; but in some cases the external parts are rigid when the pains are feeble, whilst in others, when the parts are indisposed to dilate, the pains are exceedingly strong, pushing, with unabating force, the head of the child, so that the parts must either dilate or be lacerated. Of many of these circumstances we have already spoken.

In first labours the external parts may require one or several hours' continuance of the pains, before they are sufficiently dilated to allow the head of the child to pass through them without danger of laceration; but the difficulty thence arising does not seem to require, or to be relieved by our interposition, further than to prevent injury as far as that is in our power, from too speedy an exclusion of the head of the child, in the manner before advised. The merit of our conduct under these circumstances will be chiefly negative; for if we cannot give to the parts their disposition to dilate, and ought not to dilate them artificially, there only remains for us to wait the due time in order to avoid mischief; art being more frequently exercised on such occasions in remedying the evils, which the mistaken exercise of the art has before produced, than in rectifying those which are necessary or unavoidable. It is also to be observed, when the head of the child passes through the inferior aperture of the *pelvis* with difficulty, though the external parts are pressed upon with considerable force, that the impediment to the delivery does not always arise from the resistance made by these, but properly speaking from the elongation or bending of the spinous processes of the *ischia*, and the labour should then be referred to the next order.

SECTION VI.

ON THE THIRD ORDER; OR LABOURS RENDERED DIFFICULT BY DISPROPORTION BETWEEN THE DIMENSIONS OF THE CAVITY OF THE PELVIS AND THE HEAD OF THE CHILD.

1. *Original Smallness of the Pelvis.*

THE cavity of the *pelvis* in women generally bears a certain proportion to the common size of the heads of children; yet as they both admit of considerable variation, independent of distortion or disease, it is possible, that a woman with a *pelvis* rather under the common dimensions may have conceived a child far beyond the usual size; and when this is the case, there must of course be an increased difficulty at the time of parturition. When therefore the smallness of the cavity of the *pelvis*, and the largeness of the head of the child are mentioned, they are to be considered as relative and not as positive terms; because the *pelvis* of some individual women may be so large, as to

suffer the largest head of a child, of which we have any example, to pass easily through it; and the smallest head may be esteemed large, if compared with a yet smaller *pelvis*.

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

2. *Distortion of the Pelvis.*

On the causes, kinds, and degrees of distortion of the *pelvis*, we have already spoken very fully (see chap. i. sect. 10.) The effects produced, or the obstructions caused by this distortion, at the time of parturition, will somewhat depend upon the part distorted, or upon the kind of distortion, but chiefly on the degree of change made in, or reduction of, the dimensions of the cavity, by which the natural relation between it and the size of the head of the child is perverted or destroyed. Distortion of the *pelvis* at the superior aperture creates an obstruction to the passage of the head of the child, which will be overcome with more difficulty by the powers of the construction, and which will be more inconveniently managed by art, than an equal degree of obstruction in the lower part of the *pelvis*. The greatness of the difficulty will nevertheless chiefly depend upon the degree, and, in the various degrees which are found to occur, every person must see an evident cause for all the kinds of difficulty which he may meet with in practice. A small degree of distortion, like an originally small *pelvis*, may occasion a difficult labour of that kind which may not be an object proper for the exercise of his art, as it will at length be completed by the long continued action of the *uterus;* first moulding and reducing the form and size of the head till it is adapted to that of the *pelvis*, and then forcing it through the diminished cavity. Or, the degree of distortion may be such, that notwithstanding all the moulding and reduction of the head, which can be accomplished by time and the efforts of the constitution, there does not exist sufficient room for the passage of the head through the *pelvis;* but it may nevertheless be at length brought into such a situation, as to afford us the hope of safely delivering the patient by the use either of the *forceps* or *vectis*, and of preserving the life of the child. Or, the distortion may be so considerable, that it is impossible for the head of the

child to be expelled without lessening it, and the child, if living, must be sacrificed to the safety of the parent. Or, lastly, the distortion may be actually so great, that if the head of the child could be lessened, there would not be a possibility of extracting it, and we must either submit to lose the lives both of the parent and child, or attempt to save that of the latter, by the *cesarean* section, or by some other operation, fruitless, yet almost equally hazardous, such as the division of the *symphysis* of the *ossa pubis*.

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

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

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

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

But it is not merely from the size of the head of the child that a

labour may be rendered more tedious, more painful, or even truly difficult. The usual connexion of the bones of which the head is constructed, is such as to allow of considerable diminution and change of form in its passage through the *pelvis*. The extreme degree of diminution and change which it is generally capable of undergoing, is perhaps impossible to be determined; but it does not seem unreasonable to conjecture that it may be reduced one third below its original size, without the destruction or even injury of the child from the compression, the alteration being so gradually made. The advantages gained by this compression of the head, in all cases of difficulty occasioned by the natural smallness of the *pelvis*, or in less degrees of distortion, are often greater than could have been hoped for, on almost any calculation, as was before observed. But as there is great difference in the degree of ossification in the heads of different children at the time of birth, those heads which are most perfectly ossified must of course be capable of undergoing the least change; and the degree of change which they can undergo must be produced with the greatest difficulty, and purchased at the expense of more severe or longer continued pains. On this account, a large head, with a very imperfect ossification, is often found to pass through a *pelvis* which might be considered as relatively small, with more ease than a smaller head in which the ossification was more complete; and yet the cause of the delay may not be discovered before the birth of the child. In cases of difficult labour proceeding from these and similar causes, it not being in our choice to select the circumstances, all that we can do is, to manage such as occur in the most prudent manner; and we have commonly to wait only for those effects to be produced, which may be esteemed as consequences of the efforts of the constitution fairly exerted, and never to despair so long as these efforts are properly continued.

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

Two diseases have been mentioned by writers as the cause of this enlargement, tumours growing on the heads of children, and the *hydrocephalus;* but either of these very rarely occurs. With respect to the first, it has been said, that when the tumour, of whatever kind it may be, is of such a size as to be an absolute impediment to the birth of the child, it should and may be opened or extirpated, and that the operation is not only perfectly consistent with the safety of the mother, but frequently with that of the child also. Of the existence of these tumours the instances recorded do not leave a doubt *;

* Partus difficilis a tumoribus, è capitibus fœtuum dependentibus.—*Ruysch. Obs. Anatom. LII.*

or of the possibility, when they are large, of their obstructing the delivery of the patient: but of their extirpation with safety to the child I should very much doubt, though no human being can circumscribe possibility. Yet as it is the duty, and must ever be the solicitous wish, of every practitioner, to preserve a life, when it is in his power, he may be induced to try the extent of his art, when there is little hope of success. From long continued compression, the integuments of the head of the child may become so much tumefied, and altered from their natural form and state, as sometimes to give the feel of a distinct and adventitious tumour; and yet, simply considered, such are so far from requiring any surgical assistance, that it would be absurd and flagitious to intermeddle with them. Yet when there really are any unnatural tumours or excrescences, the point of practice would depend upon the degree of impediment to the passage of the head which might be thereby occasioned, or upon the nature of the tumour, whether it could be extirpated, or only admitted of an opening to be made into it for the purpose of lessening its bulk; or if neither of these could be done with propriety, by acting as if no such tumour existed, on the general principles by which we are to be guided in difficult labours.

With regard to the *hydrocephalus,* which, if of a certain size, would certainly be a great obstacle to the delivery, this is not readily to be distinguished in the early part of a labour, because the membranes of the *ovum,* in some cases, resemble, by their thickness, the integuments of the head in others. But if we were assured that a *hydrocephalus* did exist, there would not always be occasion for us to act, as it is far more eligible, even then, to wait so long as to give time for the expulsion of the head of the child by the natural efforts, if they be equal to that effect. Should the head be so much enlarged by the quantity of fluid contained in it, that it cannot pass through the *pelvis,* even in this case the integuments will generally burst by the force of the pains. But when the fact is ascertained, and the labour is rendered extremely tedious and lingering from this cause; or if any suspicious symptoms should arise, it would not be justifiable to allow the patient to undergo such long continued pains, as when we have any hope of saving the life of the child, or of producing a child with a reasonable chance of living. The delay recommended is not intended, therefore, to go further than the prevention of mistakes. But when we have determined upon the necessity or propriety of delivering the patient, all that generally is necessary to be done, is merely to perforate the integuments of the head, immediately after which, the water flowing away, the head is speedily expelled, and the birth soon and easily completed. In the extraction of the child by the feet, there is not much more difficulty

on this account, the force with which we have the power of extracting being so great as to burst the integuments, as I have several times experienced; or any other necessary assistance may be easily afforded.

5. *Face inclined towards the Pubes.*

On a former occasion, we have mentioned that there are four varieties in the position of the head of the child at the time of birth. The first, when the *vertex* or hind head is turned or inclined towards the *pubes:* the second, when the face is turned towards the *pubes:* the third, when the head presents with one or both arms: the fourth, when the face presents. The first of these may be considered as the standard position, because it is not only the most common, but the most easy also; the head of the child being so constructed as to admit, in this position, of the greatest and most ready compression and adaptation to the *pelvis*, and of course the easiest passage through it. Yet the other positions are not to be considered as constituting labours of any other class, but as varieties of the natural position: though they must of necessity occasion considerable delay in all labours in which they happen; either because a portion of that space, which would be wholly devoted to the head of the child, is occupied by some other part unfavourably, or because the bones of the *cranium*, in such positions, more slowly and imperfectly conform to the size or shape of the *pelvis;* or because unfavourable changes of position may be equal to increase of size. When the face of the child is inclined towards the *pubes*, the peculiarity of the position is not usually discovered in the early part of the labour, or even when the first stage is completed, the practitioner being generally satisfied with knowing that it is a presentation of the head. But when there is any unusual delay, perhaps without any very obvious cause, it then becomes a duty to investigate and explore the cause; and it is not a very unfrequent thing to find the face turned towards the *pubes*. This position is most readily known by our being able to feel the greater fontanel in a common examination, though it is also proved by other circumstances relating to the features of the face, or various parts of the head, which may be readily discriminated. When this is found to be the position, it does not follow that any artificial assistance ought to be given; but, knowing that these cases are not in general dangerous, we are to wait a longer time for the effect of the natural pains; experience having proved that the head, in this position, may be, and almost universally is, ultimately expelled without the assistance of art. Yet in some of these presentations, that of the face towards the *pubes* in particular, it is said, that, by pressure with the fingers, the face may be gradually inclined to the

sacrum, and the head reduced without much difficulty to the first, or that which was stated as the most eligible, position *. But when this change cannot be effected, or not without violence, and the pains cease, or when we are fully convinced that they are unequal to the exigences of the case, such assistance must be given as the situation of the parent may require and allow.

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

6. *Presentation of the Face.*

The presentation of the face is discovered by the general inequalities of the presenting part, or by the distinction of the particular parts, as the eyes, the nose, mouth, or chin, which is usually if not always, inclined towards the *pubes*. In this presentation, the child will generally be expelled by the natural efforts; but a much greater length of time will be required for the completion of the labour, especially with first children, for the reasons mentioned under the last clause, which are in this perhaps increased. But the child may be, and generally is, born without any injury, though the face will sometimes be swelled in an astonishing manner, and the external parts of the mother being infinitely more distended than in a natural position, greater care is necessary to prevent their laceration.

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

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

Though the head should present with one or both arms, experience hath fully proved, that a woman may be delivered by the natural efforts with safety to herself, and without prejudice to her

* See Transactions Medical and Chirurgical, Vol. ii. in which there is a paper on this subject by Dr. J. Clark.

child, if the *pelvis* be well formed. But as a part of the cavity, which should be appropriated to the head, will be filled by the additional bulk of the arms, there will be an evil similar to what would be produced by a small, or by a somewhat distorted *pelvis*. Should the *pelvis* be in the first instance barely of sufficient dimensions to allow the head of the child to pass through it, then the additional bulk of the arms must render the passage of the head impossible; or the labour may be so much retarded, as to make it what is properly called difficult.

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

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

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

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

When the extremities present at the time of birth, there is often a doubt whether the child be living or not, unless it can be perceived to move. Now the fact may be ascertained by the consequences of

any violence, as no part of a dead child can either tumefy further than by compression, or change its colour, however compressed it may be, only showing one effect of violence, that of solution of continuity.

From long and severe compression at the time of birth, the head of the child becomes wonderfully elongated, or slewed and awry after birth, and so remains many years, or even during life; particularly observable in the face, the features of which are thrown out of their proper line, as appears evidently in the position of the eyes of many people.

SECTION VII.

ON THE FOURTH ORDER; OR LABOURS RENDERED DIFFICULT BY THE DISEASES OF THE SOFT PARTS.

1. *Suppression of Urine.*

The various affections of the urinary bladder during pregnancy have been already mentioned. On the commencement of labour, it was said, that an involuntary discharge of the urine might be occasioned, but in its progress, there is more commonly a frequent inclination with a difficulty in voiding it, and sometimes there is a total suppression. The inconveniences thence arising will be according to the quantity of urine retained, and to the length of time that the bladder may continue distended. The first may hinder the proper action of the *uterus*, and be an impediment to the passage of the head of the child, by occasioning a less space for it to pass through, projecting it also out of its proper direction. By the latter, the bladder itself may be injured in consequence of the continued pressure, which some part of it may undergo from the repeated actions of the *uterus*, causing inflammation terminating in partial gangrene; and in some cases in which relief was not given, the bladder has even been ruptured, the patient being thereby speedily destroyed *.

In the beginning and course of labours, especially of those which are expected to be tedious or difficult, great attention is therefore to be paid to the state of the bladder; the patient is to be frequently admonished to void the urine, and in all cases of doubt we are not to confide in any representation made to us, but to be satisfied only with seeing the quantity of urine which has been discharged; error being often committed by confounding the water of the *ovum* with the urine. By the application of the hand to the *abdomen* of the

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

patient, it is generally an easy matter to distinguish between the tumour of the *uterus*, and the flattened but circumscribed tumour of the bladder, which lies below and before that formed by the *uterus*. The patient herself is sometimes capable also of distinguishing that pain which is the consequence of the action of the *uterus*, from that which is occasioned by the pressure upon the distended bladder.

To remove that obstacle to the passage of the child, which may be produced by the distension of the bladder, and to prevent any injury to the bladder itself, it is necessary to draw off the urine with the catheter, whenever it is retained beyond a certain time or degree. In slighter cases the common catheter will answer the purpose; but when the head has been long wedged in the *pelvis*, there is not sufficient room for that to pass, even though the head be elevated or pressed towards the hollow of the *sacrum*. But in such cases the flattened catheter, contrived by my very worthy and ingenious friend Dr. Christopher Kelly, will often pass with ease and convenience; though the elastic catheter, and that kind which is made of a soft and pliable metal, is often to be preferred even to this. But whatever catheter it may be found expedient to use, or however necessary it may be to draw off the urine, we are to take great care not to introduce the instrument with violence, or precipitation, because we may do as much positive mischief with the instrument, as we aim or wish to prevent. In some cases, from want perhaps of timely care, though we are assured there is a great quantity of urine in the bladder, the head of the child is so immoveably locked in the *pelvis*, that we cannot possibly introduce any catheter, and are therefore obliged to submit to the inconveniences which may follow the distension of the bladder. But if care were taken in the beginning of labour, this does not often happen; nor is it always attended with the evils we might dread, the head of the child being at length pressed so low as to allow the urine to escape, though very slowly. Yet in all cases, in which there has been in the course of the labour a suppression of urine, or any doubt of its having been voided, it will be prudent and necessary to introduce the catheter before or soon after the expulsion of the *placenta*, that we may prevent the mischief which might be expected to follow such great distension of the bladder, if this were to remain many hours after delivery.

2. *Stone in the Bladder.*

If a woman should have a stone in the bladder, this would be no cause to prevent her being with child, or proceeding through her pregnancy without molestation. Nor, if it were of a small size, would it be any impediment to her delivery; though if it were large,

the head of the child could not pass through the *pelvis*, or not without much trouble and probable mischief. Of this case I have never met with an instance in practice, and may therefore be allowed to consider it as very rare, though there does not appear to be any reason for judging it impossible. I have reflected upon the case, and upon the conduct which it might be necessary to pursue, if it had occurred to me; and though it behoves me to speak with reserve, and to be satisfied if little confidence be placed in what I advance, it is better on the whole to give my opinion, than to leave the matter without considering, or making mention of it.

In the beginning of labour, supposing there is a stone of a large size in the bladder, one of these consequences must follow; the head of the child must advance before the stone, or the stone must be protruded before the head of the child. If the former should be the case, we might presume that the labour would proceed in a natural way, as if the stone did not exist; there would, at least, be no demand for the assistance of art, and no justifiable reason for exercising it. But if the stone should be protruded before the head of the child, our conduct must be regulated by the circumstances. It seems reasonable, that we should first attempt to raise the head in such a manner, and to such a degree, as to allow us to return the stone beyond the head. Or if this should be found impracticable, either because the head of the child was too far advanced, or firmly locked in the *pelvis*, we must then weigh the evils to be apprehended, from the compression of the soft parts, that is of the anterior part of the *vagina*, and the posterior part of the bladder, between the head of the child, and the stone in the bladder; besides the distraction of the parts which must be necessarily occasioned. Whatever conduct we might pursue may be attended with some evils, but as it is only in our power to choose the least of these, it seems better, even in the time of labour, to suffer the evils which might follow the performance of the operation for extracting the stone, than to suffer those which may be occasioned by the compression and probable laceration of the parts. With regard to the common operation, there is both less difficulty and danger in it to women than to men, though these will in some measure depend upon the size of the stone and other circumstances. In some cases independent of pregnancy also, in which the stone is contained in a distinct cell of the bladder, and could not therefore be grasped or extracted by the *forceps* when introduced, it has been proposed to make an incision through the anterior part of the *vagina*, directly upon the stone. This operation, which may in some cases be eligible, has been performed twice, by two surgeons of great ability and eminence in the country, and, as I was informed, without oc-

casioning the effect to be apprehended; that of leaving a fistulous opening, by which the urine would have been involuntarily discharged for the remainder of the patient's life.

3. *Excrescences of the Os Uteri.*

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

In June 1770, I was desired to see a patient in the eighth month of her pregnancy, who in the preceding night had a profuse hemorrhage. Her countenance showed the effects of the great loss of blood she had sustained; and from the representation of the case given me by the gentleman who was first called in, I concluded that the *placenta* was or had been fixed over the *os uteri*. On examination I felt a very large fleshy tumour at the extremity of the *vagina*, representing and nearly equalling in size the *placenta*, which I judged it to be. Had this been the case, there could not be a doubt of the propriety and necessity of delivering the patient speedily; and with that intention I passed my finger round the tumour, to discover the state of the *os uteri*. But this I could not find, and on a more accurate examination, I was convinced that this tumour was an excrescence growing from the *os uteri*, with a very extended and broad basis. I then concluded that the patient was not with child, notwithstanding the distension of the *abdomen*, but that she laboured under some disease which resembled pregnancy, and that the hemorrhage was the consequence of the disease. A motion which was very evidently perceived when I applied my hand to the *abdomen*, did not prevail with me to alter this opinion.

It was of all others a case in which a consultation was desirable, both to decide upon the disease, and the measures which it might be necessary to pursue; and several gentlemen of eminence were called in. That she was actually pregnant, was afterwards proved to the satisfaction of every one; and it was then concluded, that such means should be used as might prevent or lessen the hemorrhage, and that we should wait and see what efforts might be naturally made for accomplishing the delivery.

No very urgent symptom occurred till the latter end of July, when the hemorrhage returned in a very alarming way, and it was

thought necessary that the patient should be delivered. There was not a possibility of extirpating the tumour, and yet it was of such a size, as to prevent the child from being born in any other way than by lessening the head. This was performed; but after many fruitless attempts to extract the child, the patient was so exhausted, that it became necessary to leave her to her repose, and very soon after our leaving her, she expired.

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

The propriety or advantage of a practice, by which the life of neither the parent nor child was preserved, ought to be considered; but such cases occur so rarely, that there is always room for animadversion, when they are concluded. Yet the general principle of its being ever our duty to preserve both their lives, if possible; or to preserve that of the parent; or, if she cannot be preserved, then to save the child, if it be in our power; would have been a guide to better practice on this occasion, than that which was followed.

Excrescences of a similar kind, of a smaller size, though considerable, are not very unfrequently met with in practice; and as even these are usually accompanied with some degree of scirrhous disposition of the *os uteri*, more time is required for the completion of the labour. It is to be remarked, that in cases of this kind, there is often a long continuance of the pains without any sensible effect; but all at once, the rigid *os uteri* yields and dilates speedily and unexpectedly, or perhaps in some instances is lacerated. In some cases also, the excrescences are of so tender a structure, that they are crushed by the passage of the head over them, and entirely destroyed. During labours of this kind, and after delivery also, the great object is to guard against all causes of inflammation, at first perhaps local, but afterwards extending to other parts, connected or readily consenting with the *uterus*, and more immediately necessary for the functions of life; but I have not known any case of this kind to prove immediately fatal, except that above described.

4. *Cicatrices of the Vagina.*

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

Amidst a great number and variety of cases of cicatrices in the *vagina*, I have not met with one example in which they were able to withstand the pressure of the head of the child, if the pains were of the customary strength. The labours have indeed been considerably prolonged, but they have terminated favourably. But when the difficulty arising from this cause has been combined with other causes, it must of course have added to the trouble, which the patient would otherwise have undergone. Or, if the pains should cease before the labour is completed, then such assistance must be given as the case may require; being on our guard that we do not offer assistance before there are proofs of the necessity, and are assured that the difficulty cannot be overcome by the natural efforts.

I was informed by the late Dr. Hunter of the case of a patient, who was under his care, in whom, after her delivery, which was not attended with any circumstances of peculiar difficulty, the whole internal surface of the *vagina*, and all the external parts, entirely sloughed away.

5. *Adhesion of the Vagina.*

Adhesions of the *vagina* are occasioned by an increased degree of the same causes as those which occasion cicatrices. There may be an adhesion from disease in women who were never pregnant, or it may be the consequence of a slough thrown off after a former labour with or without the use of instruments. Cases of adhesions of this kind are commonly mentioned as of very easy management, nothing more being required, it is said, than to separate the united surfaces with a knife, and to prevent their re-union by the introduction of a

tent or canula for this purpose. It is true, when an adhesion has taken place near the external orifice, that it may in general be managed successfully and without difficulty ; but when there has been a deep slough, and the parts adhere high up in the *vagina*, perhaps through its whole extent, it is clear from the structure and connexion that there is need of the greatest circumspection, lest, on the one hand, we perforate the bladder, or, on the other, the *rectum*, all these parts being drawn close together; an accident I have seen happen under the hands of a very dexterous and able surgeon ; and it seemed unavoidable.

In some cases then it appears, that the adhesion is of such a kind, as not to admit or justify any attempt to separate the parts with a knife ; but even in these, by suffering the menstruous discharge to be collected, after a certain time, the part, where an incision or puncture with a trocar may be safely made, will sometimes be pointed out, and this being gradually dilated, a cure may be effected.

It is possible for an adhesion to take place after a woman is become pregnant, and of this I have been informed of one instance. Of course when labour comes on, the contents of the gravid *uterus* would be impelled against the adhering parts, which would either be separated, or it would resist the exclusion of the child. In the former case, nothing would be required to be done by art ; but in the latter, it would be necessary to divide the united parts by an incision made with great care, and only to a certain degree, leaving the full separation to be made by the membranes containing the waters, or by the head of the child, which will then effectually answer the purpose, and probably in a better way than by any more extended operation.

6. *Steatomatose Tumours.*

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

A lady, after the birth of her eighth child, fell into a state of bad health, with many painful and troublesome symptoms, but no marked disease. These were by some physicians considered as nervous, by others as scorbutic, and by others as rheumatic, or of a gouty nature. Various medicines were given, and different means tried for her relief, but without any good effect. At the expiration of two years she became again pregnant. All her former labours had been very easy and natural; but when Dr. Hunter was called at the commencement of this, he found an obstruction at the superior aperture of the *pelvis*, which he believed could only be occasioned by the projection of the lowest of the lumbar *vertebræ*, or the upper part of the *sacrum*. It

was then supposed, that she had the *osteo-sarcosis*, of which her complaints had been the symptoms. It was impossible for her to be delivered in any other way than by lessening the head of the child. She died on the fourth day after her delivery. Leave was given to open the body, and when the *pelvis* was examined, the tumour, which was imagined to be a projection of the bones, was found to be an excrescence of a firm, fatty substance, springing from one side of the upper part of the *sacrum*, and passing across so as to fill up a great part of the superior aperture of the *pelvis*.

It is probable, that the preceding complaints of this lady were occasioned by the pressure of this tumour upon the *uterus;* and had the real state of the case been known before the time of labour, or even during her labour, it does not appear to have been proper, or within the bounds of art, to have attempted or to have afforded her any other assistance ; but had it been known that the tumour existed, before the accession of labour, it might have been judged equally justifiable and expedient to have brought on premature labour, as in cases of actual distortion of the bones of the *pelvis*.

7. *Enlargement of the Ovaria.*

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

With the history of two cases of this kind I was many years ago favoured by Dr. John Ford, a gentleman of great skill and experience. In the former, he was surprised to find a large and firm tumour lying between the *rectum* and *vagina*, filling up all the concavity of the *sacrum*, and a considerable share of the cavity of the *pelvis*. Being convinced of the impossibility of the child passing by this tumour, which did not yield or diminish by the force of the pains, it was determined, in consultation, that the patient ought to be delivered by lessening the head of the child. The operation was performed with great care, but the patient died at the end of three weeks. When the body was opened, the tumour was found to have been an encysted dropsy of the *ovarium*, in which there was a considerable quantity of hair.

In the latter case, which in all its circumstances resembled the former, instead of lessening the head of the child, a trocar was passed through the posterior part of the *vagina*, directly into the tumour.

A large quantity of water was immediately discharged, the tumour subsided, and a living child was born without any further assistance. This patient recovered from her lying-in, but sometime after becoming hectic, she died at the end of about six months, though from the symptoms it did not appear, that the fever was occasioned either by the disease or the operation. This patient was not examined after her death.

If the dropsical *ovarium*, even should it be of a considerable size, lie in the cavity of the *abdomen*, the inconvenience it occasions is merely from its bulk, and the consequent distension, or its turning the *uterus* to one side during pregnancy; and none, that I recollect, of importance at the time of labour; but of this I have seen several instances which have generally left some doubt of the existence of pregnancy. So that having related these two cases, I have said all I have to advance on the subject, except that I have met with more than one instance of a circumscribed tumour on one side of the *pelvis*, which I at first suspected to be a diseased *ovarium*. But as these tumours have always given way to the pressure of the head of the child, the passage of which they have only retarded for a short time, I have concluded they were formed either by some soft fatty substance collected there, or were cysts, formed from the cellular membrane containing lymph casually effused. But on taking an examination after delivery, the tumours were found to have again acquired their primitive form and size, and to have resumed their former situation. One of these tumours, which grew on the anterior part of the *vagina* to a considerable size, was opened previous to the excision of the *sac*, and was found to contain a quantity of common gelatinous fluid, but this patient was not pregnant.

8. *Rupture of the Uterus.*

The human *uterus* is found to retain its original thickness during the time of pregnancy, notwithstanding its distension; or, as some have thought, to become somewhat thicker than it was in the unimpregnated state. This thickness, immediately produced by the enlargement of all the constituent parts of the *uterus*, we have therefore reason to think, is consequent to some principle acquired coeval with conception. But if the whole, or any part of the *uterus*, should be deprived of this principle, or affected with any disease destructive of the operation of that principle, then the whole *uterus*, or the part so affected, would be mechanically distended, and become thinner in proportion to its distension; and at the time of labour, when the action exerted becoming greater than the unthickened part was able to bear, the *uterus* would be, almost of course, ruptured. Or if the *uterus*, which had acquired its proper

thickness, became affected with inflammation or any other disease, weakening its power, and speedy in its progress, the texture of some part so affected might be destroyed, and the *uterus* ruptured by its own action in the time of labour. Or, independently of disease, the *uterus* may be worn through mechanically, in long and severe labours, by pressure and attrition between the head of the child and the projecting bones in a distorted *pelvis*, especially if they be drawn into points or a sharp edge. Or, it has been supposed, a rupture may be occasioned by a violent and spasmodic action of the whole or some part of the *uterus*, independent of disease, or of any mechanical cause. Or the *uterus* may be ruptured by violent accidents happening to the mother in the advanced state of pregnancy. If the *uterus* be strongly contracted, it may be ruptured also by attempts to pass the hand for the purpose of turning a child; but in this last case a rupture could only happen, when the force with which the hand was introduced was combined with the proper action of the *uterus;* for the strongest person has not the power to force his hand through a healthy and unacting *uterus*. The part of the *uterus* which generally gives way, whether posterior, which is most common, or anterior, or lateral, is usually near the union of the *cervix* with the *vagina*, in which such a change is made at the time of labour, when the *os uteri* is completely dilated, that the distinction between them is lost, the *vagina* and *uterus* forming together one cavity, though of unequal dimensions. Perhaps something of a similar kind happens to dancers, who when they make extremely violent exertions, are apt to have the *tendo achillis* broken.

Some of the causes of the rupture of the *uterus* are unavoidable, for it is not within the sphere of human abilities, to give to some part the principle by which it has the disposition or power to perform any function; allowing that art may sometimes excite the power to action, if the principle be dormant, or repress it when too vehement. Nor is it often possible to discover or prevent the degree of pressure or attrition, which some particular part may undergo in a difficult labour, before the effect is produced. But the two other causes, that which is preceded by inflammation, or that which may be occasioned by attempts to turn the child, may be corrected or avoided, by abstaining from the use of all such means as are likely to act as causes or promoters of inflammation, and by proper treatment when it does exist; or from making such attempts as may be thought necessary for the purpose of turning a child, while the action of the *uterus* is very powerful; and it may also be proper to caution the patient against making at that time any violent, voluntary exertions.

The rupture of the *uterus* is accompanied with a sense of some-

thing giving way internally, always perceptible by the patient, and sometimes audible by the attendants, with sudden excruciating pain in some part of the *abdomen*, a receding of the part of the child which presented, with an instant vomiting of the contents of the stomach, or of a brown fluid, and an abatement or a total cessation of the pain, together with some degree of hemorrhage from the *vagina;* as the *placenta* has uniformly been found to have been partly or wholly separated in every case which has come within my knowledge. After these symptoms, by the application of the hand to the *abdomen*, the limbs of the child are so easily distinguished through the integuments, as to leave no room to doubt of the accident; and if the head of the child were not locked in the *pelvis*, it immediately recedes or even goes out of the reach of a common examination, however low it might have descended. The death of the patient usually follows soon, though not immediately after the accident; but I have seen one case, in which there was reason to believe, that the woman walked a considerable distance, and lived several days after the *uterus* was ruptured before her labour could be properly said to commence.

In general there is reason to think, that the children have died immediately or soon after this accident, and there is certainly little chance of any person surviving a rupture of the *uterus*. It therefore might be doubted, whether it would be more eligible to suffer the patient to die without giving her further trouble; or whether it were our duty, hopeless as the case must be, and really is, to pass the hand into the *uterus*, to turn and deliver the child by the feet; or with the *forceps*, or *vectis*, or in any way the case would allow. What might be the sentiments of former practitioners, is not to us very material; for besides some others of which I have been informed, or which are recorded, a case occurred to my very worthy, able, and experienced friend the late Dr. Andrew Douglas, in which, though the *uterus* was ruptured, he turned the child, the patient recovered, and afterwards had children, at the birth of one of which I was present. If no other case had been recorded, this would be of sufficient authority, to render it in future the duty of every practitioner, to attempt without delay to deliver the patient, and bad as her chance certainly would be, to be strenuous in using all the means which art dictates, to extricate her, if possible, from her imminent danger, and to preserve the child. But for more particular information on this subject I must refer the reader to an essay on the rupture of the *uterus* by Dr. Douglas, and to several periodical papers of that time in which similar cases are related; but from the statement of some of these, one cannot help doubting whether the *uterus* was actually ruptured.

I was called to a case of a very extraordinary kind in which that part where the *vagina* and *uterus* are united was ruptured; the child remaining in the cavity of the *uterus*, the *os uteri* being little dilated. Here my advice was, not to attempt to deliver, because so much force would be required for dilating, that it was feared the *uterus* would be completely torn from the *vagina*, before the hand could be passed into the *uterus*, at least before the child could be extracted, and then the case would have been more horrible.

I have known two cases in which it appeared that the *uterus* was ruptured by the very effort which expelled the child. If the *placenta* be afterward retained, and it should be thought necessary to extract it, on passing the hand for that purpose, this would be more likely, without the greatest circumspection, to pass through the ruptured part into the cavity of the *abdomen*, than into the *uterus*, the *os uteri* being more contracted. It might then be possible to mistake some of the *viscera* for the detached *placenta*. This mistake was actually made, with very aggravated circumstances, in a late unfortunate case; and the immediate loss of the patient's life, and irreparable destruction of the attendant's character, were the natural and unavoidable consequences.

SECTION VIII.

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

Before we proceed to the consideration of the various means,

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

But besides the causes already mentioned, there is one much more frequent than the rest, which is, the derangement of the order of the labour by an officious interposition, or by improper management. Upon this subject it would be unpardonable to make an assertion, which is not supported by experience; but I am now fully convinced, that the far greater number of really difficult labours, to which I have been called, and I must not conceal the truth on this occasion, many of those which have been originally under my own care, were not of that denomination from unavoidable necessity, but were rendered such by improper management, in the commencement or course of the labour. Nor does the disturbance of the order of a labour depend upon the practitioner alone; for the intractability of the patient herself*, or of her friends and attendants, which, though it may be founded in affection and compassion to her sufferings, may also arise from many other motives, is too frequently productive of the same effect.

In the management of difficult labours there is required much previous knowledge and present judgement on the part of the practitioner, to distinguish in cases of great difficulty, *which* of them may demand the assistance of art, and *when* this ought to be employed; and *which* may be resigned to the efforts of nature; and no situation can be imagined, that requires greater address to procure the confidence and co-operation of all the parties concerned; or more firmness in the pursuit of the negative conduct, which it is often absolutely necessary, yet extremely difficult to follow. What-

* De la part de la mère c'est quelquefois sa mauvaise humeur, son impatience, son indocilité, la violence et l'irrégularité des mouvements.—*Peu, la Pratique des Accouchements*, liv. ii. ch. i.

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

The distress and pain, which women often endure while they are struggling through a difficult labour, are beyond all description, and seem to be more than human nature would be able to bear under any other circumstances. The great principle of all their patience and resolution is perhaps that deep rooted affection of the parent to the offspring, implanted in the female mind. But the principle of self-preservation, though varying in its operation, will recur, and demand its share of regard. In long continued labours it is therefore proper, by frequent allusions to the child, to encourage and strengthen the former principle, for its power is lessened or overcome by the weight of their present distress; their love for their child is then conquered; and the prospect of distant pleasure is not able to stand in competition with the evils of the present moment. With the firmest determination, to do what is right, they willingly persuade themselves, that the child is dead; that the object, for which they should persevere, no longer exists; and the practitioner, in opposition to his own feeling, and against the solicitations of those who confide in him, is often the only advocate for the child. But his decision to act, in cases in which the life of a child is concerned, must stand upon a better principle than conformity to the inclinations of others; for though he might avoid present censure, or even gain present credit by giving artificial assistance unnecessarily, when the case comes to be reviewed, and it always is reviewed, the blame of acting precipitately, in cases which do not terminate fortunately, will be cast upon him, and the satisfaction of others will be established by the discovery of some cause of blame in his conduct. In the exercise of the most hazardous part of a profession, perhaps in general more subject to censure than any other, it behoves us to be particularly circumspect: and though events are often beyond the power of human control, we may always act with intelligence, with prudence, and firmness; and no man's character can long be supported, if he be not governed by the determination to do what is right, to the best of his own judgement and power, under every circumstance.

The events of difficult labours, either with respect to the mother or child, very much depend upon the prudence and foresight, with

which women may be conducted through them; but however averse the practitioner may be from the use of such means as may prove hazardous to or even destructive of the child, cases must occur, in which the assistance of art will be absolutely needful, and the use of instruments justified. A time does certainly come when, if they be not delivered by art, in case of the inability of the powers of the constitution to effect the purpose, women would either immediately or consequently inevitably perish. As correct a judgement must therefore be exercised, and equal care taken, that he does not delay that assistance which may be necessary, so long that it cannot answer the end for which it was given; or while he is endeavouring to preserve the life of the child, he may lose that of the mother also, which is undoubtedly of much more value.

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

CHAPTER XI.

ON THE FILLET, FORCEPS, AND VECTIS.

SECTION I.

When men, first collected into societies, had provided for their subsistence, they would endeavour to amend their state, by removing such evils and inconveniences as were most urgent, either from their importance or frequency. Next to those arts by which the means of support were acquired, that of medicine would be of principal consideration, as, from the nature of their employments, hunting, fishing, pastoral, or agricultural, men must have been liable to diseases and to injuries, which, by accident or trial, they would learn some method of relieving; and he that should, by more accurate observation, or by age, have gained the greatest collection of knowledge, or the most dexterous method of applying it to useful purposes, would become a physician. But the origin and progress of

that branch of medicine of which we are treating would be somewhat different. When the customs and manners of life were simple, and not much disposed to produce diseases, difficulty or danger in the parturition of women would seldom occur; and, notwithstanding the distress with which they might sometimes be accompanied, the general termination of labours would be easy and safe. In the very few cases which might require more than ordinary assistance, there were none to afford it; and those women who could not bring forth their children by their own efforts were suffered to die without any attempts being made to relieve them, according to the relations which are given of the people of some countries, even at this day.

As mankind advanced in civilization, the evils attending parturition would probably increase, though ignorance and inability to give relief might long continue. But the supplications for assistance, and the affections of men, would not permit them to remain unconcerned or inactive spectators of the misery of those to whom they were indebted for the chief part of their happiness. They gave such aid as their information or ingenuity enabled them to devise, and this, in the first instance, consisted of ceremonies, or of particular precatory exclamations*, of amulets, or of medicines, to which some mysterious properties are attributed, as the skins and some other parts of serpents, the eagle stone, the blood stone, the stony substance found in the head of a shark, with many others of the like kind; and such things would, by their influence on the imagination, mightily succour the minds of women, strongly impressed with a sense of their utility, in a state of actual danger, overwhelmed at the same time with extreme pain and apprehension. In times more enlightened, for every kind of distress religion offered its consolations, by soothing the mind, by teaching mankind, when oppressed with difficulties, to use their own endeavours, by inculcating the necessity of submitting to evils which could not be prevented or avoided, and by encouraging with the hope of happy events. After the discovery of the mechanic arts, these were applied to the exigencies of every occasion; and when the sufferings of women in child-birth could no longer be endured, attempts were made to relieve them by extract-

* It is extremely curious to see the many ancient puerperal customs preserved by Ovid, in several parts of the Metamorphoses.

——— Nec habent sua verba dolores;
Nec Lucina potest parientis voce vocari.—
Constitit ad ramos mitis Lucina dolentes;
Admovitque manus; et *verba puerpera* dixit.—
Reddit onus; vagitque puer, quem mollibus herbis
Naiades impositum, lachrymis unxire parentis.

Metamorphos. Lib. x. Fab. x.

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

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

Many years ago, I attended a patient in two labours, in both of which there was a necessity of delivering with instruments, on account of the smallness and distortion of the *pelvis*, and neither of the children could be preserved. In her next pregnancy I made a pro-

* See London Medical Journal, Vol. VI. and VII. in which there is a curious history of a Negro woman, who, in the agony of her labour, performed this operation upon herself; given by Sir E. Home. I was informed by Dr. J. Hunter, that the same woman, for she recovered, was obliged to be watched in her subsequent labours, to prevent her from again performing the same operation.

posal to bring on premature labour, to which she and her friends would not consent; and I was dismissed from my attendance. In the course of twelve or fourteen years she had five more children, not one of which was born living. In the forty-sixth year of her age she proved with child, and again applied to me. When her labour came on, the first stage was suffered to proceed without interruption; but when the membranes broke, I without delay passed my hand into the *uterus*, and easily brought down the feet and body of the child; but the head being stopped by the narrowness of the superior aperture of the *pelvis*, I was obliged to exert, and to continue much force before it could be extracted. The child was born with very little or no appearance of life; but, by the strenuous use of the common means recommended for this purpose, it was recovered. On the left parietal bone there was a depression of considerable extent, and, to my apprehension, of full one inch in depth, occasioned by the projection of the *sacrum*; but the depressed part gradually rose, and in the course of a few months the bone regained its natural form, and the child was for several years in good health, with its faculties perfect. The woman recovered without any untoward circumstance.

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

SECTION II.

ON FILLETS.

The fillet used in the practice of midwifery is a single band, intended to be fixed upon 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 inconvenience. 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 judgement 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 head of a child, as high up in the *pelvis* as could be reached; then, after twisting the two ends together, to acquire a firm hold, we were taught to extract, in a proper direction, with all the force the fillet enabled us to use, or the necessity of the case might require.

The peculiar advantages expected to be derived from fillets were these. They were supposed to be applicable with great facility in every direction of the head, or when this was too high to allow of the use of any other instrument recommended with the same intention; to supply us with sufficient power to extract the head, when detained an unreasonable time, by any cause, 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 among the first attempts of art to give relief, which have been superseded by other contrivances, equally safe and more efficacious.

SECTION III.

ON THE FORCEPS.

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

Forceps have been occasionally made of wood or silver; but those now generally used are formed of iron properly tempered, with wooden handles, and, when used, are covered with smooth and thin

leather, which, without any significant increase of bulk, renders their introduction more easy, and takes off, both in appearance and reality, the asperity of the instrument. Each blade must be introduced separately, but in such directions that, when introduced, they may be connected as antagonists to each other; and there have been different contrivances or locks at the part where the handles and blades unite, to keep them fixed together.

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

From the length of the *forceps* formerly made, we may conclude that it was usual, at least sometimes the practice, to apply them before, or as soon as the head of the child had entered the superior aperture of the *pelvis*; and from their strength, that it was thought necessary to provide for the exertion of great force. The common curvature was varied according to the opinion entertained of the form and dimensions of the head of a child at the time of birth; but the lateral curvature was given for the accommodation of the instrument to the form of the *pelvis*, or for lessening the pressure upon, and of course the danger of lacerating, the external parts, while the child was extracting. As the *forceps*, though well applied, sometimes slipped from the head when brought into action, a groove, with a slight eminence on each side, was proposed to be made on that part of the internal surface which embraced the head, to prevent that accident, and to allow of a change in the manner of acting, by admitting of some degree of rotation.

Forceps have also been contrived in such a manner, that one blade received the other, and these were called male and female. They have also been made with hinges or joints between the handle and the blade of each, answering no other purpose than that of concealing them, that there might be an opportunity of performing the operation with them in a clandestine manner. But as the reasons for using the *forceps* will justify the operation to the most severe examiner; and as

these may be explained without adding to the terror or distress either of the patient or her friends, there never can be occasion for concealment, which, in these cases, ought to raise a suspicion of the judgement or integrity of those who should attempt to practise it. There is, in truth, at the present time, more frequently a necessity for resisting the solicitations both of patients and friends, urging us to the use of instruments, than of persuading them to comply with our proposals when we really think them needful.

Besides the different kinds of *forceps* which consist of two blades, others have been contrived with three, which, when separately applied, were received and screwed into a hollow handle, or fixed by some other contrivance. By those who supposed labours to be chiefly obstructed or rendered difficult by the inflection of the *os coccygis*, a third blade was added for the purpose of raising the head of the child over that part. But those who supposed difficulties to be occasioned by the *sacrum* jetting, and of course projecting the head of the child over the *symphysis* of the *ossa pubis*, added a third blade, for the purpose of bringing back the head thus projected into a right line with the cavity of the *pelvis*, before any attempt was made to extract it with the other two blades. Whatever credit may be due to the authors of these contrivances for their ingenuity, the third blade has certainly been added on erroneous principles; and *forceps* thus constructed, would not only be embarrassing in practice, but in every case, as far as can be judged, useless, or extremely injurious. (See Chapman.)

It is remarkable that *forceps* were made of an unnecessary length, when we were forbidden to apply them before the head of a child had descended very low into the *pelvis;* and they were made very strong, when it was well understood, that the force, which they enabled us to use, was far greater than could be exerted with propriety or safety to the mother. They were however by degrees made shorter and less cumbersome, and about the year 1748, Dr. William Smellie, who was eminent in practice, as a teacher of midwifery in London, after many trials altered them, and brought into general usage a kind of *forceps* more convenient than any before contrived. These before they are curved do not measure more than twelve inches from the end of the handle to the extremity of the blade; and when properly curved, little more than eleven inches, of which the handle measures near five inches. The widest part of the blade measures about one inch and five-eighths, and this gradually declines towards the handle, preserving at the same time the flatness of the blade till it meets the handle. Being simple in their construction, applicable without difficulty, and equal to the management of every case in which the *forceps* ought to be used, I have, with very little alteration, adapted the

following rules to them. But if *forceps* of any other kind should be preferred, though the principles will hold good, the rules must be varied, according to their size and form, at the discretion of the person who may perform the operation. I might also observe, though Dr. Smellie reduced the common size of the *forceps* for general use, he afterwards retained some partiality for the long *forceps*, as Dr. Mackenzie his assistant informed me.

SECTION IV.

GENERAL OBSERVATIONS.

It has been long established as a general rule in this country, that that the use of instruments of any kind ought not to be allowed in the practice of midwifery from any motives of eligibility*. Whoever will give himself time to consider the possible mistakes and want of skill in younger practitioners, which I fear many of us may recollect, the instances of presumption in those who by experince have acquired dexterity, and the accidents, which, under certain circumstances, seem scarcely to be avoided, will be strongly impressed with a sense of the propriety of this rule, as well as from the general reason of the thing. But when, from any cause, the parent becomes unequal to the expulsion of the child, the assistance of art, by whatever means it can be afforded, is justifiable by necessity; because without such assistance the parent would die undelivered, and with her life, that of the child would also be inevitably lost. Yet it behoveth every person, who may use instruments in the practice of midwifery, to be well convinced of this necessity before they are used, and to be extremely careful in their use; that he may not create new evils, or aggravate those which might be existing. But though it be our duty to avoid if possible the use even of those instruments, which are intended to be employed without injury either to the mother or child, it would, on the other hand, be absurd to defer their use till the child was dead, and the mother reduced to a state, not of apprehended, but of real danger; or, which is worse, that if she should survive, her life would be rendered miserable from the consequences of mischief done before the instruments were used. But if we compare the general good done with instruments, however cautiously used, with the evils arising from their unnecessary and improper use, we might doubt

* Non nisi summa necessitate illud exigente atque tum demum educendis ex utero infantibus admovenda esse ferramenta, quum nihil omnino spei reliquum est fore ut solarum manuum subsidio extrahere ipsos liceat.—*Heister*. Capt. Liij. ix. and many other writers.

whether it would not have been happy for the world, if no instrument of any kind had ever been contrived for, or recommended in, the practice of midwifery.

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

Before the completion of the first stage of a labour, that is, before the *os uteri* is perfectly dilated, and the membranes broken, the use of the *forceps* cannot properly come under contemplation. Because the difficulties before occurring may depend upon causes, which do not require their use; or, if required, they could not be applied with safety or propriety before those changes were made.

There is infinitely greater difficulty in deciding upon the proper case and time when the *forceps* ought to be applied, than in applying or using them; but it is universally agreed, that the lower the head of the child has descended into the *pelvis*, the easier will their application be, and the operation with them more certain and successful. With a view to this observation, a practical rule has been formed, that the head of a child shall have rested for six hours, as low as the *perinæum*, that is, in a situation which would allow of their application, before the *forceps* are applied, though the pains should have altogether ceased during that time. This, with other rules, was intended to prevent the rash or unnecessary use of the *forceps*, and certainly time, in these and many other cases, is a very good corrector of practice. It is scarcely possible to say too much against a hasty recourse to the *forceps*, even in cases which may ultimately be relieved by using them; and neither this, nor any other instrument is used in the practice of midwifery, one twentieth part so frequently as they were fifty years ago.

The *forceps* ought to be applied over the ears of the child, because when thus placed, there is the least likelihood of doing injury to the child, or of their slipping, and they enable us to act with the greatest advantage and safety to the mother. It must therefore be im-

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

Every change in the position of the head, and every alteration in the construction of the *forceps* from those already stated, will require some difference in the manner of applying and using them. But the preference, which ought in reason to be given, of the kind of *forceps* to another, is merely because one instrument may be more handy and convenient than another, for an intelligent and skilful man would be able to apply and use those of any form or size, in such a manner that they should effectually answer his purpose; as an expert surgeon would be able to amputate a limb with a knife of any kind. No consideration or advantage to be gained by instruments of any particular structure ought to lessen our attention and care when we use them; as the success of every operation must necessarily depend, not upon the excellence of the instrument, but upon the justness of the idea entertained of the case in the mind of the person who may perform it, and the dexterity or skill with which the instrument may be guided by his hands.

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

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

SECTION V.

ON THE APPLICATION OF THE FORCEPS.

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

There can be no difficulty or hazard in carrying the instrument thus far, because it will be guided, and in some measure shielded, by the finger. But the further introduction must be made with a very slow semirotatory motion, keeping the point of the blade, as it is advanced, not rigidly, yet closely to the head of the child, by raising the handle towards the *pubes*. In this manner the blade must be carried gently along the head, till the lock reaches the external parts near the anterior angle of the *pudendum*.

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

Let the second blade be introduced in this manner. Keep the blade first introduced in its place, with the two small fingers of the left hand, and carry the fore finger of the same hand between the *perinæum* and head of the child, as high as you can reach. Then take the second blade of the *forceps* by the handle in the right hand, and, conveying the point between the finger placed within the *perinæ-*

um, and the head of the child, conduct the instrument, with the precautions before mentioned, so far that the lock shall touch the anterior part of the *perinæum*, or even press it a little backwards, or be insinuated within it. In order to fix the two blades thus introduced, that which was placed towards the *pubes* must be slowly withdrawn, and carried so far backwards, that it can be locked with the second blade retained wholly, or nearly, in its first position: and care must be taken that nothing be entangled in the lock, by passing the finger round it. When the forceps are locked, it will be found convenient to tie the handles together with sufficient firmness to prevent them from sliding or changing their position, when they are not held in the hand, but not in such a manner as to increase the compression upon the head of the child.

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

The difficulty of applying the *forceps* is most frequently occasioned by attempting to apply them too soon; or by passing them in a wrong direction; or by entangling the soft parts of the mother between the instrument and the head of the child, against all which accidents we are to be on our guard.

SECTION VI.

ON THE ACTION WITH THE FORCEPS WHEN APPLIED.

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

As it is the intention, when the *forceps* are used, to supply with them the total want or insufficiency of the natural pains of labour, the whole power or force, which the instrument enables us to use,

ought not to be exerted in the first instance, but such a degree as any individual case may require; which can only be known by first trying a moderate degree of force, increasing it slowly and deliberately, according to the exigence of each case. Because the impediment may not be great, and the point of obstruction may exist only at one part; and these being surmounted by one, or a few gentle actions with the instrument, there would be no cause for acting any more. In some cases also, though the pains had entirely ceased, they will return with force sufficient to expel the child, from the irritation made by the mere application of the instrument. But when the *forceps* have been applied, they should not be removed before the head is expelled, though their assistance be not required; lest the pains should cease, and we should be under the necessity of applying them again.

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

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

only be acted with, during the continuance of the pains; the intention being not only to supply the want or insufficiency of the pains, but to assist them, and imitate also by the action with the *forceps* the manner in which they return.

By a few repetitions of this alternate action and rest before described, we shall soon be sensible of the descent of the head; and it will be proper to examine very frequently, to know the progress made, that we may not use more force than needful, or go on with more haste than may be expedient or safe. In every case, even those which allow of the easiest management, we ought to proceed slowly and circumspectly, not forgetting that a small degree of force, continued for a long time, will in general be equivalent to a greater force hastily exerted, and with infinitely less detriment either to the mother or child. But after some time, should we not perceive the head to advance, the force hitherto used must not only be continued but gradually increased, till it is sufficient to overcome the obstacles to the delivery of the patient.

It was before observed, as the head of the child descended, that the face would be accordingly turned towards the hollow of the *sacrum*, without any aim or assistance on our part. Of course the position of the handles of the *forceps*, and the direction in which we ought to act with them, should alter; for they becoming first more diagonal or oblique, with respect to the *pelvis*, and then more and more lateral, every change in their position will require a differently directed action, because the handles should ever remain, and be acted with, as antagonists to each other. In proportion also to the descent of the head, the handles of the *forceps* should approach nearer to the *pubes*; so that though in the beginning of the operation we acted in the direction of the cavity of the *pelvis*, towards the conclusion we should act in that of the *vagina*, to prevent a laceration of the parts. When we feel that we have the command of the head by its being cleared of any obstruction in the *pelvis*, and the external parts begin to be much distended, we ought to act yet more slowly, especially in the case of a first child, or there would be the greatest danger of a laceration of the soft parts: and this can only be prevented by acting most deliberately, and in the direction of the *vagina*; by giving the parts time to distend; by duly supporting the *perinæum*, which is the part chiefly in danger, with the palm of the hand firmly applied; by soothing and moderating the hurry and efforts of the patient; and, in some cases, by absolutely resisting for a certain time the passage of the head through the external parts, as in a natural labour. When the head of the child is born, the *forceps* are to be removed, the delivery being completed as far as their assistance was required, and the

remaining circumstances are to be managed as if the labour had been natural.

On the whole it appears, that necessity alone, and not any sense of eligibility or expediency, will justify the use of the *forceps;* that when such necessity exists, their use is not only justifiable, but may be highly advantageous, by improving our chance of preserving the life of the child; that with care they may be safely applied; that slowness and steadiness in our action with them will effectually secure both the parent and child against untoward accidents; but that no skill or knowledge can prevent disappointment or mischief, if they be prematurely or improperly applied, or if the operation with them be performed with hurry or violence. It is not possible to fix any limits to the time that may be required for the operation with the *forceps,* but I have frequently known more than an hour pass from the time of fixing the instrument, before I could with safety extract the head of the child through the external parts.

SECTION VII.

ON THE APPLICATION OF THE FORCEPS UNDER VARIOUS CIRCUMSTANCES.

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

It was before observed, that this position of the head only constituted a variety of natural labours, as far as position was concerned in the definition. We are not therefore to be guided in our opinion of the propriety of using the *forceps* by any position of the head of the child, but, whatever the position may be, by the necessity of any case, proved by the probable or absolute inability of the mother to expel the child. Should such necessity exist with this, or any other position of the head, the *forceps* are to be applied, in the manner before described, over the ears of the child. But when they are applied we must act with them with the greatest caution; for, having a different and less perfect hold of the head, they are more apt to slip, and, acting with less advantage, the operation, in this position

of the head, must be more precarious. But if we succeed, when the head thus situate is brought so low as to distend the external parts, there will of course be greater danger of laceration, if we be ever so much upon our guard ; because in extracting the head, the chin of the child, unless the head be unusually small, or admit of a change of position, should be cleared of the *ossa pubis*, before the hind head is suffered to slide over the *perinæum*, which will very much increase the distension, and produce the same effect as if the arch of the *ossa pubis* was too small to receive the head of the child.

The same observations are also generally true when the face of the child presents; or when, together with the head, there are one or both arms. For though in such cases there might be a necessity for, and a propriety in, using the *forceps*, the operation with them would be neither so certain nor so easy as in the position of the head first stated.

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

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

SECTION VIII.

ON THE VECTIS.

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

The true origin of this instrument, or time when it was first discovered, is not known ; but before any accounts of the *vectis* were published, some difficult cases were recorded (See Chapman), in which women had been delivered with one blade of the *forceps*, which might then be well considered as a *vectis*, though not called by that name. But when only one blade of the *forceps* had been used, the operation was mentioned as something extraordinary, to

show perhaps the judgement, skill, or good fortune of the person who performed it, and not as leading to the use of a particular instrument, or to a rule of practice. It is probable, that the instrument used by the Chamberlens in the last century was the *vectis;* but this is conjecture, for, after much inquiry, though scarcely credible, no person has yet been able to discover, that any of them left either a pattern or description of the instrument which they used. In the second volume of Heister's Surgery there is a delineation of a true *vectis,* recommended to him in very strong terms by Palfyn, a surgeon of eminence at Ghent; but neither this instrument nor its description engaged much attention, nor was the *vectis* generally known in this country, before the year 1750. For though it has been used before that time by Rhonhuysen, a surgeon at Amsterdam, after whose name it has been since generally called, it was reserved by him with great secrecy, to his own credit and advantage; and, after his death, it became the property of his only daughter, from whom it was purchased by De Bruyn, an eminent surgeon of the same place. It appears that De Bruyn concealed the secret with as much caution as Rhonhuysen; or that he instructed students in the use of the *vectis* at a considerable price, and with an obligation not to divulge to others what he taught them; which must have raised great suspicion of imposture on his part, and of credulity in those whom he taught. The names of other gentlemen who changed or improved the instrument soon became known, and annexed to a paper written on this subject by the celebrated Professor Camper, in the fifteenth volume of the Memoirs of the Royal Academy of Surgery, is a plate representing the *vectes* used by Rhonhuysen, Boom, and Titsing.

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

When the *vectis* was very much used, and highly esteemed, at Amsterdam, as an invaluable improvement in the practice of mid-

wifery, the *forceps* was the favourite instrument in this country, especially as lastly altered by Smellie, who was then the principal teacher of the art in London. But the chief practice in this city was successively in the hands of Drs. Bamber, Griffith *, Middleton, Nesbit, and Cole, some, if not all of whom, except Dr. Bamber, whose *forceps* I have seen, preferred the *vectis* to the *forceps*. To these gentlemen succeeded Dr. John Wathen, a man of great ingenuity, and most pleasing manners, who altered the form and reduced the size of the *vectis*, and frequently used it with a dexterity, that has astonished me. In the year 1757, that most excellent charity for delivering poor women at their own habitations was established; and Dr. John Ford was the first physician appointed to conduct it. On every occasion which required instruments of this kind, Dr. Ford used the *vectis;* and his coadjutors and successors, Drs. Cooper, Cogan, Douglas, Sims, Dennison, Squire, and Croft, with many others, have followed his example. From the deserved reputation of these gentlemen, who have at all times expressed their approbation of the *vectis* in preference to the *forceps*, many have been induced to try it, and the general opinion of its utility has increased. At the present time, all who are engaged in the practice of midwifery would consider themselves as deficient, if they were not acquainted with the structure and manner of using the *vectis;* some who formerly preferred and used the *forceps* have relinquished the use of this instrument for the *vectis;* and others who, from education or habit, continue to use the *forceps*, are very willing to allow the equal, if not superior utility and convenience of the *vectis*.

SECTION IX.

ON THE DIFFERENT KINDS OF VECTES.

The first *vectis* of which we had any knowledge in this country was similar to that of Palfyn, before mentioned. The instrument purchased by Vischer and Vander Pol, which was made public in a pamphlet written in the Dutch language, is different from that of Palfyn. In the account given by Camper, there appears to be some difference in the form, length, manner, and degree of curvature of the *vectes* used by De Bruyn, Boom, and Titsing. But if the powers of the instrument were preserved, and the general principle of using it followed, it is probable that all those who preferred the *vectis*

* Mr. Malden, of Putney, very obligingly showed me a letter of Dr. Griffith's containing directions for the application and use of the *vectis*, but in those there was nothing particularly excellent. Dr. Sims has also a letter on the same subject, written to his father by Dr. Griffith.

thought themselves at liberty to alter its form, or to vary its dimensions, making the instrument, by such alterations, suitable to their own ideas of the properties required.

When the *vectis* was first known in this country, that described by Heister was preferred to those recommended by the surgeons at Amsterdam. The *vectis* used by Dr. Cole was like one blade of the *forceps* somewhat lengthened and enlarged. That of Dr. Griffith was of the same kind, with a hinge between the handle and blade; and that of Dr. Wathen was not unlike Palfyn's, but with a flat handle, and a hook at the extremity of the handle, which prevented its slipping through the hand, and might be occasionally used as a crotchet. Many other changes have been made in the construction of the instrument, but the *vectis* now generally used is of the following dimensions :

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

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

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

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

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

The handle is fixed in wood.

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

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

For rendering the introduction of the instrument more easy, and for preventing all the inconveniences which might arise from the

difference of curvature, Dr. Aitkin of Edinburgh contrived a *vectis*, which he has fancifully called the *living lever*. When this is at rest it is quite straight; but while it is introducing, by turning a screw in the handle, the blade is jointed in such a manner as to bend gradually forwards as the instrument is advanced, so that the extremity of the blade is always kept close to the head of the child, of whatever dimensions that may be. There is much ingenuity in the contrivance; but of the effect in practice I cannot speak, having never tried this instrument, not wishing for one more perfect than the simple one in ordinary use. But a gentleman informed me, that in a trial he made, the chain on which the mechanism chiefly depends, broke, and he was obliged to finish the operation with a common *vectis;* so that in all probability the common *vectes* are actually preferable to any of the complex kinds.

To lessen the pressure made by the instrument, when in action, upon the parts of the mother, on which it might bear, some person contrived two holes on a part of the blade, not far from the handle, through which a strong ribband or tape was to be passed, which, being afterwards tied and pulled firmly, when the instrument was acted with, was supposed to confine it firmly to the head of the child, and prevent or lessen the pressure which might otherwise be made upon the parts of the mother. But it appears that the same end may be answered better by an intelligent and dexterous management of the instrument with the hand than by this contrivance.

SECTION X.

ON THE COMPARISON OF THE VECTIS WITH THE FORCEPS.

The general principle of practice, that the use of no instrument is to be allowed, except in cases of absolute necessity, ought not to be infringed, because we entertain a high opinion of any instrument, or because we may have acquired dexterity in using it; for such reasons would be indefensible, and any conduct founded upon them would often be highly culpable. This principle, founded on common sense as well as medical knowledge, and confirmed by daily experience, must be held inviolable. The real value of any instrument will be shown by its efficacy to answer the purpose for which it may be used, and by the safety and convenience with which it can be managed, when its use becomes absolutely necessary.

There has been much verbal dispute among those who vindicated the superiority of the *vectis* to the *forceps*, and those who maintained the long established credit of the *forceps* against the encroachments of the *vectis:* but the comparison between the two instruments has

never been brought fairly to an issue ; which might have been done by a discussion of the two following questions.

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

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

We may take it for granted, and I believe it is true, that in far the greater number of cases which occur in practice, either of these instruments may be used indiscriminately, with equal safety, advantage, and ease, allowing for the dexterity which may have been acquired by the habit of using either instrument. It is but lately that those who prefer the *forceps* have asserted, that they could deliver a woman in any case of difficulty not manageable with the *vectis;* but as far as my experience enables me to judge, such a claim in favour of the *forceps* cannot be supported. The debate on this point of the question seems to have turned formerly, not upon the superior efficacy, but upon the greater safety and facility with which the *forceps* might be used ; and upon the abuse, rather than the proper use of the *vectis*. I have not heard of any well-authenticated instance, in which after being foiled with the *vectis*, and without a change of circumstances, any operator, who had acquired a commonly dexterous use of this instrument, was able to succeed with the *forceps ;* though it is worthy of notice, that some who are accustomed to the use of the *forceps* only, think themselves at liberty to depreciate the *vectis*, and others who do not use them, speak of the *forceps* in terms of unjustifiable contempt.

It might be questioned, if we were to admit the objections made by the approvers of each instrument, to their full extent, whether they do not ultimately lead to the abandonment of both ; and it is certain, that the greatest improvement in the practice of midwifery at the present time is to be attributed to an established aversion from the use of instruments of any kind, whenever they can possibly be avoided.

With respect to the second question, we will take the facts, and relinquish the arguments used by those who have preferred the *vectis* to the *forceps;* which I allow sometimes to have been extravagant, as is not unusual with those who are the introducers of novelties to public notice, till experience has corrected partialities. If any confidence may be placed in medical reports, it appears that many cases have occurred, in which, after the introduction of the first blade of the *forceps*, it has been very difficult, or scarcely possible, without the hazard of mischief, to introduce the second blade, and the operation has been performed with the single blade used as a *vectis*. Of this I have known and been informed of several instances.

It appears also, that, before the head of the child has been so low down as was stated to be eligible for using the *forceps*, the *vectis* has sometimes been readily applied, and effectually used, with safety both to the mother and child, when the necessity of some particular case immediately required the operation. When the head of a child has not only been high up, but locked also in the *pelvis*, when there was not space sufficient to admit the two blades, or more force perhaps was required than the *forceps* in that situation enabled us to exert, and we should otherwise have been compelled to lessen the head, it has been feasible to apply the *vectis*, and the patient has been safely delivered, with a probable chance of preserving the life of the child; but of this I have not myself known any instance. It is also to be observed, whenever more than common force is exerted with the *forceps*, that it appears to be obtained by using the two blades as distinct *vectes*. Moreover, in all the deviations from that position of the head which is most natural, as when it is turned with the face towards the *pubes*, or when the face presents, in which it is allowed that the *forceps* cannot be used with the utmost advantage or certainty; in all such cases, I know, the *vectis* may be applied and used both with safety and efficacy. From this statement it may be presumed, that the *vectis*, prudently used, is, in every case, an equally safe and efficacious instrument with the *forceps*, and one better adapted in many cases which occur in practice. It is with this persuasion, that several teachers in the art of midwifery in London, at the present time, never use the *forceps*, or speak of them in their lectures; while others, to whose judgement I owe much respect, continue to use the *forceps*, and think I have advanced more than experience will justify in favour of the *vectis*. But these different opinions regarding the preference due to the *forceps* and *vectis* prove to my mind, that, in the generality of cases, either instrument may, in expert hands, be used with equal safety and advantage, as was before mentioned. I may also be permitted further to observe, that I know several gentlemen of eminence, in the early part of their lives accustomed to use the *forceps*, who, discovering by accident or trial that they were able to afford every assistance with a single blade, have abandoned the *forceps*, afterwards never using more than a single blade, or the *vectis*; but I never knew an example of any person, who, having been accustomed to the *vectis*, relinquished its use and resorted to the *forceps*. The reader will observe, that, in giving my opinion on these instruments, I do not speak of their abuse, but of their use on really necessary occasions; and may be assured that I generally consider disputes about the preference of instruments among the frivolous and most unworthy occupations of men of understanding.

SECTION XI.

ON THE MANNER OF USING THE VECTIS.

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

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

Pass two fingers, or the forefinger of the right hand, to the ear of the child, nearest to the *pubes,* and, introducing the *vectis* between the fingers and the head of the child, conduct it slowly forwards till the point of the *vectis* reaches the ear, wherever that may be. Then, advancing the instrument as if it were a blade of the *forceps,* carry it on till, according to your judgement, the extremity of the blade may reach as far, or a very little beyond, the chin of the child, when the line of the head, on which the instrument rests, will be in a straight direction from the *vertex,* over the ear, to the chin of the child; and this is the most favourable position in which it can be placed. Then,

grasping the handle of the instrument firmly in the right hand, wait for the accession of a pain, during the continuance of which, raise the handle of the instrument gently but firmly towards the *pubes*, at the same time exerting a small degree of extracting force. When the pain ceases, let the instrument rest; and when it returns, repeat the same kind of action; and every time of acting endeavour to lessen the pressure on the soft parts of the mother, with the two fingers, or the inferior side of the palm of the left hand, placed in such a manner as to form, in some sort, a cushion on which the instrument may play or be supported; or perhaps a pad of folded linen cloth may be advantageously applied between the instrument and the part of the *pelvis* on which it would press. By a repetition of this action during the continuance of the pains, the head of the child will soon be perceived to descend, and the face to turn gradually towards the hollow of the *sacrum*. But should the very moderate force we have recommended be found insufficient to bring down the head of the child, it must be gradually and cautiously increased, till it is sufficient to answer the purpose: and this may be done consistently with the safety both of the mother and child. When the *vertex* begins to fill and protrude the external parts, it is probable there may be no further occasion to act with the instrument; or, if further action be required, it must be extremely gentle, taking all possible care, by turning the handle towards the *ischia* or side of the *pelvis*, by supporting the *perinæum*, and by slow proceeding, to guard against a laceration of the parts, as was before advised in the use of the *forceps*.

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

It is also to be observed, though, from the name of the *vectis*, it might be supposed we had the power of acting with it as a *lever* only, that it would be found to possess a considerable degree of extracting force, even when the curvature is but small; and that we are able, at the time of using it, if necessary, to direct with convenience, and in various ways, the head of the child as it descends.

In using the *vectis*, some have recommended the application of it towards the hollow of the *sacrum*, and spoken of the advantages of this mode of application. But I have persuaded myself, that the opinion which could lead to this practice was erroneous, that the instrument would then be worked with less efficacy, and there would be a greater hazard of doing mischief to the mother and child.

It may lastly be observed, that some gentlemen are said to have, by frequent practice, acquired such wonderful dexterity in the use of the *vectis*, as to finish the operation of extracting the head of a child with one single action of the instrument. But being ever afraid of sacrificing safety to dexterity, I only pretend to describe a method of using this and all other instruments securely and efficaciously, and must therefore be excused from commenting further on all that has been unadvisedly objected against, or advanced for, the use of the *vectis*, under various circumstances *.

CHAPTER XII.

SECTION I.

ON LESSENING THE HEAD OF THE CHILD.

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

This operation has ever been esteemed of the utmost consequence with regard to its principle and practice. The right or equity of taking away one life for the preservation of another being doubted, the question was referred to divines, as the most competent judges of the case; and by them it was decided to be unlawful to take away one life, on any account, for the preservation of another †. The reference of the question may perhaps be considered as an instance of humanity and benevolence, and, in some measure, as a proof that this operation had been performed too frequently; and the decision seemed actually to forbid it altogether. But, as far as

* See a full and accurate history of the *Vectis* in Observations on Human and Comparative Parturition, by R. Bland, M.D. A.S.S.

† Peu, in his *Pratique des Accouchements*, has preserved the forms of the statements and decisions upon this subject by the Doctors of the Sorbonne.

Non enim licet unum interficere alterius vitæ gratia. Rodericus e Castro.

the general determination could be supposed to relate to this operation, there appears to have been fallacy in the statement of the question, and sophistry in the reply. For by the first it was presumed that the child was always living when this fatal operation was to be performed, though that could not universally, nor indeed very frequently, have been the case; and by the latter it was allowed, that the authority of the decision did not apply, or might be suspended, if there were reason to believe that the child was already dead. It was probably for these causes that all the symptoms of a dead child, certain and equivocal, were collected and distinguished by authors with such great assiduity and circumspection, because they were the authorities for, and the justifications of, a practice, which, without them, would have been very reprehensible, if not punishable.

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 least 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 under any circumstance to perish, the death of the child, unless under some very rare incident, would be an inevitable consequence. But I cannot persuade myself, nor can I think it reasonable or just, that the head of a child should ever be lessened on the testimony and judgement of any single person, however well he may be informed and experienced, if a consultation can be obtained.

True religion, and the common sense of mankind, appear to have nothing contradictory. The doctrine they teach of its being our duty to do all the good in our power, and to avoid all the mischief we can, is applicable to the exigences of every state, and we may be easily reconciled to it on the present occasion. In some cases of difficult parturition it is not possible that the lives both of the mother and child should be preserved. Of the life or death and safety or danger of the mother, we can, under all circumstances, be assured; but of the life or death of the child there is often reason to doubt, when we are called upon to decide and to act. The destruction of the mother, or which has by many been considered as synonymous, the cesarean operation, would not, in the generality of cases, which may bring

the operation of which we are speaking under contemplation, contribute to the preservation of the child, that being already dead; but the treatment of the child as if it were actually dead, with as much certainty of success as is found in other operations, secures the life of the parent. It then becomes our duty, and is agreeable to our reason, to pursue that conduct, which will give us the most probable chance of doing good; that is, of saving one life, when two lives cannot probably or possibly be saved.

I forbear to inquire into the comparative value of the lives of an adult and a child unborn, because that does not seem to me to be the present question, nor that any advantage can be obtained by the depreciation of the life of either; and the subject has been in that view well considered*. Nor does it seem necessary to our purpose to discuss another question, which has been lately agitated, whether a child unborn has any feeling, because the fact of their having feeling, of some kind, or in some degree, may be clearly proved by any one who will observe the effect of irritating the soles of the feet of a living child when these present, or the palm of the hand when that presents, the body and head being yet retained in the *uterus*. But there is an argument to be drawn from the circumstances which sometimes occur in cases of laborious parturition, which applies with greater force towards justifying this operation, in preference to any other which might prove more hazardous to the mother, than any abstract reasoning. In all difficult labours, properly so called, especially such as are occasioned by great disproportion between the head of the child and a small or distorted *pelvis*, one of the first effects of long-continued and strong pains is the death of the child, generally, long before there are any tokens of the mother being in immediate danger. The head of a dead child collapsing and admitting of pressure into a form more suitable to the dimensions of the *pelvis*, than a living one, will frequently be expelled through a space too small to allow that of a living child of the same size to pass. But after this change which follows the death of the child, should the head remain too large to pass through the *pelvis*, putrefaction advancing, the integuments of the head begin to decay, and the bones to loosen from each other. By the continuance of the action of the *uterus* upon the child the integuments of the head at length burst, and the bones being separated, the brain of the child may be evacuated through the opening thus naturally produced. The bulk of the head thus lessened may be excluded by the force of the pains, and the body, impaired by an equal degree of putrefaction, may readily follow, and the labour terminate without the assistance of art. All these changes may be, and in several in-

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

stances to my own knowledge, have been gone through with perfect safety to the mother, without the interposition of art; so that the artificial opening of the head of a child is, in fact, no more than an imitation in one case of what happens spontaneously in another; and such imitation may be considered as the true ground, on which the whole practice of surgery has been founded. It may also be observed, that the resources of nature, in every thing which relates to parturition, are infinite, and constantly exerted for the preservation of both the parent and child; yet when the two objects are incompatible, the life of the child is almost uniformly yielded to that of the parent.

From the number of the signs of a dead child given by authors, and by the context of their writings, it appears to have been the practice, whenever the death of a child was ascertained, to use the means of extracting it; or to have given medicines to excite and aid the constitution for expelling it, without any reason drawn from the present state of the mother, but to prevent remote and suspected danger. This practice corresponded with the theory of the ancients, that a living child was born by its own efforts, but a dead child, being destitute of all power, must be excluded or extracted by art*. But no fact is more clearly proved than that of a dead child remaining in the *uterus* inoffensively, for several weeks before the accession of labour, and being then expelled in a manner perfectly natural, though in a quite putrid state. No injurious absorption takes place, nor does the *uterus* suffer by being in contact with it. The certainty of the death of the child would not therefore, immediately indicate the necessity of the operation we are considering †; but the reasons for, and justification of it, must be deduced from the state of the mother only; and that state must be such as to prove her absolute inability to expel the child; and the impossibility of extracting it safely by any of those means which have been contrived for the purpose of delivering women, giving at the same time a chance for preserving the lives of children; together with the uselessness and danger of delay. But as the signs of a dead child, if decisive, would on many occasions have their influence on practice, and might at least induce the most cautious and prudent man to hasten the time of performing this operation, which he might otherwise defer; and as the knowledge of these signs will lead to a more full investigation of the subject, it is proper to enumerate them, and to enquire at the same time how far each of them

* Ad bonum partum, duorum corporum vigore est opus, et gravidæ mulieris et infantis.—*Gal. in Aphorism. Hippocrat.*

† Si sub ipsis partûs doloribus ac laboribus infans emoritur, nec tamen minus decenter, sed naturaliter compositus esse deprehenditur, non statim, quamdiu scilicet de morte non satis certi sumus, unci vel alia admovenda sunt instrumenta. *Heister. Chap. CLIII.*

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

SECTION II.

ON THE SIGNS OF A DEAD CHILD.

1. *Recession of the Milk, and Flaccidity of the Breasts*.*

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

2. *Coldness of the Abdomen.*

When children die toward 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 coldness; which may be produced by some contingent circumstance, as the great heat of the room when she is in a profuse perspiration, or the sudden admission of cold air under the bed-clothes in winter. Little stress is to be placed on this sign

* Quæ corrupturæ sunt fœtus, iis mammæ extenuantur.—*Gal. in Aphorism. Hippocrat.*

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.

3. *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 into contact with the body of the child; but the integuments of the *abdomen*, not contracting with equal celerity, and the *uterus* wanting that support which they afforded when it was fully distended, 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 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.

4. *Want of Motion of the Child.*

The kind and degree of motion which may be caused by the child varies in different women, and at different periods of pregnancy. By some the child is scarcely ever perceived to move, and 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 this 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; then the regular increase of size 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 from the hope of a more speedy delivery, if they concluded, that the judgement 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 under 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 judgement; 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 judgement; for we are not to be governed or alarmed by unfounded apprehensions of danger, but by its actual existence.

5. *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 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 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.

6. *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,* 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 waters of the *ovum,* in the appearance of which there is a very great difference. They become altered likewise by contingent circumstances, as the casual retention of the discharge, the mixture of a small quantity of blood, or slight inflammation in the parts, which in some cases give a strong scent to them, 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, those have in many instances been so little changed, as not to raise suspicion of any harm having befallen the child, in the minds of very experienced men. 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 appearance of the discharges, without other collateral proofs of its death, or a conviction from other circumstances of the operation being absolutely necessary.

7. *Evacuation of the Meconium when the Head of the Child presents.*

Should a child present with the breech or inferior extremities, the evacuation of the *meconium,* which is an absurd name given to the excrements 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 with such 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 by experience it has been fully and frequently proved, that a child may be born living, though the *meconium* had come away when the head presents; its evacuation proving no more than the weakness of the child, or the degree of compression it has undergone. The discharge of the *meconium* may also depend upon the quantity contained in the bowels, or some casual pressure upon the *abdomen* of the child. We may however, in general, conclude, when the *meconium* does come away in a natural presentation, that the state of the child is not void of danger; and for many years I never saw a child, pre-

senting with the head, born living, when the *meconium* had come away more than seven hours before its birth. But at length, I met with a case, in which the *meconium* was discharged for more than thirty hours, at the end of which time, though the woman was delivered with the *forceps*, the child was born healthy and strong; 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.

8. *Edematose, emphysematose, or other peculiar Feel of the Head or other Parts of the Child.*

In many cases in surgery, information may be gained, and the judgement 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 we may decide in many doubtful cases, by the feel of the head, whether a child be living or dead. But as we know that in surgery, the most 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 edematose to a considerable degree, from pressure in its passage through the *pelvis;* and sometimes emphysematose 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 this has been long dead, and their natural connexion 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 of the hair; but proofs of things self-evident are not 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, and the bone laid bare, without destroying the child. Pro-

bably 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 food remaining unchanged in the stomach would be a proof of the debility of that part.

Many signs of a dead child have been mentioned by authors, under the denomination of equivocal, as the 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 this operation 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.

SECTION III.

ON THE CAUSES OF THE DEATH OF THE CHILD.

The proportion of children stillborn to the number of births has not been accurately determined, nor is it easy to decide the question; as it may probably vary in different countries and situations, 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 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, as by local inflammation or other disease of some part of its own body, essentially necessary to life; as in children born blind; 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 communi-

cation between the child and the *uterus;* by a partial or total separation of the *placenta,* or by the rupture of some of the large vessels which run upon its surface; by the vessels of the *funis umbilicalis* becoming impervious; by the circulation through them being obstructed by the casual tying of a knot; by untoward pressure of the body of the child upon the *funis;* or by 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 the 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 judgement 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 this 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 parents 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 in common observation, that far the greater number of those labours which have been considered as difficult, and which really were such towards the conclusion, were not in fact occasioned by the state of the patient, but by interposition, and 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 judgement, 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.

SECTION IV.

ON THE INSTRUMENTS USED IN THIS OPERATION.

The instruments with which this operation was anciently performed, do not appear to have been well calculated to answer the intention of the operator, effectually or safely. They consisted chiefly of hooks, single or double, blunt or sharp pointed, differing in form and length, which were fixed upon any part of the head with the view of extracting it forcibly. It being sometimes found impracticable to fix a hook firmly upon the head, other instruments were invented and used to make an opening into which a hook might be fixed, but apparently without any intention of lessening the bulk of the head. All these instruments it would be useless and tiresome even to enumerate; but it is remarkable that Mauriceau, a man of great experience and real ability in his profession, should have complained of difficulties in this operation which he could not surmount, from the want of better instruments, and those which he used were certainly very imperfect.

Perhaps there is no operation in surgery which admits of a more precise description or distinction, than this of lessening the head. It consists of three parts; perforating the *cranium;* evacuating the brain and *cerebellum;* and extracting the head; and three instruments have been commonly used for these purposes. The first was the scissors originally used by La Motte, altered and improved by Smellie; the second was in the form of a large spoon with serrated edges,

for the purpose of evacuating the brain; the third was a hook or crotchet, straight or curved, to be used singly, or in pairs like the *forceps*, by which the head was to be extracted.

Many years ago, Savigny, the instrument maker, at my request, prepared two instruments, which I suppose to be fully sufficient for this operation, the evacuation of the brain not requiring a separate instrument. The first was a *perforator* in the form of Smellie's scissors, the blade being slightly curved in the manner of the scissors used for extirpating the tonsils, but without any cutting edge, which is somewhat dangerous and altogether useless; and strength was added to the instrument by giving greater thickness to the inner part which was before sharpened to an edge, and is in this blunted. The second was a crotchet with a little degree of curvature, and a hook brought to a flattened point, about one inch in length, which is small if compared with those before used. The *perforator* measures about nine inches in length, and has a stop on each blade one inch and a quarter from the point. The crotchet which has a wooden handle and a flat stem, should, when properly curved, be of an equal length with the *perforator*. These instruments, which are now almost in general use, are found to be very convenient, and fully adequate to every purpose in the performance of this operation; and as the intention is well understood, and the instruments simplified, both the difficulty and danger of the operation are infinitely lessened.

SECTION V.

ON THE MANNER OF PERFORMING THE OPERATION.

Much consideration is required before we determine to perform this operation, and, according to my judgement, it ought never to be performed on the opinion of any single person, if that of two can be procured, both on account of individual character and public satisfaction. But when we have once decided upon the necessity of its being done, besides great circumspection in the manner of doing it, there is occasion for our being resolute and persevering in our attempts to accomplish it; even when the difficulties to be surmounted appear to be too great for any degree of skill, or any force we have the power of using. One common error formerly prevailed in this and too many other surgical operations, founded on an opinion, that it was needful to perform it speedily; but it is now proved by experience, and generally acknowledged, that the more calmly and slowly we proceed, the less chance there will be of failing, or doing mischief. As the sole aim of this operation is to preserve the life of the mother, without regard to the child, whatever

its state might be, it will be our duty to be particularly careful to guard against every accident which might prove injurious or hazardous to the mother. But, as by following the distinctions specified in the last Section we shall be able to mark and explain all the circumstances of the operation as they occur, we will abide by those distinctions in describing the manner of performing it.

SECTION VI.

ON THE PERFORATION OF THE HEAD.

The ease or difficulty attending this and every other part of the operation will depend upon the distance the head may be from us; whether for instance, it be descended and locked in the *pelvis*, or be lying at the superior aperture; and upon the degree of distortion of the *pelvis*, which may be only so much as just to prevent the passage of the head, or so great as to render even the use of the instruments both troublesome and dangerous. Some inconvenience may also be produced by the *os uteri*, should it not be completely dilated; but this may rather be esteemed a reason for extraordinary care, and slow proceeding, than as a cause of difficulty.

Without regard to the part of the head which we mean to perforate, but deciding upon that which is most obvious and easy of access, as the most proper, the left hand flattened is to be produced into the *vagina*, and the fore finger of the same hand is to be directed upon that part of the head where we intend to fix the point of the instrument. The *perforator*, held in the right hand, is to be conducted with the convex part towards the palm of the left hand, and with the point kept close to the fore finger, till it reaches the part where we have determined to perforate. The fore finger of the left hand is then to be passed round the point of the instrument, that we may be assured we have fixed it in the right place, and that none of the soft parts of the mother are in the way of being hurt. With the instrument held firmly in the right hand, we must then press through the integuments of the head; and, the point being fixed upon the bones of the *cranium*, begin to perforate, by turning with a semirotatory motion the handle of the instrument. This motion of the instrument, care being taken to confine the point to the place where it was originally fixed, is to be continued till we judge the bone to be actually perforated; and we are to try occasionally, by advancing the instrument, whether the bone be perforated or not. When the bone is perforated, the instrument being pressed forwards will penetrate the head, and go on till it reaches the stops formed upon the blades. Then fixing the finger and

thumb of the right hand in the bows of the handle, or pressing the thick part of the hand between the stems, or calling for the help of an assistant, we should separate the handles of the instrument to such a distance as to make a slit or opening of sufficient length in the *cranium*; judging of, and in some measure guiding, the effect produced upon the blades by the separation of the handles, and by the finger of the left hand retained in its primitive position. The handles being then closed, the instrument must be turned in a transverse direction, and they are again to be separated in the same cautious manner, by which means a crucial opening of a proper size will be made in the *cranium*. This being completed, the *perforator* is to be closed, and withdrawn in the same cautious manner in which it was introduced.

In this part of the operation the principal things which demand our attention are, first, that the instrument be carefully introduced; secondly, that we be not alarmed at the discharge which follows the perforation of the integuments of the head, as that is to be expected; thirdly, that the point of the instrument does not slip while we are perforating; and fourthly, that the crucial opening in the *cranium* be sufficiently large, to allow of the exclusion of its contents.

SECTION VII.

ON THE EVACUATION OF THE CONTENTS OF THE HEAD.

A VERY large opening of the *cranium* has been generally considered as necessary for the well performing of this operation; but this is not absolutely required in any point of view, nor can it always be made with safety. It must, however be sufficient for the purpose of suffering the contents of the head to pass through it; and for the evacuation of these, it was before mentioned, that various instruments had been contrived. But these instruments, especially the serrated spoon, appear to be both unnecessary and dangerous; unnecessary, because the texture of the brain and *cerebellum* being broken down, their evacuation will follow of course, as the head is propelled or extracted; dangerous, because an instrument with many sharp points could not be frequently introduced and withdrawn, without the hazard of being hitched on the soft parts of the mother. Any smooth instrument of a proper size and length, such as the handle of a silver spoon, or a blade of the *forceps*, will answer the purpose of breaking down and evacuating the contents of the head safely and effectually. But the perforation being completed, I have generally introduced the crotchet into the opening in the *cranium*; and turning it round frequently, in vari-

ous directions, especially near the basis of the skull, have completed this part of the operation without difficulty. With all the care which can be taken, it is not always possible to do this on the first attempt; but, if in the course of the operation it should be found that the head does not readily collapse, because some part of its contents had escaped the action of the instrument, the same method may at any time be safely repeated, without delaying the operation.

SECTION VIII.

ON THE EXTRACTION OF THE HEAD.

It was formerly a rule of practice, whenever the head of the child was opened, that the efforts to extract it should immediately commence, and be continued till the purpose was accomplished. With all the cautions which have been given for ascertaining the necessity of the operation before it was performed, it was strongly inculcated, that we should be on our guard not to defer it till the strength of the patient was too much exhausted; lest by such delay we should altogether lose the advantage that would result from the natural efforts, which might otherwise be made for the exclusion of the lessened head; and when the child was extracted, lest the patient should be reduced to a state of the greatest danger from mere debility; more especially if there should be a loss of much blood, before or after the exclusion of the *placenta*. Our conduct, with regard to the extraction of the head, must then depend upon the state of the patient; whether that state will permit us to wait for the advantages to be derived from the putrefaction and compression of the head from the natural pains, or whether the head should be speedily extracted by art. If the *os uteri* be not completely dilated, when we begin to extract, our proceedings ought on that account to be very gentle. But if from the great distortion of the *pelvis* we should have been convinced of the necessity of performing this operation in the beginning, or early part of a labour, the head when lessened may be left for many hours to undergo those changes which putrefaction occasions, to the diminution of its bulk by compression, to its gradual descent into the *pelvis*, when it may be readily extracted, or to the chance of its final expulsion without assistance, as the reason and nature of the case may indicate or require. Under such circumstances the late Dr. Christopher Kelly* informed me,

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

and I believe the practice originated with him, that he had left the head of a child, after the evacuation of its contents, for more than twenty-four hours, without making any artificial attempts to extract it; and that the operation was, by this delay, rendered more safe, and infinitely more easy. The late Dr. Mackenzie also informed me, and many other persons, that he had in the latter part of his life followed this practice with success. But the matter has been more fully discussed, with great ingenuity, and as much precision as the question admits, by a late very sensible and judicious writer *, who in a case of which I was a witness, left the head of a child more than thirty-six hours after it had been lessened, and then extracted it; the woman recovering without any untoward symptom. Of the *pelvis* of this woman, who, I am informed, is now dead, we were never able to get the exact dimensions, as she removed from her usual habitation, and could not afterwards be traced.

When the head of the child has been lessened, the length of time during which the patient may therefore be trusted in expectation of favourable changes, must be left to the judgement that may be formed of every individual case which may be the immediate object of practice. In some cases, from the precarious state of the mother, there will exist a necessity of extracting the head as speedily as we can with safety; yet the general principle to be established is, that the longer we have waited in any case, the more easily will the head be afterwards extracted. But the patient is to be carefully watched that we do not wait too long, lest unfavourable symptoms should come on, and the end for which the operation was performed be ultimately defeated.

Sooner or later then, according to the state of the mother, it will

probably, of which the doctor had informed me, which I transcribe in his own precise words.

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

The *pelvis* of this woman came at length into my hands, and in some parts of the superior aperture does not measure more than one inch and a quarter, though on one side the space is equal to two inches. D.

* *Essay on Laborious Parturition, by W. Osborn, M.D.*

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

Should the head of the child be so high in, or above, the superior aperture of the *pelvis*, or this be so much distorted as not to admit of my giving this kind of assistance, or should it be unequal to the purpose, I carefully introduce the crotchet, guided by my left hand, into the opening in the head; and, fixing the point of the hook as far from the edge of the bone as its curvature will allow, I begin to pull moderately by the handle held in my right hand, guarding at the same time the hook of the crotchet with the fingers of the left, lest it should happen to tear away the bone, or slip.

If on trial the crotchet be found firmly fixed, but the head be too much impacted in the *pelvis* to be brought down with the force first used; that is, supposing the force required to extract the head be equal to 10, and the force which can be exerted by the crotchet not to exceed 5; no other purpose can be answered by striving too earnestly with the force which cannot be made to exceed 5, except tearing away the piece of bone in which the crotchet may be fixed, which does not facilitate the operation. We are to be satisfied with the steady exertion of the force 5, which, being continued, will at length be found sufficient for our purpose, the resistance gradually diminishing, and the force 5 remaining. In the repetition of our attempts to extract the head, which must be made at intervals, should the bone in which the instrument was fixed, be loosened and come away, wholly or in part, the crotchet must be again introduced and fixed in another place, and the same method of proceeding followed; remembering also when we extract, to pull with some variation in the direction, but always in the line of the cavity of the *pelvis*. In almost every case of difficulty the principal obstacle or cause of the difficulty is at one particular part of the *pelvis*, and when the head has passed that part there is no further occasion for using much force; and we are afterwards to proceed very circumspectly, that there may be no laceration of, or injury done to the parts of the mother, internal or external. The principle I wish to impress on the minds of those who may be embarrassed with difficulties of this kind is, that time is equivalent to force, and that no advantage will be obtained by pulling

away small pieces of bone, except such as were loose and likely in their passage to injure the soft parts of the mother, or by acting hastily or violently. On the contrary, when the instrument is once firmly fixed in a part of a bone which affords a good hold, I have been cautious not to tear it away by pulling rashly, considering that as something like breaking the instrument with which I was performing the operation. Where the resistance has been very great, after making my first efforts with all the force and skill I could safely exert without success, leaving the crotchet fixed, I have desisted for an hour or longer, and then renewed my attempts.

In a case of very great difficulty it is however possible, that all the bones of the *cranium* might be brought away successively, and nothing of the head remain but the basis of the scull, with the integuments. In such a case it has happened, quite unexpectedly, that I have succeeded in bringing down the remainder of the head, merely by grasping the integuments firmly in a mass, or even in distinct parts, and pulling by them in a proper direction. But, if these should be found insufficient, the crotchet is to be introduced again, and fixed upon the basis of the scull on any part where we can get a firm hold, and this assuming a more convenient direction will be more readily brought down. I have not found, in cases of this kind, that I have acted from a preference for fixing the instrument in this or that part, or in this or that manner; but, giving myself time to reflect, the exigence of the case has dictated what I ought to do, so that I am not solicitous about any particular method. Some have thought that it was of great importance to fix the crotchet on the outside of the head, and others have insisted on the propriety and superior advantage of fixing it on the inside; but I am persuaded that such things are of little consequence, and that in the course of a difficult operation it may be found necessary and useful to fix it in either way.

If the disproportion between the cavity of the *pelvis* and the head of the child be very great, we may then allow it to be possible that all the bones of the *cranium*, together with the basis of the scull, may be brought away, yet the body of the child may remain above the superior aperture of the *pelvis*, with absolute inaction of the *uterus*. This circumstance may require different methods of treatment. If the space between the projecting bones of the *pelvis* would permit the flattened hand to be passed into the *uterus*, it might be most expedient to turn the child, and deliver by the feet, which, thus situate, I have more than once done. But, if the distortion of the *pelvis* will not allow the hand to pass into the *uterus*, or if there be reason to apprehend mischief to the *uterus*, from the jagged or loosened pieces of bone, the crotchet must be again introduced, and fixed upon the chest of the child, where it may probably meet with

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

SECTION IX.

ON THE SUBSEQUENT TREATMENT.

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

Women in general recover well after this operation, provided it was not delayed till some irreparable injury was already done to the parts of the mother, and was performed with care. Besides the treatment which may be proper for all women in childbed, it will be incumbent upon us to be particularly careful in these cases that the urine be voided; and, if the patient should not be able to do it by her own efforts, that it be drawn of with the catheter, very soon after, if it were not, or could not be done, before her delivery. The use of the catheter is also to be continued, twice in the course of twenty-four hours, till she become able to expel the urine; lest there should be inflammation on any part of the bladder or *meatus urinarius*, and a slough be cast off, which, unless it were merely a small portion of the *meatus*, might be followed by an involuntary discharge of urine ever afterwards; which I consider as one of the most deplorable accidents in the practice of midwifery.

While I am correcting these papers, a case of this kind has unfortunately occurred, and with circumstances that no knowledge or caution could have foreseen or prevented. This patient, after a very hard labour with a dead child, voided her urine without trouble of any kind, for ten days after her delivery, according to the report of the patient herself and her attendant. She then complained of some uneasiness after every evacuation, but no difficulty in voiding it. Yet on the fourteenth day, a small slough was thrown off from the bladder. I mention this case, because I have generally suspected the sloughing to be occasioned by the want of due attention to the urine, or of a prudent use of the catheter; and there can be no doubt but that negligence in these two points has generally been the cause of such accidents.

SECTION X.

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

We have before alluded to this operation as a method of preserving the lives of children, without adding to the danger of women, if in any case the *pelvis* were so much distorted, or so small, as absolutely to prevent the passage of the head of a full grown child, and yet not so far reduced in its dimensions, as to prevent the head of a child of an inferior size from passing through it. Melancholy are the reflections when a woman has a *pelvis* so very much distorted (and such women have usually a wonderful aptitude to conceive) that there should be no chance, or very little, of preserving the lives of her children; and yet, in the course of practice, I have in many instances been called to the same woman, in five or six successive labours, merely to give a sanction to an operation, by which the children were to be destroyed. It is to the credit of the profession, that every method, by which the lives of parents and children might be preserved, has been devised and tried; and, though frequent occasions for using some of these methods cannot possibly occur in any one person's practice, it is right that all should be acquainted with what has been proposed and done in every case of great difficulty, with or without success.

A great number of instances have occurred, of women so formed, that it was not possible for them to bring forth a living child at the termination of nine months, who have in my own practice been blessed with living children, by the accidental coming on of labour when they were only seven months advanced in their pregnancy, or several weeks before their due time. But the first account of any artificial method of bringing on premature labour was given to me by

Dr. C. Kelly. He informed me, that about the year 1756, there was a consultation of the most eminent men at that time in London, to consider of the moral rectitude of, and advantages which might be expected from, this practice, which met with their general approbation. The first case in which it was deemed necessary and proper fell under the care of the late Dr. Macaulay, and it terminated successfully. (The patient was the wife of a linen-draper in the Strand.) Dr. Kelly informed me, that he himself had practised it, and among other instances, mentioned that he had performed this operation three times upon the same woman, and twice the children had been born living. The thing was often the subject of conversation, and has been proposed by writers, but some have doubted the morality of the practice; and the circumstances which may render the operation needful and proper, have not been stated with any degree of precision; but the practice afterwards became almost obsolete or forgotten.

With regard to the morality of the practice, the principle being commendable, that of making an attempt to preserve the life of a child which must otherwise be lost, and nothing being done in the operation which could be injurious or dangerous to the mother, but, on the contrary, a probability of lessening both her danger and suffering, I apprehend, if there be a reasonable prospect of success, no argument can be adduced against it, which will not apply with equal force against every kind of assistance at the time of parturition, against inoculation, or medicine in general, and, in fact, against the interposition of human reason and faculties in all the affairs of life. Such an argument would lead us back to the absurd doctrine of predestination; if with justifiable intentions, with the greatest probability of doing good, and without producing any comparative present or future mischief, we may not use our endeavours to extricate our fellow creatures from evils which threaten them, or under which they may be actually oppressed.

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

As to its safety, having reasoned upon the structure and state of the parts concerned in the operation, and having carefully attended to all the circumstances which have occurred when it had been performed in more than twenty cases, in which I have either performed it, or it has been done by my advice and persuasion, I have not known one untoward or hazardous accident that could be imputed to it; and in the greater number of these cases the children have been born living. Many instances of this operation being performed successfully have, since my first proposal of it, about thirty years ago, been also recorded by others; I therefore feel authorized to say, as far as my own reason, or experience, or those of many others, who have favoured

me with the result of their practice, enable me to judge, that the operation of bringing on premature labour, in the cases to which this discourse has any reference, is perfectly safe to the person on whom it may be performed.

But respecting the utility of the operation, the statement first made of the intention or purpose with which it ought to be done, that is, to try whether the head of a small child will not pass through a *pelvis* too much narrowed in its dimensions to allow one of a common size to pass, will show, that the objects of the operation are circumscribed within certain limits. Should the cavity of the *pelvis* be of its natural size, this operation is out of the question, and never can be required on that account. If the cavity of the *pelvis*, though reduced in its dimensions, be such as to permit the head of a full grown living child to be squeezed through it by the force of strong and long continued pains, this operation is not required, and ought not to be performed, except in some particular cases in which it may be thought eligible. If the *pelvis* be so far reduced in its dimensions as not to allow the head of a child of such a size as to give hope of its living, to pass through it, the operation cannot be attended with success, though it may free the patient from much suffering. It is in those cases only in which there is a reduction of the dimensions of the *pelvis* to a certain degree, and not beyond that degree, that this operation ought to be proposed, or can succeed with complete advantage.

It would be highly satisfactory, if I were able, to state with precision the exact dimensions of the cavity of the *pelvis* of the person, on whom it might be needful to perform this operation, and on whom it might be performed with success. But as all the instruments and methods contrived for measuring the *pelvis* in the living woman too imperfectly answer this purpose to enable us by them to form an unerring guide to practice; and as the head of a child before it is born can never be accurately measured, of course the exact relation between them must be unknown, and the determination must be therefore left to opinion, and to former proofs: and those who are experienced will not commit any great mistake in their conjectures, even if they have no other than this probable evidence, by which their judgement may be guided. Under circumstances and in situations just preventing the successful use of the *vectis* or *forceps*, and just compelling us to the fatal measure of lessening the head of the child, it may become a duty to propose, on a future occasion, the bringing on premature labour; at seven months, or any later time, according to our sense of the disproportion existing between the head of a child and the cavity of any particular *pelvis*. It can hardly be doubted, but that the casual events of practice first inspired the notion of this method in the mind of some person, who, adverting to the fortunate

termination of premature labours coming on spontaneously, or of very small children, in cases of distortion of the *pelvis*, endeavoured to imitate by art what not unfrequently happens naturally. It is also to be considered that in a child born prematurely, the bulk of the head is not only much less than at the full time, but the component parts of the head are more loosely connected and far more pliable, and of course its volume is more readily adapted to the space through which it is to pass.

I cannot deny myself the pleasure of relating the following case, which occurred very lately.

A lady of rank, who had been married many years, was soon after her marriage delivered of a living child, in the beginning of the eighth month of her pregnancy. She had afterwards four children at the full time, all of which were, after very difficult labours, born dead. She applied, in her next pregnancy, to Dr. Savage, whom I met in consultation. By some accounts she had received, she was prepared for this operation, to which she submitted with great resolution. The membranes were accordingly ruptured, and the waters discharged, early in the eighth month of her pregnancy. On the following day she had a rigor succeeded by heat and other symptoms of fever, which very much alarmed us for the event. On the third day, however, the pains of labour came on, and she was after a short time delivered, to the great comfort and satisfaction of herself and friends, of a small but perfectly healthy child, which is at this time nearly of the same size it would have been, had it been born at the full period of uterogestation; and it has lived to the state of manhood. In a subsequent pregnancy, the same method was pursued, but whether the child was of a larger size than before, or the *pelvis* were become smaller, whether there was any mistake in the reckoning, or whether the child fell into any untoward position, I could not discover, but it was still-born, though the labour did not continue longer than six hours. But in a third trial, the child was born living and healthy, and she recovered without any unusual inconvenience or trouble.

The defects arising from the distortion of the bones of the *pelvis*, have been adverted to, as alone rendering this operation necessary; but if the cavity be so far lessened in its dimensions, as to hinder the passage of the head of a child, of its full size, from any other cause, such as the growth of a tumour like that mentioned in section 7, 8. chap. vi., the expediency of bringing on premature labour, might be maintained by equally sufficient reasons.

There is another situation in which I have proposed, and tried with success, the method of bringing on premature labour. Some women, who readily conceive, proceed regularly in their pregnancy

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

The propriety of this practice has also been considered, when women have, during pregnancy, suffered more than common degrees of irritation, especially when the stomach is in such a state, that it cannot bear nourishment of any kind or in any quantity, and the patients are thereby reduced to a state of dangerous weakness. Presuming that these symptoms are purely in consequence of pregnancy, it may perhaps be justifiable to bring on premature labour. Of the success however, of such, I cannot speak from my own experience, yet I can conceive a case of this kind in which it might be reasonable and proper to take this operation into consideration.

I may be allowed to conclude this subject, without entering into a detail of the manner, in which premature labour may be brought on; because no person qualified to decide on the propriety of this operation can be ignorant of the manner of performing it, whether it be done with a quill sharpened at the point, or any more formal instrument. I must however take notice, that when the membranes of the *ovum* are punctured or ruptured, some caution is required to avoid injuring the head of the child, which may lie close to them; and, after the discharge of the waters, it is necessary to observe, that the time when the action of the *uterus* may come on will be very different; this happening in some instances in twelve hours, and in others not under twelve or fifteen days. During this interval we have only to wait patiently for the event, and when the pains come on, the labour, if natural, is to be suffered to proceed without interruption; or, if irregular, such assistance is to be given, as the peculiarity of the case may require. It is scarcely necessary to mention, that when we are considering the propriety of this operation, it ought not to be performed when the patient labours under any hazardous disease; and that if complaints should afterwards arise, our endeavours must be exerted to remove them before the accession of labour. But concluding all the observations which it seems necessary to make on this subject, I must solemnly deprecate their being applied to dishonest and immoral purposes.

SECTION XI.

ON THE SECTION OF THE SYMPHYSIS OF THE OSSA PUBIS.

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 (see chap. i. sect. 3.); 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*, 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 applauses 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 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 universally freed from the pains and dangers of parturition. The influence of vanity was at least as strongly marked in these proceedings 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 too hasty and too enthusiastic, not to raise a suspicion of error or deceit in the estimate of the operation, or in the 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.

Immediately after the accounts of the operation were brought into this country, wishing, as a matter of duty, to understand the ground of the subject, I had a conference with the late Mr. John Hunter, in which we considered its first principle, its safety; and after the most serious consideration it was agreed, that if the utility could be proved, there appeared from the structure of the parts, or from the injury they were likely to sustain by the mere section of the *symphysis*, no sufficient objection against performing it. Of its real utility it was however impossible to decide, before many experiments had been made on the dead body, to ascertain the degree of enlargement of the capacity of the *pelvis*, well formed or distorted, which could be thereby obtained. Such experiments were soon made, and their result published by the late Dr. William Hunter; and these proved on the whole, that in extreme or great degrees of distortion of the *pelvis*, the advantage to be gained was wholly insufficient to allow the head of a child to pass without lessening its bulk; and in small degrees of distortion, that the operation was unnecessary, such cases admitting of relief by less desperate methods. They proved moreover, that irreparable injury would be done by attempts to increase the common advantages gained by the section of the *symphysis*, by straining or tearing asunder the ligaments which connect the *ossa innominata* to the *sacrum*, and to the soft parts contained in the *pelvis*, particularly to the bladder. For the reasons advanced by Dr. Hunter, the operation was never (excepting in one unhappy case) performed in this country, and so perfectly were the minds of men satisfied of its impropriety and insufficiency, that I do not believe the section of the *symphysis* ever came into contemplation in any one case of difficult parturition, with any of the gentlemen who practise midwifery in this city. But as accounts of the operation were frequently brought from the Continent, and as active measures were pursued for supporting the celebrity with which it had been first brought into notice, Dr. William Osborn examined all the cases then published, stated with precision the little advantages gained, the injuries occasioned, and the general result of the operation, and proved both by facts and arguments the cruelty and futility of it, in a very sensible essay first written professedly on the subject.

Here the matter might for ever have rested, but in writing on the practice of midwifery, as well as any other art, it seems necessary to record not only what has been proposed and done with success, but the trials that have been made of things proposed, though unsuccessful, and on what circumstances the want of success depended; otherwise there might be at different times a repetition of the same trials and of the same misfortunes. Perfectly convinced

though I am of the impropriety of this operation, and hoping that no attempts will ever be again made to bring it into practice, it seemed necessary to give this short account of it, and I cannot refrain from making the following observations.

It is proved in the first place, that *some* enlargement of the capacity of the *pelvis* is actually obtained by dividing the *symphysis* of the *ossa pubis.*

Secondly, That the evils, which have followed this operation, have been very much occasioned by its being performed unskilfully; or by injudicious endeavours to increase that enlargement of the capacity of the *pelvis* beyond the degree which naturally follows the division of the *symphysis.*

Thirdly, That 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.

Fourthly, That some children were born living when this operation was 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 considered.

We may also say, that this operation is not so certainly fatal to those women on whom it may be performed, as the cesarean operation; nor so certainly destructive of children as that of lessening the head.

We may then be allowed to suppose a case, 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 cesarean operation at the expense or great hazard of her life; and that she through human frailty might refuse to submit to the cesarean 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 cesarean operation, and instead of adding to the danger, give some chance of preserving the life of the child.

But, from the statement of this case, or any thing before advanced, I hope it 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 any other which, to my apprehension, can be imagined.

CHAPTER XIII.

SECTION I.

ON THE CESAREAN OPERATION.

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

It has been supposed by some writers, that a name was given to this operation from a circumstance common to it and every other in surgery in which a knife was 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 the feet foremost were called Agrippæ; or when there were twins, and only one was 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 been presumed even to come into the world in the common way *. But it is well known, that the name of 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

* Auspicatiùs, enectâ parente, gignuntur, sicut Scipio Africanus prior natus, primusque Cæsarum a cæso matris utero dictus.—*Plin. Histor. Nat.* lib. vii. cap. ix.

† The mother of Cæsar, 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.

writers in medicine take notice of this operation, and we cannot suspect they were so negligent as to have omitted the description of it, or so ignorant as to be unacquainted with it, when, in all probability, had it been performed, they would have 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 case: Eliz. 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.

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: but Weideman of Dussendorp, in his Thesis, has given an account of all the cases of this operation, which have been recorded before his time, and the result of them. But the records of this operation have been imperfectly preserved even in modern times, though they are certainly few in number. Yet, from the context of the cases recorded, it appears that some have been misrepresented, and that some are fictitious, and were alleged to answer other purposes, as was the supposed one of lady Jane Seymour, 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, or from some other cause, it was never performed, or even proposed, or hardly 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 judgement 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.

* See Rapin, vol. viii. p. 17, and the note annexed to it. Also the Preface to this Introduction.

SECTION II.

By the first writers on this subject many circumstances are recited, which were supposed to render this operation necessary, some respecting the parent, others the child. Of the first kind were extreme smallness or distortion of the *pelvis:* the straightness or closure of the natural passages, from *cicatrices,* adhesion, or any other cause; 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 to its position also; and on this occasion twins, and even monsters, which there was no wish to preserve, have been mentioned. But, whatever was the existing cause, it appears that there must have been a full conviction on the mind of the person who proposed this operation, of the impossibility of delivering the patient by any other means. Some writers have indeed spoken of this operation, not with a view to its absolute necessity, but its eligibility, or as deserving preference to other methods of delivery which might be practicable. Such writers have not met with general approbation, but their influence has been too great; for in several of the histories 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 its influence in France, where it has certainly been often proposed, and sometimes without a doubt performed unnecessarily, and in some other parts of the Continent, of which the account of the following case, 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 performing this operation, and while the surgeons were preparing for it, the child was expelled by the natural pains. No other principle but that of necessity can certainly be admitted as a justification of this operation; that is, whenever it is proposed, there shall be no other way or method, by which the life, either of the mother or child, can possibly be preserved; and the impossibility shall be confirmed, not by the opinion of one, but as many competent judges as can be procured. If such satisfaction could be given, I should then consider this operation justified by every principle of religion and 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.

SECTION III.

THREE general situations have been stated in which it has been supposed that the cesarean operation might be necessary *.

1. When the parent was dead, and the child living.
2. When the child was dead, and the parent living.
3. When both the parent and child were living.

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

With respect to the second situation, as in 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, which is a very important one, the hope of preserving the life of the child; the chance of preserving the parent being much lessened, at least not improved, by an operation so full of danger. It will therefore, I think, be generally acknowledged, that the operation ought not, 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 cesarean operation, it might lead to a comparative estimation between the life of the child and that of the parent. But the common sense of mankind being agreed in 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, to preserve the life of the parent; and in the third, that of the child, which have been on various occasions inculcated and applied, will point out the general line of conduct we ought to 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 under circumstances which relate to the mother alone.

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

Some have been of opinion, that this operation ought never to be performed on the living subject. Impressed, perhaps, with the dread of the operation, they did not distinguish between necessity and eli-

* See *Bonet, Sepulch. Anatomic.*

gibility, and therefore wished to abolish it altogether, which would be an unnecessary and improper general rule. But if it were to be performed only when the patient was dead, more particularly if we were to wait for her death, as the only proper time of performing it, it would generally be fruitless. For I do not find any instance of a living child extracted by this operation after the death of the mother, unless the child escaped by the same stroke as that which proved fatal to the mother, of which the accounts seem to be almost fabulous, or merely accidental. 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 a labour, it is possible for a living child to be extracted after the death of the mother, by speedily performing this operation; and as no harm can possibly result from the operation, supposing ourselves disappointed, no reasonable objections can be made to our performing it under such circumstances. In some countries the laws forbid 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.

SECTION IV.

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

Many of the causes which have been specified by writers, as producing a necessity of performing this operation, are certainly unequal to so great an effect. The size of a child, however large, unless the *pelvis* be at the same time very much distorted; nor any untoward position of the child; nor twins; nor monsters; nor the closing or straitness of the soft parts, can ever compel us to the necessity of performing this operation; because we know from reason and experience that difficulties arising from such causes admit of relief by less desperate and dangerous means. It may be asserted in general terms, that there is only one case which can justify our proposing or performing this operation on the living subject, and that is, such an extreme degree of distortion of the *pelvis* as renders the extraction of the child, in its present state, when diminished in its bulk, or even reduced into pieces, absolutely impracticable; in other words, when the situation is such, that the woman would in all probability die, if this operation were not performed. But it is also true, if any other cause could be proved to exist, which produced the same impracticability, then the operation would be equally requisite and justifiable. (See the Fourth Order of Difficult Labours, Sect. III.)

To make a precise statement of that degree of distortion or consequent diminution of the cavity of the *pelvis*, which might require this operation, is not perhaps possible in the living subject. The natural space of the cavity of a well-formed *pelvis*, from the *ossa pubis* to the *sacrum*, is about four inches and a half, and in some subjects rather more; and the heads of children at the time of birth bear a general relative proportion to this space. But living children of the full size have been born frequently by the natural efforts, when the space was presumed to be less than four inches; and if the children were small, when it did not exceed three inches: and we may judge that the head of a child is capable of being reduced by compression one third of its natural bulk, without destruction of its parts, or any permanent injury. But should the capacity of the *pelvis* be reduced under three inches, we have no good reason to expect a living child, of its full growth, however small, to pass throught it, either naturally, or by the assistance of art; though the head of one that is dead, especially if it be putrefied, or one much below the common size, may be pressed through a *pelvis* of about those dimensions, even without artificial assistance. Should the capacity of a *pelvis* not exceed, according to our judgement, two inches and a half, then the head of a child, unless the contents be evacuated, cannot pass or be extracted through it. But if the cavity of the *pelvis* be so far closed, that it should in any part very little exceed one inch, of which examples have sometimes occurred, we might then presume that the head of a child, though it were reduced to the least possible size, could not be extracted through it; and then the necessity and propriety of performing the cesarean operation would be allowed, whatever aversion we might have to it, especially if we had reason to think that the child was living, or to conclude that it was not dead.

These general positions every person engaged in practice will bear in his mind, in all cases of difficulty arising from distortion of the *pelvis*. But he must also recollect, that the remaining space of the cavity of the *pelvis*, in cases of distortion, will be differently estimated by different persons, and cannot be ascertained with precision by any one during the life of the patient. He will also remember, that the kinds of distortion are as various as the degrees, and that the cavity, though much diminished in one part, may be far less altered in another; and that even one side of the *pelvis* may measure two inches or more when the other is scarcely equal to one; which consideration may make a change in our judgement and conduct of the kind of operation required widely different, as well as in the operation itself. It should also be remembered, that the size of children at the time of birth, and the firmness of the bones, together with the compactness of

their union with each other, are very different, and might add to, or lessen, the difficulty of a birth, whether natural or artificial. After a mature consideration of the whole matter, I am however of opinion, that no rule of sufficient authority to guide us strictly in any particular case can be formed from such calculations only, and that our conduct is not to be governed wholly by them, but by the reflections of common sense working in a reasonable mind, stored with the knowledge of such calculations, and of many other collateral circumstances relating to the mother or child, which it is impossible to enumerate or describe, so as to render them applicable in any particular case. Besides the positive distortion of the *pelvis*, there is in some crooked people such a twist or projection of the last lumbar *vertebra* over the superior aperture, as to increase, or constitute an obstacle to the passage of the head, less tractable and as insurmountable as any degree of distortion existing in the bones of the *pelvis*. Of this the case of the woman on whom the operation was lately performed at Manchester is an example, and her case seems to have fully justified the operation.

I cannot however relinquish the subject without mentioning another statement of this question, which has often employed my mind, especially when the subject has been actually passing before me. Suppose, for instance, a woman married, who was so unfortunately framed, that she could not possibly bear a living child by any method hitherto known. The first time of her being in labour, no reasonable person could hesitate to afford relief at the expense of her child; even a second and third trial might be justifiable to ascertain the fact of the impossibility. But it might be doubted in morals, whether children should be begotten under such circumstances, or whether, after a solemn determination that she cannot bear a living child, a woman be entitled to have a number of children destroyed for the purpose of saving her life; or whether, after many trials, she ought not to submit to the cesarean operation, as the means of preserving the child at the risk of her own life, if she will submit to have children under such circumstances. This thing ought to be considered. Moreover, when it has been ascertained, that women could not possibly bear living children naturally, or on any assistance which art can afford, and the great end of marriage has been frustrated, some have determined on a voluntary separation from their husbands, from a sense of the moral turpitude of conceiving children without the chance of bringing them living into the world. But the law of the land has afforded no remedy for the case, though, as this fact sometimes admits of unquestionable proof, it would not be difficult to adjust terms of separation between a husband and wife thus circum-

stanced, so cautiously, that they should not be abused, yet without the imputation of criminality to either party; and many evils might be thereby prevented, and some great advantages obtained.

I take this opportunity of making another observation on this subject, which affords but gloomy reflections. Formerly the cases in which the cesarean operation could come to be considered, were almost universally confined to cities, or very large towns, where the customs and manners of life most frequently occasioned, with every other kind of decrepitude, distortions of the *pelvis* and all its consequences. But within these few years, from the general dissemination of manufactures, especially that of cotton, over many parts of the country, these evils have become much more frequent; and as the children employed in them are obliged to stand, or are confined to one posture for many hours together, before their bones have acquired sufficient stability to support them, many have become deformed. To boys it may be a great evil and mortification to have bandy legs, yet this does not prevent their becoming fathers; but girls under the same circumstances must often be precluded from being mothers; nor could they go through the process of parturition without infinite suffering and danger. It therefore deserves consideration, both as it is of great political importance, and as a most interesting case of humanity, whether some means cannot be contrived, by which such misfortunes may be prevented.

SECTION V.

In almost every case in which the cesarean operation has been performed in this country, the patients have died. It may be of use to inquire, whether their death were occasioned by any disease, with which they were afflicted before the time of labour; or were the consequence of the state to which they were reduced from the occurrences of labour, before the operation was performed; or were the inevitable consequence of the operation. In cases of death occasioned by wounds, the following order in which the danger is produced may be observed: first, from convulsions, or 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 incisions; nor does it appear, that any of them sunk through the loss of blood accompanying or succeeding the operation. Some died within twelve, others at the end of twenty-four hours, and a few died on

the third day after the operation. If we may judge of the cause of the patient's death by the time of her dying, it might be said, that the death of those who failed within twenty-four hours, was probably owing, not to the operation alone, but to the violence of this, combined with that of 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 the *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 cesarean 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 alway 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 urge us, when we do perform it, and as far as it may be in our power, to select the most eligible time; and from every motive to exert all our judgement 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 judgement of any one person, unless in some case of great and urgent necessity; and 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 prove only that the operation had been abused, and not serve as a valid argument against its use when such necessity really existed.

SECTION VI.

Having never performed the cesarean operation, nor seen it performed, I offer the description of the case related in the fourth volume of the Medical Observations and Inquiries, as the best example

which has been recorded. The operation was performed by Mr. Thomson, one of the surgeons of the London Hospital *.

" A table being prepared, the patient was placed upon it, lying on her back, her head being supported by pillows, and her legs hanging down. The belly appeared prominent chiefly on the right side, the protuberance of the *uterus* extending but about two or three fingers breadth on the left of the *linea alba*. There was no difficulty therefore to determine where the incision was to be made.

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

" The *uterus* appearing very solid to the touch, it was apprehended by some gentlemen, that the *placenta* might perhaps adhere to that part of the *uterus* which lay bare, and which might considerably obstruct the removal of the child, or endanger a hemorrhage. With precaution, therefore, an aperture was made in the centre of the *uterus* sufficient to admit my finger, with which conducting the curved knife, I dilated the wound in the *uterus*, upwards and downwards, to the full extent of the outward wound.

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

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

" The *uterus* being disburdened of its contents, and contracting amazingly fast, the *omentum* and bowels began to protrude; Mr.

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

For a full and accurate account of all the circumstances relative to this operation, see a work lately published by Dr. Hull, an eminent physician at Manchester.

John Hunter was so obliging as to assist me in retaining them within the belly, whilst I cleansed away the grumous blood (which was small in quantity) and made the *gastroraphy* or suture of the belly.

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

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

CHAPTER XIV.

CLASS THIRD.

PRETERNATURAL LABOURS.

TWO ORDERS.

FIRST ORDER.—PRESENTATION OF THE BREECH, OR INFERIOR EXTREMITIES.

SECOND ORDER.—PRESENTATION OF THE SHOULDER, OR SUPERIOR EXTREMITIES.

SECTION I.

The technical terms which are used to specify all the other classes of labours, relate to some circumstance in which the mother is wholly or chiefly concerned. But the term *preternatural* applies merely to the position of the child, and this kind of labour may occur in a woman in perfect health, when all the changes incidental to the state of parturition are made in the most favourable manner, and in whom there is the best possible formation. In short, there may be no deviation or irregularity of any kind, excepting only that the head of the child does not present. Should the presentation of any other

part but the head be combined with a hæmorrhage, or any other circumstance of dangerous importance, either to the mother or child, the title of *preternatural* would be generally lost, and the labour referred to some other class.

The presentation of children at the time of birth may be of three kinds: first, with the head; secondly, with the breech, or inferior extremities; thirdly, with the shoulder, or superior extremities. With the first of these the labour, as far as relates to the position of the child, is called natural; but with the two latter, preternatural. Preternatural labours have been subdivided, by systematic writers, into a much greater number and variety; but as all distinctions are to be made and regarded according to their utility in practice, and as no possible advantage can be derived from their multiplication, but on the contrary much confusion, it will be found expedient to abide by these distinctions only. For though there may be a difference in one respect or other in every labour of this kind, and of course a necessity for some change in our conduct, yet notice cannot possibly be taken of every alteration, and these distinctions will be found sufficient for all the general purposes of practice.

Great pains have been taken to discover the causes of the preternatural presentation of children, and with the best intention; that of pointing out the errors and irregularities by which they were supposed to be produced, in order to prevent them. On this part of our subject, though there have been many different opinions, I think it has been generally presumed, that preternatural presentations happen more frequently to women in the lower ranks of life, than to those in a more affluent condition: the accidents and exertions, to which the former are chiefly liable, being considered as the causes. Before we consent to this inference, it would however be necessary to examine into the truth of the assertion. I believe it has never been satisfactorily proved, that preternatural presentations are really more common in the lower than in the higher ranks of life; the number of the former being, almost beyond any comparison, greater than those of the latter. No station of life is exempt from these presentations, though they rarely occur in any, especially those of the second order; and it is wonderful, that those women who have had such accidents, at different periods of uterogestation, as would be deemed most likely to produce them, have escaped them. But though preternatural presentations seldom occur when they are dreaded and expected, it is remarkable that some women are peculiarly subject to them; not once only, which might be considered as the effect of some accident, but exactly to the same presentation, whether of the superior or inferior extremities, in several successive or alternate labours. It seems doubtful, therefore, whether we ought not to exclude accidents as the

common causes of these presentations, and search for the real cause in some more intricate circumstance; such as the manner after which the *ovum* may pass out of the *ovarium* into the *uterus;* some peculiarity in the form of the cavity of the *uterus, abdomen,* or *pelvis;* in the quantity of the waters of the *ovum* at some certain time of pregnancy; in the circumvolution of the *funis* round the haunches or lower part of the back of the child; or perhaps in the insertion of the *funis* into the *abdomen* of the child, which is not in all cases confined to one precise part, but admits of considerable variety.

SECTION II.

ON THE SIGNS OF PRETERNATURAL PRESENTATIONS.

Several presumptive signs of the preternatural presentation of children have been mentioned; such as an unequal distension of the *abdomen* during pregnancy; some peculiarity in the motion of the child; the sudden rising of the child, when the woman is in a recumbent position, so as to affect her stomach, or to incommode her breathing, which is not unusual when the child presents with the breech; the slow progress of the first stage of a labour; the early rupture of the membranes; or the elongated form which the membranes containing the waters assume, while the *os uteri* is dilating. But these symptoms and appearances will be found very uncertain; nor can we confide in any mark or indication, until we are able to feel and distinguish the part which really presents. It will often be in our power, before the membranes are broken, to discover that the presentation of the child is preternatural; and sometimes, though not constantly, to say what the presenting part is. But when the membranes are broken, a small share of skill and circumspection will enable us to determine what that part is; especially if we have accustomed ourselves to handle the limbs of new-born children. By its roundness and firmness, the head may be distinguished from any other part; the breech may be known by the cleft between the buttocks, by the parts of generation, and by the discharge of the *meconium;* though the last circumstance does not always happen even when the breech presents, till the labour is far advanced, and sometimes occurs likewise in presentations of the head. The foot may be known by the heel and the want of a thumb; and the hand by its flatness, by the thumb and the length of the fingers. In some cases I have found the hands and the feet lying together; but this cannot create much embarrassment to an intelligent practitioner; though there is reason to believe that an error or mistake in judging a superior to be an inferior extremity, has sometimes been productive of

mischief. I do not mention the marks by which the back, belly or sides might be distinguished, because these properly speaking never constitute the presenting part; that is, though they may sometimes be felt, they never advance foremost into the *pelvis* in the commencement, at least, of a labour.

SECTION III.

ON THE MANAGEMENT OF THE FIRST ORDER OF PRETERNATURAL LABOURS.

In the first order of preternatural labours may be included the presentation of the breech, of a hip, of the knees, and of one or both legs.

When a labour is so far advanced that the *os uteri* is fully dilated, if no part of the child can be felt, it will be prudent to watch carefully when the membranes break, as there is a chance that the presentation may be of such a kind as may require the child to be immediately turned; and if no part of the child can be felt, by a common examination, after the membranes are broken, it will be justifiable to ascertain the presentation by the introduction of the hand. Should the head or inferior extremities be found to present, the hand may be withdrawn, and we may suffer the labour to proceed without any further interposition; but if it should be that kind of presentation which requires the child to be turned, we shall have an opportunity of performing the operation before there is any contraction of the *uterus* sufficient to obstruct the delivery.

In the first order of preternatural labours, two very different methods of practice have been recommended. By the favourers of the first method, we have been directed, as soon as the presentation was discovered, whatever might be the state of the labour, to dilate the parts, then to pass the hand into the *uterus*, and to bring down the feet of the child. Or if these were originally in the *vagina*, to grasp them and extract the child expeditiously, making the labour wholly artificial, without waiting for the natural expansion of the parts, or for the expulsatory action of the *uterus*. Would it not argue a want of humanity, say they, to leave the woman for many hours, perhaps a whole day, or even a longer time, in pain and anxiety, when we have the power of extracting the child in a very short space of time, by which the violence of the pain would be lessened, or its duration at least very much shortened? Others, on the contrary, have considered this practice as founded on a vulgar and pernicious error, which makes no distinction between the slowness and danger of a labour. These have considered the

presentation of the breech and inferior extremities as generally safe; and have taught us, that such cases ought to be, and with security may be left to the efforts of the constitution, no kind of assistance being required, in the first stage of the labour; the mother, at least, certainly not suffering more than in a presentation of the head, and the chance of preserving the life of the child being by this cautious proceeding much improved. Of the superior advantage of these two methods it is only possible to judge by the general event of cases of this kind. If this should prove, which I believe is scarcely to be doubted, that less injury is done to the mother, and that there is a better chance of saving the life of the child, by suffering it to be expelled, than by artificial delivery, there can be no hesitation to which of the methods preference should be given; for the charge of want of humanity cannot be properly laid against a proceeding which most frequently terminates happily for both.

From the manner of expressing the directions for the introduction of the hand, for the purpose of bringing down the feet, in presentations of the breech, or inferior extremities, we might conclude that it was always to be done with much ease. But on trial it is often found very difficult, or impossible, without the exertion of very great force; and when this is done, or if the feet were originally in the *vagina*, though the first part of the extraction might be easy, we should in the progress find an increasing difficulty, which would bring the life of the child into great hazard. The thighs would advance more slowly than the legs, and the breech than the thighs; there would be some delay with the body, then with the shoulders, and lastly, when the arms were brought down, with the head. These little difficulties and embarrassments, separately considered, may not be of much consequence, but collectively they occasion great hazard of a compression of the *funis* continuing long enough to bring the life of the child into danger, if not to destroy it; and this can only be prevented by a hurry in the extraction of the child, which may lacerate or do much injury to the parts of the mother. If, on the contrary, we suffer the breech, especially with the legs turned upwards, to be expelled by the natural pains, the distension of the parts thereby occasioned is so ample, that the body and head follow immediately, or may be readily extracted. In cases of the presentation of the breech or inferior extremities, it is therefore now established as a general rule with men of the first abilities and reputation, to suffer the breech to be expelled by the pains, and then to give such assistance as the exigencies of the case may require.

In every labour, in the progress of which we cannot feel the head of the child presenting, or do feel any other part, the membranes being unbroken, we must be particularly careful on no account to

break them prematurely, that is, before the *os uteri* is fully dilated; because, whatever the presentation may be, the child is in no danger till the waters are discharged; and a natural opening or expansion of the parts is always preferable to an artificial dilatation, however carefully made. But when the membranes break spontaneously before the *os uteri* is dilated, and we can discover the presentation of the breech or inferior extremities, it is proper to leave the dilatation to be completed by the natural efforts, though it will be effected slowly and more awkwardly, than if it was done by the volume of the membranes containing the waters, or by the head of the child. The presentation of the breech is sometimes so untoward that the *scrotum* and *penis* of the child intervene, and are the parts which are pressed upon the *os uteri* during its dilatation. In consequence of this pressure, which is in some cases unavoidable, those parts become prodigiously tumefied, and when the child is born, appear in a gangrenous state. In a few instances I have known a portion of the skin of the *scrotum* or *prepuce* slough away, but by the assiduous use of fomentations and cataplasms, further mischief has always been prevented.

Though it may be proper, and is perfectly agreeable to the most respectable modern practice, to leave the child to be expelled by the pains, when the breech or inferior extremities present, unless the circumstances of the mother should require more speedy assistance: yet this resignation of the labour is only to be understood as proper, till the breech is expelled through the external parts, giving time for their dilatation, and guarding them with as much care as when the head presents. For after that time, as there is great danger of the child being destroyed by the compression of the *funis*, though perhaps of no long continuance, the labour must be accelerated, but with skill and judgement. That compression is also to be lessened, or other injury prevented, by gently drawing the *funis* somewhat lower down, in such a manner that it may never be on the full stretch. In some cases, however, after the expulsion of the breech, the continuance of the pulsation in the *funis* very satisfactorily proves, that no compression of importance has taken place; the child of course being in no danger, there is no occasion to hurry the delivery.

When the breech or inferior extremities have passed through the external parts, great attention is to be given also to the position which the child bears with regard to the mother. Whatever that might be, the child would be extracted with equal ease till we came to the head; but if the face were turned towards the *pubes* of the mother, the head could not then be brought away, or its position conveniently changed, without much additional difficulty. As soon

therefore as the breech is expelled, if the back of the child be not turned towards the *abdomen* of the mother, it will be necessary, that the practitioner, while he is extracting or the body descending, should give such an *inclination* to it, that when it is wholly extracted, the hind part of the head of the child may be turned toward the *pubes,* though not with a sudden motion or violence, lest the child should be thereby injured or destroyed. The directions given on this occasion are, that we should make the turn beyond the mere reduction of the back of the child to the *pubis,* and then revert it to a certain degree, by what may be supposed equivalent to a quarter turn. But such rules being very complex, are more apt to create confusion than to be of use, and are not founded on practical observation, but on an erroneous opinion that the head of the child could be extracted only or most commodiously, when the face of the child was turned exactly toward the *os sacrum* of the mother. Whereas it is now well known, that the head of the child will pass through the *pelvis,* with one ear to the *pubes* and the other to the *sacrum,* or in different degrees of diagonal direction regarding the cavity, and that it is not found to proceed precisely alike in any two labours.

When the child is brought down as low as the shoulders, it has been esteemed by some as a very injudicious practice, to bring down the arms of the child; these being turned along the head, preventing, in their opinion, that contraction of the *os uteri* round the neck of the child, which would be an impediment to its complete deliverance. Others have considered this step as absolutely necessary in all cases, the arms, according to them, occupying a portion of that space which would be filled up by the head only. If the extraction of the head with the arms turned up, be on trial found tolerably easy, there is clearly no occasion to bring them down; but if the head should remain fixed in such a manner as to resist the force which we think can be safely or prudently exerted, then the arms ought to be successively brought down, but very circumspectly, lest they should be fractured or dislocated, or come along with a flirt, or so sudden a motion as to endanger the laceration of the *perinæum.* Nor is there afterwards found to have been any reason for apprehending inconvenience from the spasmodic contraction of the *cervix* or *os uteri* round the neck of the child; at least it is not produced by this cause so commonly as by hurrying the first part of the delivery.

When the arms are brought down, should there be much difficulty or delay in the extraction of the head, it will be of great use to pass the fore-finger of the left hand into the mouth of the child, and to press down the jaw towards the breast (but not to pull by it), in

order to change the position of the head, which may be easily done, and the extraction be thereby much facilitated. But of this difficulty we shall speak more fully when we consider the inconveniencies produced in this kind of labour, by the distortion of the *pelvis*.

In the extraction of the child, the body is converted into a lever or instrument for that purpose, and this will act in different cases, or different periods of the same case, with greater advantage, by changing the direction in which it is used. Accordingly in some cases, greater progress is made by acting alternately from side to side, and in others from the *pubes* to the *sacrum*, or in the opposite direction; and that way is to be pursued, in which we are sensible of obtaining the greatest advantage with the least violence. When the head is passing through the external parts, these may be supported with the fingers or palm of the left hand spread over the *perinæum*, while we are extracting with the right. As the head advances, the body must be turned more and more towards the *pubes*, and we must finish the operation very deliberately, or the parts will be lacerated; an evil rendered sometimes by precipitation and imprudent management of almost as much importance as the loss of the child or mother: occasioning, at least, great misery and distress through the future part of the patient's life.

Though children presenting with the breech are commonly expelled by the efforts of the parent, it must sometimes happen that these fail to produce their proper effect, and the assistance of art is required. But assistance is not to be given till, by the failure of the efforts, it is proved to be absolutely necessary; that is, when having given full scope and due time to the efforts, they are proved to be unequal to the expulsion of the child. Whenever artificial assistance is given in these cases, it ought to be perfectly consistent with the safety of the mother, and if possible, with that of the child, which must be considered and treated as if we were certain it was, and would be born, living. When therefore we are satisfied and convinced that the mother is unable to expel her child presenting with the breech, if the inferior extremities cannot be readily brought down, it will be proper, by hooking one or more fingers in the groin, to try whether we cannot give such an addition to the force of the pains, as may be sufficient to extract without injuring it; that is, either by hurting the neck or joint of the thigh bone, or by separating the bones of which the *pelvis* is then composed. Should this force, though continued for some time be proved unequal to the purpose, it will be found expedient to pass a garter, a piece of broad tape or riband, over one or both thighs, one of which is usually pressed before the other, as the case will allow; and then, taking both the ends of the ligature in the same hand, we shall have

the opportunity of exerting great power, should it be required, with less detriment to the mother or child than by any other means; with much convenience at the same time to ourselves, and generally with success. But if the breech should be so high, that the feet cannot be brought down, nor the ligature passed, or its power be insufficient, of which I do not recollect an instance, and the necessity of delivering the mother should be urgent, then a blunt hook or the crotchet must be fixed over the thigh or in the groin of the child, and we must manage as in other cases of extreme difficulty and danger, as the circumstances will allow, but perhaps without following any general rule, and without regard to the child.

It has been said, that children presenting with the breech are generally born alive, and some writers have even considered this presentation of the inferior extremities as natural, and preferable to that of the head; because assistance could be more readily given when it was required. It is true that the children will usually be born alive if they be small, or of a common size, and the true dimensions of the *pelvis* be unimpaired; or if this presentation occur to those who have before had children, the parts yielding kindly and with facility according to the progress of the labour, and this be not by any cause retarded or interrupted. But if it should be a first labour, and the children large, or somewhat beyond the common size, and the labour tardy, or require much assistance from art, they will be more frequently born dead, in consequence of some casual but destructive pressure of the *funis*, before the breech is expelled, or afterward; and with regard to presentation, that which is most common is certainly, for that reason, to be esteemed natural. I have considered one child in three of those born with these presentations, to be still born.

In all cases, in which the child is expelled or extracted by the breech, or inferior extremities, the *placenta* is usually managed without difficulty or danger, and it is generally, though not always, excluded more easily, and in a shorter time than after a natural birth.

SECTION IV.

ON THE DISTINCTIONS OF THE SECOND ORDER OF PRETERNATURAL LABOURS.

In the second order of preternatural labours, the presentation of the shoulder, or one or both arms, may be included; and whichsoever of these is the presenting part, there is a necessity of turning the child, and delivering by the feet, for the interest both of the mother and child. In the management of presentations of this

kind, there is always less difficulty if both arms present, than if there should be but one arm; it will therefore be necessary, to speak only of the presentation of a single arm.

In ancient times it was the custom, in every kind of labour, except those in which the head originally presented, to endeavour to return the part presenting, and to bring down the head; and if this were 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, in all unnatural presentations; and this method, with some alterations and improvements in the operation, has been practised ever since his time, and considered as the only one, by which the child presenting preternaturally could be extracted, and the life of the mother preserved. But many years ago it was my good fortune to discover, that in some of the worst kinds of preternatural labours, those in which the assistance of art is sometimes found to be insufficient and often unsafe, the powers of the constitution, if not impeded in their operation, are capable of expelling the child, with perfect safety to the mother, and without any additional danger to the child. Of the manner in which this delivery is accomplished by the natural pains, we shall speak in its proper place.

Though the necessity for turning children and delivering by the feet, in this second order of preternatural labours, be universally acknowledged, yet the circumstances of those women who suffer them are exceedingly different. With the view of preventing or lessening the embarrassment of the practitioner, it is requisite therefore to make several distinctions: and we will say, that it may be necessary to turn the child,

First, when the *os uteri* being fully dilated, and the membranes unbroken, a superior extremity is felt through them; or immediately upon the rupture of the membranes and the discharge of the waters, before there is any return of the pains, or any important contraction of the *uterus* round the body of the child.

Secondly, when the membranes break in the beginning of labour, the *os uteri* being very little dilated, perhaps scarcely in a sufficient degree to allow a hand or an arm of the child to pass through it, and but just enough to discover the kind of presentation.

Thirdly, When the *os uteri* is fully dilated, the membranes having been long broken, and the *uterus* strongly contracted round the body of the child, which is strictly fixed at the superior aperture of the *pelvis*.

Fourthly, When under any of these circumstances, there is a great disproportion between the size of the child and the dimensions of the *pelvis*.

Under each of these distinctions, a variety of other objects may require the attention of the practitioner, but of every one of these it is impossible to take notice in the description of any stated case, as no two labours ever were in all points exactly similar.

In the practice of every art, some advantages must remain beyond the power of any doctrine to teach or describe, all rules applying to general, and practice to particular cases. These advantages can only be obtained by the cultivation of our own minds, by experience, and by the acquisition of that dexterity, which frequent exercise must give to our hands.

SECTION V.

It is proper, in the first place, to speak of the method of turning children in those cases which come under the first distinction, the management of them being more easy and simple, as there is only one object which demands our care, that is, to change the position of the child.

Whenever there is a necessity of turning the child, the patient is to be placed in the same situation as in a natural birth, upon her left side, with her knees drawn up, across the bed, and as near to the edge of it as possible. There have been many different directions and opinions respecting the advantages of particular situations, especially that of turning the patient upon her knees. But as our aim, in the choice or preference of these, is merely to obtain the free and most convenient use of our own hands, the position of the child remaining the same, however the woman may be placed, the common situation will generally be found most convenient. Yet as that situation which suits one practitioner may be awkward to another, and as in the course of the operation changes may be expedient, every practitioner must make them when they appear necessary to himself. To many it is more convenient to turn with the left hand, than with the right; and from the common position of the child, the former is often more commodious; but every person will, of course, recommend that in which he can act with most dexterity and advantage.

Though in the case we are now supposing the *os uteri* may be fully dilated, it is possible, that the *os externum* may be in a rigid and contracted state. For the purpose of dilating this, it will then be necessary with the fingers of the right hand, reduced into a conical form, to act with a semirotatory motion, and with some de-

gree of pressure upon the sides, and towards the *perinæum.* The artificial dilatation of all parts should be slowly made, and in imitation of the manner in which they are naturally dilated ; and we are not to be satisfied with such a degree of dilatation as will barely admit the hand into the *vagina,* because the contraction round the wrist or arm would, in some cases, be a hindrance in the subsequent parts of the operation ; the dilatation should therefore be sufficient to allow of the unembarrassed use of the hand.

When the hand is passed through the *os externum,* it must be conducted slowly to the *os uteri,* which we presume to be fully or sufficiently dilated.

If the membranes be unbroken, the hand may then be conducted into the *uterus,* and they will be easily ruptured by grasping them firmly, or by perforating them with a finger. The hand must then be carried very deliberately along the sides, thighs, and legs of the child, till we come to the feet. If both the feet should be lying together, we must grasp them in our hand ; but if they be at a distance from each other, we may commonly deliver with one foot without much additional difficulty ; though as in some particular positions we cannot always turn the child, if it be large, by one foot, it is better to make it a general rule to bring down both feet together, when they are in our power.

Before we begin to extract, we must examine the limbs we hold, and be assured we do not mistake a hand for a foot. The feet, being held firmly in the hand, must then be brought with a waving motion slowly into the *pelvis.* While we are withdrawing the hand, the waters of the *ovum* flow away, and the *uterus* being emptied by the evacuation of these and by the extraction of the inferior extremities, we must wait till it has contracted, and on the accession of a pain the feet must be brought lower, till they are at length cleared through the *os externum.* The operation may then, in one sense, be said to be completed, that is, what was originally a presentation of the arm, is now become that of the feet, which considered as primary, might have been left to the efforts of the constitution in the manner before described. But as no person who had undergone the operation of turning a child, with the expectation of a speedy delivery, would have patience to wait for the expulsion of the child by the natural pains, it is incumbent upon us to finish the delivery, though there is no occasion for hurry ; and violence would be equally unnecessary and improper.

In the first place then, observing the direction of the feet, and knowing if the toes of the child be towards the *abdomen* of the mother, that this position would be unfavourable when the head was to be extracted, we must gradually turn the body of the child

during its extraction, in such a manner that the back of the child may be placed towards the *abdomen* of the mother, before the head is brought into the *pelvis*. It was before observed, that this turn of the child has been described with useless intricacy, and in a manner which can only serve to confuse the practitioner, who will reap all the advantages to be gained by any kind of turn, if he remember in general, that if the back of the child be toward the *abdomen* of the mother, the head will pass more commodiously than in any other direction. The opinion of the necessity of changing the position of the child at this time has been so strongly inculcated, and so eagerly pursued, that I have more than once seen it attempted with such a degree of force, as must have destroyed, or done very great injury to the child, had it been living; the operation being evidently more dangerous, than the evil it was intended to remove. Nor is this the only case in midwifery, in which the means, recommended for the purpuse of preserving the life of the child, are utterly inconsistent with its safety.

When the heels or back part of the child are turned toward the *pubes*, the feet, wrapped up in a cloth, are to be held firmly about the ancles, and when the pains come on, we must extract in a straight direction, or from side to side, or from the *pubes* to the *sacrum*; taking care that we do not by violence, or by too large a sweep, run the risk of hurting the child, or of lacerating the external parts of the mother. In the interval, between the pains, we must rest, and in this manner proceed, assisting the efforts of the mother, only at the time of her making them, and not rendering the delivery wholly artificial. When the breech of the child is arrived at, and begins to distend the external parts, we must proceed yet more slowly, giving time for their full dilatation, supporting and favouring any part which may be immoderately distended, and guiding the child in a proper direction, by turning it towards the *pubes* as it advances. The breech being expelled, the *funis* soon appears, and a small portion of it must be drawn forth to prevent its being upon the stretch. Then wrapping a cloth over the body of the child, which must be held as close to the mother as it conveniently can, and calling for her voluntary exertions, the child is to be speedily extracted in a manner already described *.

When both the arms are brought down, if that be necessary, it will be of service to suffer the body of the child to rest upon the left arm of the operator, his hand being spread under the breast, with a finger turned back over each shoulder. His right hand is to

* When the life of a child was endangered by continuing in this situation, Dr. Pugh advised the introduction of a properly curved air pipe into its mouth, but this I have never used.

be laid in a similar manner over the shoulders of the child, and these positions will give him great advantage in the extraction. But if the head should not descend, the operator with his thumbs conducted into the *vagina* may press the head from the *pubes* to the *sacrum;* or pass the fore-finger of his left hand into the mouth of the child, and extract as was before advised, being still careful of the external parts, when the head is passing through them.

Proper attention must be immediately paid to the child, and of the management of the *placenta* we are to speak hereafter.

SECTION VI.

In the second distinction it was supposed, that together with the presentation of a superior extremity, there was at the time of the rupture of the membranes, very little dilatation of the *os uteri*, and some degree of contraction of the *uterus* round the body of the child.

The directions generally given on these occasions are, that as soon as the presentation is ascertained, the operator should sit down and dilate the *os uteri* sufficiently to allow the introduction of the hand; which should then be passed with care and expedition into the *uterus* in order to turn the child. But some practitioners have judged it more proper to wait till the *os uteri* is dilated naturally, if that be done in any reasonable time, before any attempt is made to introduce the hand and turn the child. As in every case of the presentation of the superior extremities, there is a necessity of turning the child, the sooner the hand can be passed for that purpose, the more safe and easy in general will the operation be, as there must of course be less contraction of the *uterus* round the body of the child. But as there is some hazard of doing mischief by every artificial dilatation of the *os uteri*, I believe it is better to wait for the natural dilatation; at least every attempt to dilate by art should be made with great caution, and only during the interval between the pains, unless they be very feeble. Yet we ought not to wait in these cases, till there is a complete and absolute dilatation of the *os uteri;* but always to consider it as sufficiently dilated, when we presume it will readily admit the hand, and then the child should be turned without delay.

If the external parts be rigid and contracted, they must be dilated, but without violence, in the manner before directed; and the hand, being passed into the *vagina*, must then be conducted into the *uterus*, on that side of the *pelvis* where it can be done with most convenience; because that will lead most readily to the feet of the child. It is generally better to conduct the hand between the body of the

child and the *pubes*, than between it and the *sacrum*, because in these presentations the feet lie most commonly towards the *abdomen* of the mother. In every case which comes under the present distinction, there is some degree of contraction of the *uterus* round the body of the child, though trifling when compared with what occurs in the cases to be described under the next section. If therefore we understand and are able to perform the operation of turning the child, in the easiest and most difficult cases, we shall certainly be competent to the management of all the intermediate ones; there being in these no new rules, which we are required to follow, but merely an accommodation of rules already known to the exigencies of any individual case.

SECTION VII.

Under the third distinction, we are to presume, that, together with the presentation of a superior extremity, there is the worst possible situation of the child in all other respects; that is, together with an exceedingly close contraction of the *uterus* round the body of the child, the membranes having been long broken, and the waters discharged; to which may perhaps be added very strong pains.

In this case, supposing the difficulty of turning the child as great as it possibly can be, it will follow, that there is no occasion for hurry or violence, as we can lose nothing by taking time to deliberate and to act. Before we proceed to the operation of turning, it will be therefore proper to repeat our examination, when we have considered the case, in order to prevent any error in the first decision we have made upon the subject, and to ascertain the precise position of the child; and to reflect also, whether by some previous management it may not be in our power to lessen the impediments to the operation, and the particular as well as general state of the patient. In either of these views there are only two objects which can engage our attention; the wrong position of the child, and the strong contraction of the *uterus* round its body. The first of these, in the account given of the cases which came under the first distinction, was stated to be of little consequence; that is, to be manageable without difficulty, and to be frequently void of danger either to the mother or child. The principal inconvenience will then be produced by the contraction of the *uterus*, which it must be our duty to remove or lessen, before we attempt to perform the operation of turning the child.

The contraction of the *uterus*, under these circumstances, may be

of three kinds. There is, first, the continued or permanent contraction, in consequence of the waters having been long drained off, and which to a certain degree takes place in all cases, when there has been but little or no pain. This may in fact be considered as the exercise of that inherent disposition in the *uterus*, by which its efforts are made to recover its primitive size and situation, when any cause of distension is removed. There is, secondly, the occasional or extraordinary contraction of the *uterus*, by which whatever is contained in its cavity is ultimately to be expelled, which returns at intervals, and is so constantly attended with pain, that the terms pain and action are in such cases used synonymously. Thirdly, there is an irregular action of the whole or some part of the *uterus*, which is sometimes unfavourable to the expulsion of its contents, which produces effects according to its peculiarity, and this is called spasmodic; a general term, not wrested from its common meaning, but appropriated to every kind of morbid, irregular, or excessive action. Now the difficulty and the danger, which attend the operation of turning a child, proceed either from the extraordinary or irregular action of the *uterus;* and in order to avoid those, as much as possible, it will be proper to establish it as a general rule, never to attempt the operation of turning the child, while the patient has very strong pains.

The consternation of friends, and the sufferings of the patient, must necessarily raise a suspicion in her mind, that there is something unusual and dreadful in her case, and the solicitude thence arising will often increase the unavoidable inconveniences of her situation. The prudent and steady conduct of the practitioner will, on such occasions, very much contribute to remove the fears of her attendants, and to give a composure to the mind of the patient, which will be productive of the most happy effects. If she should be much heated, it will be also proper to take away some blood, and to direct an emollient clyster, for the purpose of emptying the *rectum*, and of softening and soothing the parts, which are in a very irritable state. Even the time employed in these matters will give an opportunity for quieting the violent agitation of the patient's mind.

We are not at present in the possession or knowledge of any specific medicine, upon which we can depend, for suppressing or moderating the action of the *uterus*, when exerted unfavourably, or at any improper time. Almost the only medicine we ever think of having recourse to on such occasions, is *opium;* and this, given in two or three times the usual quantity, will in many cases of this kind answer our expectations; though sometimes, when given in a common dose, it has a contrary effect, and excites the *uterus* to

stronger action; it may also be given as a clyster; or a pill composed of three grains of purified *opium* may be introduced and suffered to remain in the *rectum*. If the opiate should fail to quiet the pains, and to compose the patient, we must wait till the *uterus* is wearied, or ceases to act of its own accord, or acts with less violence. But if the opiate should produce the effect for which it was given, it will be in about twenty minutes after its exhibition, when we are to consider the calm or disposition to sleep, as affording us the most favourable opportunity for turning the child.

Throughout the operation, it is necessary to bear in our minds the distinctions made between the different kinds of action of the *uterus*. The hand must be introduced slowly, but with sufficient force to overcome the continued or permanent contraction of the *uterus*, or the operation could never be performed; and the same may be observed of the irregular or spasmodic action, but with perseverance rather than violence. But if we* were to attempt to overcome the extraordinary action, either the hand would be cramped, and we should be unable to finish the operation; or if we had power sufficient to overcome the contraction of the *uterus*, there would be the greatest hazard of its being ruptured: the deduction is therefore plain, that we ought not to attempt to introduce the hand, while the *uterus* is in extraordinary action.

By the examination of the child's hand which presents, we shall be able to distinguish whether it be the right or the left; and, which is of more consequence, by its position to judge, to which part of the *uterus* the feet of the child are directed. For unless the arm or body be unnaturally twisted, the palm of the hand is always turned towards the inferior extremities or fore parts of the child.

It is in no case necessary, or in anywise serviceable, to separate the arm of the child, previous to the introduction of the hand of the operator. In some cases to which I have been called, in which the arm had been separated at the shoulder, I have found great inconvenience, there being much difficulty in distinguishing between the lacerated skin of the child, and the parts appertaining to the mother. The presenting arm is never an impediment of any consequence in the operation, and therefore, in my opinion, ought not to be regarded, or on any account removed.

It sometimes happens, that the introduction of our hand is absolutely prevented by the shoulder of the child, jammed at the superior

* Qui enim urgentibus doloribus, manus intus dare, vel fœtum dirigere, vel aliquod membrum replicare audent, iis evenire potest, ut uterus rumpatur, mulierque subita morte rapiatur, cujus partus post obitum in ventre reperiri solet. *Platneri Institutiones Chirurgicæ*, pag. 1040.

aperture of the *pelvis*. It will then be necessary to pass the fore-finger and thumb of the right hand in the form of a crutch, into the armpit of the child, pushing the shoulder towards the head and towards the *fundus* of the *uterus*; at the same time firmly and steadily maintaining the advantage we gain as we proceed, till we have raised the body sufficiently, to allow the admission of the hand into the *uterus*, and to bring the feet somewhat nearer to us.

When we begin to make our attempts to introduce the hand into the *uterus*, though the patient might be in a composed state, the irritation thereby occasioned will disturb her, and the extraordinary action of the *uterus* be brought on, which will be indicated by the consequent pain. During the continuance of this action and pain, we must not proceed in our attempt, but wait till they cease, laying our hand flattened in such a manner, that no injury may be done by our efforts, or by the action of the *uterus* itself, upon any inequalities of the knuckles. When the action of the *uterus* ceases, our attempts to introduce our hand must be renewed, and steadily continued till the action returns, when we must again rest. Thus proceeding, that is, alternately resting and acting, we shall, by repeated, and sometimes long continued efforts, at length safely accomplish the purpose of conducting the hand so far into the *uterus*, that we shall be able to lay hold of the feet of the child. In some cases our attempts to introduce the hand are very discouraging, as we are sensible of little or no progress; but the hurry or violence are never to be increased on account of the greatness of the difficulty. We must persevere, and be persuaded, that prudent attempts will not be fruitless, though they may fail to answer our expectations immediately; as each apparently unprofitable attempt contributes at least to the efficacy of a succeeding one.

The strongest contraction of the *uterus* is sometimes at the *cervix*, and when this is passed, ample room is afforded for the discovery of the feet towards the *fundus*, without much trouble. But the contraction is very irregular, being in some cases in the centre, or uniform throughout; whilst in others, the *uterus* is drawn into lines, as if a cord had been passed round it externally with great strength, so as even to be painful to the hand. In some cases the *uterus* is also contracted into a globular, and in others into a longitudinal form. These different contractions render some difference in our conduct necessary, but if we have a true general idea of the various kinds of contractions, as before described, the little increase or peculiarity of difficulty will be readily managed. In a globular contraction of the *uterus*, when our hand has passed beyond the *cervix*, there will be no trouble in coming at the feet, and the child will usually be

turned very easily; but in the longitudinal contraction, the feet being at a great distance, there is more difficulty, though it is not always necessary to go up to the *fundus;* for when we come to the knees, these being cautiously bent, the legs and feet will be brought down together.

In whatever way we lay hold of the feet, we must examine them before we begin to extract; for though one arm be in the *vagina,* the other may be high up in the *uterus,* and mistaken for a leg. We must also remember that it is necessary to extract slowly; for if we should attempt to hurry the operation, the feet may slip out of our hand, and immediately recede to the *fundus* of the *uterus,* or to the part from which they were brought, and lay us under the painful necessity of returning with the hand, to bring them down again. When we have laid hold of the feet, if we proceed slowly, the child commonly turns without much difficulty. But when the feet are brought into the *pelvis,* if the turning of the child be not perfected, or cannot without much difficulty, it will be of great use to fix the noose of a garter or riband round one or both ancles, which may be conveniently and readily done by forming it upon our wrist, and then sliding it with the fingers of the left hand, over the right hand containing the foot or feet, without quitting our hold of them; and dexterity in forming and fixing this noose may be of great use in the subsequent parts of the operation. When the noose is fixed and drawn tight round one or both the ancles, we may pull by both the ends of it with either of our hands, at the same time grasping the feet and extracting with the other hand, till they are brought slowly through the external orifice. Should there be much difficulty in the operation, after the feet are brought low into the *vagina,* we may conclude, that it is occasioned by the body of the child being fixed across the superior aperture of the *pelvis.* To remove this impediment, it may be necessary to take the two ends of the noose into our right hand, and passing the finger and thumb of the left in the form of a crutch into the armpit of the child, as before described, we must extract with our right hand, and at the same time raise the body of the child with the left, till the child is disengaged, and there is sufficient room for the entrance of the hips into the *pelvis.* There will then be no further difficulty, and we must deliver as was directed under the First Order of Preternatural Labours.

SECTION VIII.

In presentations of the superior extremities, when the waters have been long discharged, and the shoulder of the child is jammed at the

superior aperture of the *pelvis*, it was said to be expedient and necessary to pass the finger and thumb in the form of a crutch into the armpit of the child, in order to raise the body towards its head, and towards the *fundus* of the *uterus*, till it was sufficiently moved out of our way to allow of the introduction of the hand into the *uterus*. But in some cases, when we are first called, the shoulder is so far advanced into the *pelvis*, and the action of the *uterus* is at the same time so strong, that it is impossible to raise or move the child, which is so forcibly impelled by the pains, as to overcome all the power we are able to exert. This impossibility of turning the child had, to the apprehension of writers and practitioners, left the woman without any hope of relief. But in a case of this kind, which occurred to me about twenty years ago, I was so fortunate as to observe, though it was not in my power to pass my hand into the *uterus* to turn the child, that by the mere effect of the action of the *uterus*, an evolution took place, and the child was expelled by the breech.

Of the first testimonies that prove the possibility of this evolution which I have called spontaneous*, the public has long been in possession. The cases in which this has happened are now become so numerous, and supported not only by many examples in my own practice, but established by such unexceptionable authority in the practice of others, that there is no longer any room to doubt of the possibility of its happening, more than there is of the most acknowledged fact in midwifery. As to the manner in which this evolution takes place, I presume, that after the long continued action of the *uterus*, the body of the child is brought into such a compacted state, as to receive the full force of every returning action. The body in in its doubled state, being too large to pass through the *pelvis*, and the *uterus* pressing upon its inferior extremities, which are the only parts capable of being moved, they are forced gradually lower, making room as they are pressed down for the reception of some other part into the cavity of the *uterus* which they have evacuated, till the body turning as it were upon its own axis, the breech of the child is expelled, as in an original presentation of that part. Nor has there been any thing uncommon in the size or form of the *pelvis* of these

* See the London Medical Journal, Vol. V. for 1785; and the Journal de Médecine de Paris, pour Avril et Septembre, 1785, and many cases published since that time. I used the words *spontaneous*, though to some it appeared objectionable, but I could not fix upon one better suited to explain my meaning. I only intended to say, that the series of effects terminating in an evolution of the child were wholly independent of the practitioner, not that this was produced from any impulse or exertion in the body moved. In the sense in which I use the term *spontaneous*, it seems to be proper according to its common use in *medical*, though perhaps not strictly in *mechanical* language.

women to whom this case has happened, nor have the children been small, or softened by putrefaction, because one or more children have been in this way born alive*. I believe, on the contrary, that a child of the common size, living, or but lately dead, in such a state as to possess some degree of resilition, is the best calculated for expulsion in this manner. Premature or very small children have often been expelled in a doubled state, whatever might be the original presentation, when the *pelvis* was well formed, or rather more capacious than ordinary; but this is a different case to that we are now describing.

Yet the knowledge of this fact, however unquestionably proved, does not free us from the necessity and propriety of turning children presenting with the superior extremities, in every case in which that operation can be performed with safety to the mother, or give us a better chance of saving the child. Under such circumstances the instructions given by former writers, and the observations we have before made, must still be considered as proper to guide our conduct. But when we are called to a patient with a preternatural labour, in which there is little or no reason to hope for the preservation of the child, or in which we are assured of its death, or when the operation of turning cannot be performed without violence and some danger to the mother; then the knowledge of the probability of a spontaneous evolution will set our minds at ease; and disengage us from the consideration of making any hasty attempts to perform a hazardous operation, from which no possible good can be derived, except that of extracting a dead child, and which at all events might be effected by a method far more safe to the mother.

The time required for the spontaneous evolution of the child, and the facility with which it may be made, will depend upon a variety of circumstances, but chiefly upon the size of the child, the aptitude of its position, the dimensions of the *pelvis*, and the power exerted by the *uterus*. If the child be very large, or much below the common size, the slower I believe will be the evolution, nor can it be made at all without a strong action of the *uterus*. It is possible, therefore, when we have conducted ourselves on the ground of expectation that the evolution would be made, that the pains may fall off, or be unequal to the effect, and we may be disappointed. It might then be apprehended, that the difficulty of extracting the child would be infinitely increased. But though the evolution was not perfected, I have not found this consequence; for the child, though not expelled, has been

* Dr. Garthshore, consulting physician of the British Lying in Hospital, informed me of a case of this kind, in which the child was born living; and Mr. Martineau, an eminent surgeon at Norwich, informed me of another.

brought into such a state, that afterwards I could often pass my hand with ease, and bring down its feet, though in an attempt to do this in the beginning of the labour I had been foiled. In one case, in which the evolution did not take place, I could not bring down the inferior extremities, but I had no difficulty in fixing an instrument upon the curved part of the body of the child, or in bringing it away with entire safety to the mother. It was before presumed, that the child was dead; and the sole object was, to free the mother from her danger, and with her safety, no appearances of the child, however disagreeable, are to be put in competition. In cases of this kind another mode of practice has been recommended, that of separating the head from the body, with a blunt hook, or other convenient safe instrument; but as I have never practised this method, I give a description of it in a note*.

In the course of my conversation and correspondence with medical friends, I have been informed of several instances of women who have died undelivered, their children presenting with the arm; because the practitioners were not able, by art or by force, to pass the hand into the *uterus*, to turn the child, and deliver by the feet, and it was not spontaneously turned. These cases have been mentioned to me as objections to the idea of spontaneous evolution, but, I apprehend, without reason. The evolution is supposed to be the consequence of the strong and long-continued action of the *uterus*, uninterrupted. Now the first part of the operation of turning a child by art, formerly consisted almost wholly in resisting this evolution; and if the attempts were persevered in, would be an absolute bar to its taking place. To give a full explanation of my opinion, I should say, that a woman in a state of nature, with her child presenting in any manner, would not die undelivered, if no assistance were afforded to her. But if an equally healthful woman lived in a country somewhat civilized, in which the art of midwifery was in an imperfect state, much would be thought requisite to be done, and violence supplying the place of knowledge and skill, she might perish from the ungainly and rude exercise of art, rather than from the necessity of her case; for by the attempts of art the natural efforts would, in these cases, be defeated. In the most per-

* Hoorneus sæpe laudatus adhuc peculiarem novum, eumq; breviorem modum, fœtum mortuum cum brachio arctissimi in vagina uteri hærente, invenit atque descripsit: qui in eo consistit, ut quando ad pedes pervenire nequit, collum, utpote quod in fœtibus valde adhuc tenerum est, vel scalpello a reliquo trunco resecet, vel unco idoneo quam cautissimè auferat: hoc enim facto vel sponte mox prorumpit ex utero fœtus, vel tamen, dum brachium propendens attrahitur, quod medico tunc loco habenæ inservit, quam facillimè excutitur: caput vero deinde seorsim mox vel manu, vel aliis propositis artificiis, si manus parum esset, ejiciendum.—*Heister*, cap. cliii. sect. ix.

fect state of society, all just and true knowledge in this art being founded upon observation of the proceedings of nature, and all sound practice upon the imitation, the well-judging practitioner would recur to the consideration of the primitive state; that is, he would do nothing, unless it was absolutely necessary for him to act, and then he would act in imitation of nature. From a retrospective view of the practice of midwifery in all former times, and in all countries, every intelligent person sees, and is ready to acknowledge, that there has been too officious an interposition, and too great a readiness to give assistance in various ways, for the relief of many difficulties attending parturition; which are not only fully proved to require no assistance, but which are also now allowed to be surmounted in a safer and more effectual way by the resources of the constitution. This should certainly put us upon our guard against hasty determinations, upon what is possible or otherwise, in any case; or upon the use of any means, which may be destructive to the child, or injurious to the mother *.

Now I am speaking of the spontaneous evolution in presentations of the arm, it will not be amiss to observe, that several other changes of the position of the child take place, at the time of birth, particularly the following, of which I have seen more than one instance. Having been called to women in the beginning of labour, and finding by an examination, that the head of the child presented, I have left them for several hours, till the first changes were naturally made. When I have examined them on my return, I have found the arm of the child presenting, the head being departed out of my reach. I do not know, that any practical advantage is to be obtained by the knowledge of these cases; but it is remarkable, that the accident has always happened to women who were deformed. Such cases however should be recorded, and it is possible, that, some time or other, the

* In America and Africa the native women, whom we may presume to be healthy, very seldom die in labour, or in consequence of it. Properly speaking, they have no midwives. The same may be observed of the women in Lapland, and other northern countries. Yet the African women, when transplanted to the West India colonies, not unfrequently die. They are attended by ignorant midwives. In the East Indies, the midwives of the country are ignorant and daring, interfering perpetually, and often in the most outrageous manner, with the women in labour, many of whom die, or suffer grievous complaints for the remainder of their lives. In England the practice of midwifery is extremely reasonable, and it is a rare thing for women to die in labour, or in consequence of it, unless when there is some dangerous epidemic disease. In France, the practice of midwifery is more artificial, and there is, both in that and other countries on the Continent, a very reprehensible fondness for instruments and operations; we may therefore conclude, that the abuse of art produces more and greater evils, than are occasioned by all the imperfections of nature.

knowledge of them may be of use. It may lead to an explanation of one cause at least of preternatural labours.

SECTION IX.

To the preternatural presentation of the child, and the circumstances before mentioned, there may be added a distortion of the *pelvis*. As there is no occasion to repeat the management, which the other circumstances may require, we may confine our attention to the peculiar difficulties produced by the distortion. Some disadvantage may arise from this cause in the extraction of any part of the child, but it will be trifling, if compared with that which attends the extraction of the head; we may therefore be allowed to suppose, that the whole of the child is born, except the head, which cannot be brought away in the usual manner, or by the means before advised. The force with which we endeavour to bring down the head of the child, must then be gradually increased, till we are convinced, that a greater degree is inconsistent with the safety of the child, or induces the hazard of separating the body from the head.

The wish to extract the head of the child speedily, is founded on the apprehension, justly entertained, that in this position the life of the child is in the most imminent danger, from the compression of the *funis*. A vigorous pulsation in the *funis* proves, even at this time, that the child is not in any danger, and of course gives us an opportunity of acting with deliberation. But should the pulsation, which was at first lively and strong, gradually decline, and then altogether cease, the head must if possible be speedily extracted, or the child will be inevitably lost, there being no other way of removing the compression, or of preserving its life.

The extraction of the head may then be attempted with two views, either to save the life of the child, or merely to free the mother from any danger, which might arise from its detention. When the first is our aim, the force with which we extract must be moderate, and consistent with the safety of the child; it must be exerted in a proper direction with regard to the *pelvis*, as was before observed; it must be uniform and commanded; and if there be any pains, it must accompany them. Should the head descend in ever so small a degree, we must not act precipitately, and increase the force in order to finish the delivery suddenly; but we must proceed with circumspection, or we shall add to the danger which the child is already in, and run the risk of doing injury to the mother; though when the head begins to advance, there is seldom much remaining difficulty, the cause usually existing at one particular part of the *pelvis*. It has

been said, that children have been sometimes born alive, when the strongest efforts, and those continued for many hours, have been made to extract the head detained in this position. But I have not been so fortunate as to meet with any such instances, a short space of time having generally been sufficient to frustrate my hopes, and convince me that the child was dead. Though when the head has been detained a considerable time, a few cases have terminated more favourably than I could have expected, and I have been agreeably surprised with the discovery of some faint signs of life, which, by the assiduous and careful use of the common means, have been improved, and the life of the child at length perfectly recovered, as was observed in Sect. I. Chap. XI.

But when we have abandoned all hope of preserving the child, and have no other view but simply that of extracting the head, we must be particularly cautious, that through our conduct the mother does not suffer either any immediate injury, or that any foundation of mischief be laid, which may show itself at some future time. When we have in vain exerted all the force which we think reasonable and proper, and which, in some cases, must be more than any circumstance would be thought to require, it will be expedient to rest, for the purpose of gaining all the advantage to be obtained by the compression of the head. On this account, the mother will actually suffer no more inconvenience, than would have been produced if the head had originally presented, and been locked in the *pelvis*. After waiting some time, we must renew our attempts to extract, and thus proceed, alternately resting, and acting with efficacy and resolution; and if the hold we may have of the body or extremities of the child does not suit, a silk handkerchief or other band may be passed round its neck, and this will be found a very handy and convenient instrument.

The great impediment to the extraction of the head of the child exists in the disproportion between it and the *pelvis*. Another of no little consequence may be produced by the dislocation of the neck, or the laceration of the skin, either of which would lead to the separation of the body from the head; an accident one would wish to avoid, as it would lay us under the necessity of using some awkward instrument, instead of the body of the child. Either of these inconveniences is readily occasioned by the impatience or despair of the practitioner, who is apt to twist the neck while he is extracting, or to pull with a sudden motion, instead of the uniform one before recommended.

In these cases of extreme difficulty, it will always be of service, and often succeed when other means fail, if we can conduct our thumbs

between the head of the child and the *pubes*, and press the head forcibly towards the hollow of the *sacrum*. It would also be of service if we were able to pass the finger into the mouth of the child, to change the position of the head; but in the worst cases this is impracticable, the head being obstructed so high, that the mouth of the child is beyond our reach. When these means are not in our power, or fail to answer our purpose, it will be necessary to leave the head a yet longer time, that it may undergo a greater degree of compression and accommodation to the *pelvis*, and then to renew our attempts to extract it.

It must be a very great disproportion betwen the head of the child and the *pelvis*, which is able to withstand this method of proceeding, if we persevere in it with prudence and steadiness; because the integuments of the head will burst, or the bones be bent inwards in an extraordinary degree, or even broken. Sometimes however this method of proceeding fails; or a hemorrhage comes on; or the situation of the mother from some other cause will not allow us to take so much time, or proceed so slowly, as is generally proposed, and we are compelled to the use of such means, as promise a more speedy completion of the delivery. Different kinds of *forceps* have been advised for this purpose, but no instrument of the sort ought to be used on such occasions, because the child is dead; and it would be impossible but that the mother must by their use undergo the chance of mischief, without any equivalent advantage. It then only remains that we should lessen the head of the child, and the operation may be as easily performed in this, as in the natural presentation of the head. In the description of this operation it was said, that it clearly divided itself into three parts: 1, perforation; 2, evacuation of the brain; and 3, extraction of the head. It will not be possible to make the perforation in the usual place, but we must take that which offers itself most conveniently. We may recollect that there is a small fontanel behind each ear in the head of a *fœtus*, which is a convenient place for the purpose; or it may be done at the basis of the *cranium* through the mouth; or, in short, in any part where we can fix and command the use of the perforator, except perhaps the occipital bone, where we may cut the ligaments which join the neck to the head, and when we intend to extract, we should leave the head behind. When the perforation is made according to the rules before mentioned, and the brain evacuated, the head may be readily extracted, either by pulling by the body of the child, or by inserting a crotchet in the opening made by the operator as in other cases. But it will be scarcely believed, how seldom this operation is necessary under these circumstances, if we have not been in a hurry, but

have acted with prudence. Nor have I ever known any ill consequences follow the compression which the soft parts undergo, between the head of the child, and the sides of the *pelvis*, if proper attention were afterwards paid to the state of the bladder and *rectum*.

SECTION X.

Though with cautious management the head of the child is seldom separated from the neck, and though with indiscretion it could not often be produced, yet the possibility of the accident, when there is great disproportion between the dimensions of the head and those of the *pelvis*, especially in the case of a child some time dead, makes it necessary for us to be prepared for managing the case if it should occur. It has moreover been surmised, that under peculiar circumstances it might be eligible to separate the head from the body, with the expectation of afterwards extracting it with more ease; but this, however just in theory, will not, I believe, give us any advantage in practice, especially in cases of distortion of the *pelvis*; at least so the accident seems to have proved, when it has unavoidably happened. Should there be a tendency to a separation of the neck, the hold it yet affords will serve to assist us in the perforation more effectually than any artificial contrivance, and in the extraction also of the head.

When the head of the child has been left behind, the case has been considered as frightful, and, which is true, exceedingly troublesome to manage, because the *pelvis* might be expected to be very small in proportion to the size of the head, except in the case of a putrid child; and because it could not without great difficulty be fixed in such a manner, as to be conveniently subjected to the action of the instruments, which it may be necessary to use. Of these there has certainly been contrived a sufficient number for the purpose of almost every case. It is nevertheless evident to every practical man, that the greater part of them were the conceits of ingenious men in their closets, and either could not be applied, or, if applied, could not be of any service in a case of real perplexity.

The chief obstacle to the extraction of the head must arise from the disproportion between it and the cavity of the *pelvis*, or it would be excluded by the pains, or easily brought away: and this disproportion can only be removed by lessening the bulk of the head. If this were fixed firmly in the *pelvis*, there would be no more difficulty in making the perforation, or in any part of the operation, than in a case in which the head originally presented; but should the head be disengaged, and lying loose at the superior aperture of the *pelvis*, it would not make due resistance to the point of the perforator, which

would be apt to slide, we should be foiled in our attempt, and incur the hazard of injuring the mother. To avoid these inconveniences and mischief, external pressure must be made either by the hands of an assistant, or with a napkin passed round the *abdomen* with sufficient firmness to keep the head steadily fixed; and this being done, the operation of perforating and lessening the bulk of the head may be performed without any chance of failure or mischief. In the very few cases of this kind to which I have been called, the difficulty has not, except in one instance, by any means been equal to what I expected from the representation of different writers. It is a case to be prevented or avoided, if possible; but when it does occur, there is neither that danger in the case, nor that difficulty in the operation, which ought to terrify a practitioner who has common resolution, and who gives himself time for a little reflection. We may however believe that in some cases every attempt to extract the head has been in vain, and the patients have been resigned to their fate; of which there is one instance in Mauriceau, another in Chapman, and some in other writers. Yet even in these cases, though the patients have most frequently died, after a certain time the action of the *uterus* has come on, and at length expelled the head; in one case, if I am not mistaken, so late as the twentieth day after the accident had happened. The degree of distension of the *uterus*, occasioned by the mere head of a child, would not indeed be so great as to make us very apprehensive of fatal consequences on that account; and if the *uterus* be in a healthy state, a substance of that bulk and kind might be managed either by common putrefaction reducing its size and dividing it into portions, or it might by repeated efforts be expelled, especially if the *pelvis* were of any reasonable size. But should the head of the child be retained, it is probable, that the *placenta* would also remain, and the two circumstances combined would add to the danger produced by each; so that we must revert to the former conclusions, that the head ought not to be separated from the body if it can be avoided; and if separated, ought not to be left in the *uterus*, if it can possibly be extracted by any means not absolutely injurious to the patient.

CHAPTER XII.

CLASS THIRD.

ANOMALOUS, OR COMPLEX LABOURS.

FOUR ORDERS.

ORDER FIRST.—LABOURS ATTENDED WITH HEMORRHAGE.

ORDER SECOND.—LABOURS ATTENDED WITH CONVULSIONS.

ORDER THIRD.—LABOURS WITH TWO OR MORE CHILDREN.

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

SECTION I.

ORDER FIRST.—LABOURS ATTENDED WITH HEMORRHAGE.

It is necessary to premise, that no practical advantage can be derived from the arrangement of these labours into one class. This is merely of use for the convenience of doctrine, and to prevent the multiplication of classes; for there is not the least resemblance between the different orders of anomalous or complex labours, which do not therefore admit of any general definition or character.

Uterine hemorrhages, from different causes, very frequently occur in practice, and always require great attention; but those, which we are about to consider in this place, are such as depend upon the states of pregnancy and parturition. These have ever been esteemed as constituting a very important part of the practice of midwifery, on account of the immediate and great danger with which they are often attended; and because the safety of the patient, in these cases, more frequently depends upon the judgement and skill of those under whose care she is placed, than in almost any other circumstances. The subject therefore requires to be treated with the utmost circumspection; and though much industry hath been employed upon it, there is reason

to believe, that the knowledge of many things, of which we are at present ignorant, is wanting for the perfection of the rules of practice. The knowledge, however, which we do possess, it is incumbent upon us to place in the most advantageous point of view, that it may be converted to use; that we may be enabled to do what reason and experience dictate to be necessary and proper; that we may determine upon the time most suitable for acting; and be warned, moreover, against relying on such things as are useless, or doing what is needless or hurtful.

The word hæmorrhage does not apply with propriety to all discharges of blood from the *uterus*, some of these being natural or salutary. The menstruous discharge is natural, but if it should be excessive in quantity, too frequent or irregular in its returns, or prolonged beyond its usual time, it might be called hæmorrhage. Every discharge of blood which occurs during pregnancy, however small, may be called hæmorrhage, because it is not natural at that time, though the greater discharge, the more decidedly proper would be this term; and the case is similar with the small discharges, which pretty generally attend the commencement, or which occur in the course, of labours. The same observation may be made of those discharges, which happen between the birth of the child, and the expulsion of the *placenta;* these being often profuse, and not very unfrequently dangerous. But the discharges which happen after the expulsion of the *placenta* cannot be called hæmorrhages, unless they are excessive in their degree; because some loss of blood is at that time necessary and natural. We may then say, that all effusions of blood, which are inordinate in quantity, or irregular in the time of their appearance, may be denominated hæmorrhages; and these, which are the objects of our present consideration, may be divided into four kinds.

1. Those which occur in early pregnancy, or in abortions.

2. Those which occur in advanced pregnancy, or towards the full period of uterogestation.

3. Those which happen between the birth of the child and the expulsion of the *placenta.*

4. Those which follow the expulsion of the *placenta.*

Under one or other of these distinctions will be included every kind of hæmorrhage, which depends upon pregnancy or parturition; and this arrangement will not only convey a clear idea of the subject, but be of use also in practice. Yet it is necessary to observe, that there may be a combination of the three last kinds, or any two of them, in the same patient; but whether they be separate or combined, the modes of treatment may be accommodated to each case

with equal propriety and advantage, as far as it may be reducible to the general denomination.

Greater accuracy is nevertheless required in the description of what is meant by early or advanced pregnancy, or we may entertain different notions of, and use different terms for, the same thing. Perhaps no precise line can be drawn for this purpose, as contingent circumstances may cause a variation in different women; yet the best, which the nature of the subject admits, is probably to be taken from time. We will then say that all expulsions of the *fœtus*, before the termination of the sixth month of pregnancy, may be called abortions *; but all expulsions in the last three months shall be considered as labours, premature or regular. There is a practical reason for this distinction. Before the termination of the sixth month, these cases, generally speaking, neither require nor allow of manual assistance; but in the last three months, they admit of manual assistance, if it be required, though not with equal ease; for the longer the time which is wanting to complete the period of uterogestation, the greater the difficulties will be which attend any operation that it might be thought necessary to perform. It is also to be observed, that expulsions of the *fœtus* sometimes happen so critically, as to render it an extremely difficult thing to decide, to which of the distinctions they ought to be referred; and in these, if we knew any method of treatment between that enjoined for abortions, and at the full period, such for instance as puncturing or breaking the membranes containing the waters of the *ovum*, that would be most eligible. But on this, as well as many other occasions, there is room to observe, that when every doctrinal distinction has been made, no absolute rule can be formed for the conduct of the practitioner, in every individual case which may occur, or in every possible situation in which a patient may be placed; but he, knowing in general what ought to be done, and in particular what ought to be avoided, must ever be at liberty to exercise his own judgement in the application of every rule.

SECTION II.

ON THE FREQUENCY OF ABORTION IN WOMEN.

It would be curious, and might be of some utility in practice, to ascertain whether women, on account of their menstruation, or their

* Fœtûs præmatura ejectio.—*Linnæus.*

Sanguinis ex utero gravido profluvium, cum fœtu immaturo vel mola subsequenti. —*Vogel.*

Partus morbosus et symptomaticus. Fœtus ejicitur potius quam paritur.—*Haro.*

erect position, or the structure of the *ovum*, or the process by which this is connected to the *uterus*, or from any other cause, are naturally more liable to abortions than animals; or whether frequent abortions in women may not be considered as an attributive, either of habits superinduced by modes of education or of living, or of accidents which might be avoided. There is great room to lament their frequent occurrence in the more civilized, perhaps luxurious scenes of life, and in those constitutions that are extremely delicate, and which are indeed hardly found equal to the continuance of the human race. Yet in those situations which might be presumed to be most unfavourable to the sex, among the lowest ranks of life, abortions, except from violent external accidents, rarely happen; so that there is good reason for believing that women in a state of nature would not be more liable to abortion than other creatures. According to the opinions nevertheless of many systematic writers on this subject, every action in common life has been assigned as the cause of abortion: yet this is rarely the case; but in general that, about which the patient was employed, when the first symptom appeared, is fixed upon as the particular cause, though probably she was before in such a state that abortion was inevitable. If this opinion were just, the event ought rather to be imputed to some previous indisposition, or to the excess of some actions, forgotten perhaps when the causes of abortion actually took place, than to the exercise of the body on common occasions. Greater practical benefit will be obtained, if we seek for the causes of abortion in the general infirmity of the constitution, or in some particular state of the *uterus*, or its appendages, or in the want of necessary attention to this situation, than by imputing it to these accidents. As far as the constitution may be altered, by the reduction of the general strength, by excessive irritability, by plethora or febrile disposition, so as to be unable to perform its functions, or to perform them with ease, propriety, and regularity, we may esteem every cause capable of producing such a state, as a primary cause of abortion. It does not, however, often happen, that simple weakness is a cause of abortion; for women who prove with child in very weak and reduced states of the body, particularly in consumptions, in which there is a great aptitude to conceive, have, of all women, the least disposition to miscarry; yet a state more feeble and more irritable could with difficulty be pointed out. But the weakness and irritability are at that time of a particular kind, not arising from, connected with, or influencing the *uterus*, which proceeds in the performance of its functions, as regularly as if the whole constitution was in perfect health; and such patients are generally kept in a state of quietude. We may hence conclude, that either weakness or irritability in general is seldom a cause of abortion; but some weakness

or imperfection originating in, or affecting the *uterus* or its appendages; or a peculiar kind of irritability, thence proceeding, distinguishable enough in the female character by a careful observer, which creates impatience of mind and restlessness of body; in which every occurrence is the parent of ungrounded fear and solicitude, and every office is performed with hurry and vexation. As an abundance of acrimonious, or some other humour, or some quality of the body, may transfer this state to the mind, so the mind often reverberates this state to the body, the continuance of which will often prevent or impede the regular performance of any process. It is therefore often found of as much importance in these cases, to give composure and steadiness to the mind of a patient, by leading her to hope and cheerful expectation, by soothing and comfortable conversation, as it is to administer medicines to the body.

With respect to that state of the *uterus* causing abortion, the opinion originally entertained and still pursued, as far as can be collected from the medicines usually prescribed, was, that it failed to perform its office on account of its excessive lubricity, as if the *ovum*, before loosely attached, slipped out of the *uterus;* but this idea will not bear examination, being supported neither by the reason of the thing, nor by the occurrences of practice. It is remarkable, that women, who are in the habit of miscarrying, go on in a very promising way to a certain time, and then miscarry, not once, but for a number of times, in spite of all the methods which can be contrived, and all the medicines which can be given; so that, besides the force of habit, there is sometimes reason to suspect, that the *uterus* is incapable of distending beyond such size, before it assumes its disposition to act, and that it cannot be quieted till it has excluded the *ovum*. What I am about to say will not, I hope, be construed as giving a license to irregularity of conduct, which may often be justly assigned as the immediate cause of abortion; or lead to the negligent use of those means which are likely to prevent it. But from the examination of many *ova* after their expulsion, it has appeared, that their longer retention could not have produced any advantage, the *fœtus* being decayed, or having ceased to grow, long before it was expelled. Or the *ovum* has been in such a state, as to have become wholly unfit for the purpose which it was designed to answer; so that if we could believe there was a distinct intelligence existing in every part of the body, we should say, it was concluded in council, this *ovum* can never come to perfection, and it shall be expelled. Nevertheless, in some cases, the *ovum*, though blighted or extinguished, if the expression may be allowed, will, though it cease to grow, remain inoffensive in the *uterus* to the period of legitimate pregnancy, or may be expelled at any intermediate time.

Conception probably depends upon the perfect state of one or both *ovaria*, and will therefore sometimes take place, when the *uterus* is considerably diseased. But the progress depends upon the state of the *uterus*, and chiefly upon that of the *fundus;* for I have known several instances of women, who had both excrescences and induration about the *os uteri*, who have conceived and gone on to their full time without any material inconvenience, till the time of labour approached.

The imperfections observed in *ova* are of different kinds, and found occasionally in every part; and there is usually a consent between the *fœtus* and the shell of the *ovum*, as the placental part and the membranes may be called, but not always. For examples have occurred, in which the *fœtus* has died before the termination of the third month, yet the shell being healthy has increased to a certain size, has remained till the expiration of the ninth month, and then been expelled, according to the genius and constitution of the *uterus;* though frequently it has been found to have undergone great changes, as for instance, in many cases of hydatids. But if the shell becomes diseased, then the *fœtus*, being deprived of its nourishment, is of course destroyed, and both are expelled, as any other extraneous body would be, though not immediately on the accession of the mischief. There is reason to believe, that the part of the *ovum* most commonly diseased, is not that which passes from the *ovarium*, but that production of the *uterus*, which is prepared for the reception of the *ovum* after its passage from the *ovarium*, and which may be called the connecting membrane of the *ovum*. When that process, by which the two membranes are cemented, goes on without interruption, I believe the connection is completed between the sixth and the tenth week from the time of conception. But when an abortion is about to happen, there is usually between this and the outer membrane of the *ovum* an effusion of blood, which often insinuates itself through the cellular membrane of the *placenta* and between the membranes, giving externally to the whole *ovum* a tumid and unequal appearance, often not unlike a lump of coagulated blood, for which it has been frequently mistaken, and then it is popularly called a false conception. It is probable, that either the connecting membrane is imperfectly formed, or there is some difficulty, and a failure in the completion of the union between it and the *ovum*; and according to this opinion the causes of abortions are generally to be sought for in the female only, contrary to what I formerly suspected.

SECTION III.

ON THE TREATMENT IN ABORTIONS.

All the means which can be advised with any prospect of success, in the treatment of patients disposed to abortion, whether the cause exist in the constitution or in the *uterus*, may be considered as preventive or curative. In either of these views we must chiefly recur to the constitution; as in the first case, it is the great object of our attention: and in the second, as the principal chance of producing any salutary change in the *uterus* is through the medium of the constitution, on the regulation of which our success must ultimately depend. Should a separation of the husband from his wife's bed be thought necessary, it must be chiefly so about the period above mentioned, unless when there have been frequent miscarriages at any other precise time, when particular attention in this respect will be required.

As women with different constitutions and different states of health are subject to abortion, every mode of treatment must be accommodated to the constitution of each patient, and to the disease of which there may be any indication. In plethoric and febrile habits it may be proper to take away small quantities of blood, soon after the suppression of the menstruous discharge, and occasionally afterwards; to enjoin a spare, or even a vegetable diet, and to give cooling medicines; in some habits, in which the *uterus* may be supposed unwilling to distend beyond a certain degree, or where the degree of irritability is extreme, to prescribe opiates in small quantities often repeated; and sometimes tepid bathing. In debilitated and languid constitutions, a strengthening diet must be allowed, and wine, especially claret, in an indefinite quantity at such times as the patient may be more sensible of depression, or the want of support, of which no one but herself can be sensible. Every kind of medicine, which proposes to give vigour and energy, will also then be proper; as the *cortex cinchonæ* in any convenient form, and preparations of iron in the officinal or extemporaneous forms, of which the *zincum vitriolatum* is the most commodious, or mineral waters of the same quality, but in small quantities. The shower bath, dashing cold water upon the loins, the cold bath, sea-bathing especially, are pretty constantly recommended for the general purpose of improving the health not only in those who have a disposition to abortion, but in those also who are accustomed to bring forth dead children, or who are prone to hæmorrhage at the time of delivery; and experience has shown, that they may, in many cases, be continued through the whole time of pregnancy with safety and advantage. For the great purpose of establishing permanent strength in those, who have had long continued ill

health, or who are in a habit of meeting with these untoward accidents, nothing seems better calculated, or is found to be more useful, than travelling; not taking a hasty journey, but wandering about by easy stages, for many months, by which the evils, that appertain to the too refined scenes of civilized life, are done away, the mind becomes soothed and composed, and the corporeal advantages of a natural state are in some measure acquired.

When the health cannot be confirmed, so as to enable the constitution to bear the common exigencies of life, it has been thought advisable to remove patients from them, by confining them occasionally to their house, to a floor, or a single room; or even to a horizontal position, throughout pregnancy; at least till the period when they were accustomed to miscarry was past, and the injunctions in this respect must accord with the debilitated or irritable state of the patient. Some instances of advantage from this method I have known, particularly in the early part of pregnancy. But if we were to consider abortions as originally proceeding from weakness, or too great a degree of irritability, confinement to a room, or any treatment by which both those evils are likely to be increased, seems a strange and unlikely method of preventing mischief; and from what I have seen of the general issue of such strict practice, much cannot be said in its favour, the event being usually deferred, but not hindered. In the management of some cases of this kind, I have thought myself entitled to credit, but I must also acknowledge, that I have been frequently disappointed; yet from some general improvement of the health, or for some reason, not obvious or easy to discover, the patient, wearied with the fruitless attempts of art, and, deserting all rules, has another time escaped the abortion, which I had before in vain attempted to prevent.

With respect to that state of the *uterus* itself, which may be considered as the cause of abortion, should there have been any indication from the discharges being irregular or profuse, if they be of the sanguineous kind; from their quality or degree, if of that kind which passes under the general name of weakness; it is first to be determined, whether they be symptoms indicating a certain state of general health, or any morbid disposition of the *uterus*. Should they even be of the latter kind, it is in general only by application to, and improvement of, the constitution at large, that we have the power of making any material alteration in the state of the *uterus*. Something may however be done by local applications of various kinds, especially by injections, but their activity must not be such as to make too quick an alteration, by suppressing suddenly any kind of discharge, to which the part itself, or the constitution, may have been long accustomed. For it must be observed, that disagreeable as these

discharges are, their sudden suppression by the use of powerful astringents, often occasions very serious or dangerous diseases; and such discharges seem to be really of secondary use. That is, if we suppose a certain state of the *uterus*, the discharge may be absolutely necessary for its relief, while it remains in such a state, and the state is to be changed previous to the suppression of the discharge; else, instead of removing, we shall add to the existing disease, or produce one of a different and worse kind. In such states of the *uterus* as dispose to abortion, I have seldom dared to advise any more active application than the Bath or Buxton Waters, which may be injected into the *vagina*, in the interval between the two periods of menstruation, or even for a longer time. I say into the *vagina*, because I do not approve of daily or frequent attempts to introduce any instrument within the *os uteri*, on this account, or for the relief of any disease. It must however be mentioned, that some have assured me, they have advised the use of astringent injections, even those composed of *zincum vitriolatum* or *alum*, and other medicines of that class, not only for the cure of common weakening discharges, but with much advantage also in pregnancy, when there was a propensity to abortion.

SECTION IV.

ON THE SYMPTOMS PRECEDING AND ACCOMPANYING ABORTIONS.

The circumstances attending abortions, and the symptoms by which they are threatened or accompanied, are very unlike in different patients, as are indeed all the effects arising from uterine disturbance. But there is generally alternate pain and ease in the back, *abdomen*, and inferior extremities, with a sense of weight and weakness in the region of the *uterus*, frequent micturition, and a tenesmus: but the most certain sign of a threatened abortion is a discharge of blood, which proves that some part of the *ovum* is already loosened from the *uterus*.

When such discharge happens during pregnancy, especially at an early period, it has been a received opinion, that abortion was inevitable, because it was presumed, that the separation which it proved could not be repaired. It must be allowed, that under such circumstances there is always too much reason to apprehend an abortion; yet experience has fully shown, that women, who have had not one, but repeated discharges, and sometimes to a profuse degree, with considerable and regular pains, have gone to their full time, without any imperfection in the child, or any detriment to the mother; the pain ceasing, and the loosened part, by some operation beyond human skill, having been cemented and reunited to the *uterus*, which reunion,

I presume, may take place, or be completed in ten or twelve days after the cessation of the discharge. There seems to be just so much chance of preventing an abortion, when there has been one or more discharges of blood, as to make it worth our while to use the common means for that purpose; keeping the patient cool and composed by medicines and general treatment, which must in such cases be the principal aim, and by means suited to her constitution or any peculiarity in her situation.

There is an almost endless variety in the manner, in which abortion happens. Some women abort with sharp and long continued pains; which denote that some part of the *ovum* is firmly adherent to the *uterus;* others, with little or no pain, the *ovum* gliding out of the *uterus* almost imperceptibly; some with a profuse and alarming hæmorrhage, others with very little. In some, the *ovum* has been soon and perfectly expelled; in others, after a long time, first the child, then the *placenta,* whole, or in small portions, or part of it dissolved. But whatever other pain or trouble may attend, the hæmorrhage is the only immediately alarming symptom; I say immediately, because every practitioner must be convinced, that sometimes abortions either occasion local diseases, or the time of abortion is an era, from which we may date the commencement of some dangerous disease of the *uterus,* or its appendages. It has also been imagined, that the safety of the patient very much depended upon the complete and speedy expulsion of the *placenta;* and when it was retained, very active deobstruent medicines, as they were called, were supposed to be necessary, and strenuously given for the purpose of expelling it, lest it should become putrid, and some of the putrefied particles be absorbed into the constitution. I believe the whole of this supposition is groundless, having seen many instances of its being expelled in a very putrid state at different periods of pregnancy, when the patient was in perfect health; and if she had any disease, the putridity of the *placenta* clearly seemed the consequence, not the cause, of the disease. At all events, much less mischief may be expected from the retention of a putrid *placenta* at this period of pregnancy, than from attempts to force it away by the medicines usually given for that purpose, or by manual assistance.

The degree of hæmorrhage in abortions is not always in proportion to the period of pregnancy, but it depends upon the difficulty with which the *ovum* may be expelled; sometimes upon the cause, and often upon some peculiarity in the constitution, as happens in the various degrees of the menstruous discharge.

A notion of there being something mysterious in uterine hæmorrhages, different from those from any other part of the body, has been entertained, and supposed to occasion the necessity of a pecu-

liar treatment. But it is now agreed, that the general principles, which guide us in the treatment of hæmorrhages from any other part of the body, are with equal propriety applicable to those from the *uterus*. We must however recollect, that in uterine hæmorrhages, depending on pregnancy, there is an additional circumstance, which we are ever to bear in mind; that they are ultimately to be suppressed by the action of the *uterus*, contracting its cavity into a less compass, of course lessening the dimensions of the vessels and expelling whatever may be contained in its cavity. In this view uterine hæmorrhages do certainly differ from those of any other part of the body, because they in general, immediately or presently cease or are much abated on the exclusion of the *ovum*.

Hæmorrhages of all kinds are moderated, or wholly stayed, by the formation of *coagula* at the orifices of the open vessels; or by the contraction of the coats of the vessels themselves, by which their orifices are lessened or closed. The latter of these effects being stronger and more active in arteries than in veins, may be a reason for the common observation, that hæmorrhages from arteries, though in an equal degree, are less dangerous than those from veins, in which the power of contraction is less or altogether wanting. It has been proved by physiologists, that both these effects, that is, the formation of *coagula*, and the contraction of the vessels, are favoured when the blood circulates most slowly, as in fainting; not to mention, that the quantity of blood lost in a given time will depend upon the rapidity or slowness of the circulation, as well as upon the size of the vessel opened. But in a state of faintness, which speedily follows all profuse hæmorrhages, three effects are produced at the same time: the circulation of the blood is more slow, or is altogether suspended; *coagula* are sooner formed: and the vessels contract more efficaciously. During faintness, the advantage arising from the contraction of the *uterus* is likewise obtained; for this acts, or makes its efforts to act, in sleep, during faintness, and sometimes even after death. Fainting may then be considered as a remedy provided by nature for averting the immediate danger of all hæmorrhages, and to prevent their return. Cordials or stimulants should not therefore be given to those who are faint from hæmorrhages, till by the duration of the faintness we conclude there has been sufficient time to produce those effects, which would prevent a renewal of the hæmorrhage, or lessen its danger, if it should return; and then cordials are to be given liberally, and repeated as often as the circumstances may require.

The *Materia Medica* abounds with articles under the class of astringents, many of which are given indiscriminately in hæmorrhages and profuse discharges of every kind; nor does much distinction seem to have been made between those, which were found useful in hæ-

morrhages as applications, and those which were given internally. It has rather been concluded, that what was found useful as an external application, would of course be profitable if given internally. It is however clear, that astringent medicines, properly so called, can have no immediate power of stopping hæmorrhages from the *uterus*, or any other internal part of the body, excepting the intestinal canal; but that every medicine, which slackens the circulation of the blood becomes eventually an astringent. If the patient therefore be at first plethoric or heated, it may be proper to bleed in an incipient abortion accompanied with hæmorrhage; though if she be reduced to a state of weakness, that operation would be useless and improper. The saline draughts with nitre, or nitre alone; or acids mineral or vegetable, may be given as frequently and in as large a quantity as the stomach can bear, as the infusion of roses, which I have given with much liberality, and often found an effectual and very pleasant medicine; or the gum *kino* with *alum;* or the *plumbi superacetas;* or the *zinci sulphas.* Even the nausea, which these and other medicines sometimes produce, has by no forced construction been considered as an artificial imitation of faintness, and found serviceable, and medicines have been given expressly for this purpose; the safest perhaps, and not least effectual, of which is *ipecacuanha,* in small quantities, often repeated, so as to keep up a perpetual nausea. Oil of *turpentine,* in proper doses, has been recommended, and certainly is a very powerful medicine in hæmorrhages, but it seems better suited to those which are habitual or of long continuance, than to those which are instantly profuse and dangerous; the *digitalis* I have not tried, though from its power of slackening the circulation it promises to be of considerable service. When the discharge is profuse, cloths wet in cold vinegar may be applied to the *abdomen* and loins, and changed when they grow warm. In *Italy,* and other hot countries, and sometimes in this, it is a custom to give ice internally, or to sprinkle it crushed into small pieces over the body of the patient, who must also be exposed to, and suffered to breathe the cold air, rendered more active by fanning. On the same principle clysters of cold water have been advised. In short, every application and medicine, actually or potentially cold, the coldest water, even ice itself, if it can be procured, may be given and repeated with probable advantage, when the exigency of these cases requires very powerful assistance.

Injections of cold or astringent fluids, such as the *liquor aluminis compositus,* into the *vagina* have been much recommended, as being of great service for the suppression of uterine hæmorrhages. If we attempt to throw up the injections when the blood is flowing in a full torrent, they will be immediately rejected; and if they be used with the view of preventing a return of the hæmorrhage, which has ceased,

it is rather to be expected and feared that they would occasion it, by washing away the *coagula* probably formed and applied to the orifices of the vessels. The principal good that can be derived from them, seems to be by their action upon the internal parts as a cold application; and in this view lumps of ice have been advantageously introduced into the *vagina*. Less objection may perhaps be made, and equal or rather greater advantage will attend the introduction of lint, sponge, or any soft substance, moistened with spirit of wine or any astringent liquor into the *vagina*, which may serve the purpose of forming *coagula*, and applying them to the orifices of the opened vessels. But I have generally been satisfied with the application of cloths wet with cold vinegar to the external parts, with so firm a pressure, that the stream of blood should be instantly retarded or stopped. This might have been originally done instinctively, to remove the immediate dread of the hæmorrhage, and to give me a little time to reflect and determine how I should proceed; but being persuaded that this is of real utility, it is a custom with me to do it, in the first instance, in every alarming or dangerous hæmorrhage.

Opiates have been generally recommended as of principal efficacy for the prevention of abortions, and in all cases of uterine hæmorrhage; but I seldom use them in the latter situation, unless with a view of moderating any unusual degree of pain, or of quieting some tumult which preceded, attended, or followed the accident, and then in moderate doses, repeated according to the urgency of the case; having reasoned myself into an opinion that they do not, in these cases, deserve the high commendation which has been given them. Some pain is unavoidable and necessary, for the exclusion of the *ovum* out of the cavity of the *uterus*, whenever we have given up the hope of preventing abortion. The degree of pain proves the degree of action raised for the purpose, and we should consider how far by lessening the pain we may lessen the action, and by lessening that action, by which the *ovum* would be expelled, whether we contribute to the suppression or continuance of the hæmorrhage, or to the more regular conduct of the abortion. But when there are the common symptoms of abortion without hæmorrhage, small doses of *tinctura opii*, often repeated, or a clyster with thirty or forty drops of the same tincture, will be of great service; and in these cases bleeding is frequently required.

It was said that no manual assistance was required in the management of abortions, and no rule can be more generally true; yet there are some exceptions. When, for instance, a woman who is miscarrying, with a considerable, or an apparently dangerous hæmorrhage, or with frequent repetitions of it, is so far advanced in her pregnancy, that it may be difficult to decide whether we should deem it an abor-

tion or a premature labour; it may not be safe to rely upon the use of those means which were advised for hæmorrhages in general, and yet the operation of delivering would, if it were possible, be extremely difficult and hazardous. We may then determine upon an intermediate method, which is to break the membranes. By the discharge of the waters of the *ovum*, which necessarily follows, the distension of the *uterus* is lessened, of course the size of the open blood vessels, by which the discharge had been made, is diminished, and the hæmorrhage is abated or suppressed. In consequence also of the discharge of the waters, the *uterus* acquires a disposition to act, and an ability to act with more energy, and the whole business is sooner completed. At a more early period likewise of pregnancy, when the hæmorrhage is profuse, liable to return, or of long continuance, on examination *per vaginam*, not otherwise thought necessary, the *ovum* will sometimes be found hanging in the *os uteri*, half or more of it voided out of the cavity of the *uterus*, yet enough remaining to keep up the hæmorrhage. Then, by a little motion or slight impulse in different directions, it will sometimes be cleared of the *os uteri*, and drop into the *vagina*. But great caution is to be used in this operation, for if it be done with violence, it may occasion an increase of the hæmorrhage, or be a cause of future mischief. The relation of the following unfortunate case which lately occurred may be of use.

I was desired to see a patient, in the seventh month of her pregnancy, who had a very profuse hæmorrhage, which had appeared about six weeks before. The *placenta* was over the *os uteri*, and the gentleman first called in finding it impossible, on account of the rigid state of the *os* and *cervix uteri* either to pass his hand, or to hook down any part of the child either with his fingers or any contrivance, had conducted a small piece of whalebone through the presenting part of the *placenta*, and discharged the water of the *ovum*. The hæmorrhage was immediately very much lessened, and did not return again with great violence, though it never ceased. About twelve hours after the discharge of the water, pains came on and a great portion of the *placenta* was forced into the *vagina*. She continued nearly in this state for seven hours, when it was judged proper to give her some assistance, by attempting to extract her child, and it was then discovered that a part of the navel-string and an arm were also in the *vagina*. The child being small, it was thought probable, that it would come away doubled without much difficulty, by gently assisting, during a pain. The body of the child did descend somewhat lower, but the arm giving way, we desisted from that attempt. It was then considered whether it would be at that time possible to pass the hand into the *uterus*, but on trial it was found impracticable. The blunt hook was then passed over the spine of the child which was brought away, but not

without considerable force. The instant the child was extracted, she complained of very excruciating pain in the region of the *uterus*, which contracting speedily, was thought to be *after-pain*, for which twenty-five drops of *tinct. opii* were immediately given and repeated without any advantage. The pain however increased, she became restless, and died two hours after the extraction of the child, apparently in a convulsion.

With a view to the management of similar cases, which may in future occur, it may reasonably and properly be asked, was this case well conducted? even allowing, which I believe is true, that what was done was well done. To this question I should answer, no; for as the hæmorrhage was very much lessened, and the danger thence arising removed, there was no sufficient reason to justify our hastening the delivery by the means which were used, and we certainly ought to have waited with more patience.

In abortions, dreadful and alarming as they sometimes are, it is a great comfort to know that they are almost universally void of danger, either from the hemorrhage, or on any other account. It is perhaps impossible to explain it, but the fact is undoubtedly true, that an equal loss of blood, and with apparently equal and immediate effects, should, in abortions, if properly managed, and the patient be in good health when they take place, not occasion any danger; and yet at the full period of uterogestation be so dangerous, that one considers the patient who recovers as having a lucky escape. It is wonderful also to observe, how soon women recover from the debility occasioned by hemorrhages in abortions; and how long a time is often required for their recovery after the same circumstance in advanced pregnancy. But though I reckon there is little or no danger from mere abortion, yet when the accident is in consequence of acute diseases, there is often extreme danger; for women abort because they are already in great danger, and this is aggravated by the abortion. Without a more accurate distinction we may still form an erroneous prognostic. It has been generally said, for example, that women who miscarry, or are delivered at the time of their having the small-pox, universally die. Now if a pregnant woman should, at any period of pregnancy, expel her child in the commencement of that disease, perhaps from the violence of the eruptive fever, she may not only escape the danger, but go through the disease with as much regularity, as if she had not miscarried. But if that period of the disease be passed without abortion, and the patient should go on to the time of the crisis, and then miscarry, the general prognostic will be too true; at least the death of the patient has followed in every case of this kind which I have seen. Since the first publication of these obser-

vations I have also been informed of two cases of early abortion, which have proved fatal. In the first, the patient became paralytic immediately after the hæmorrhage; but the death of the second, though she was only in the seventh week of her pregnancy, seemed to be occasioned merely by the hæmorrhage, or, more probably, by a convulsion.

SECTION V.

ON HÆMORRHAGES IN THE LAST THREE MONTHS OF PREGNANCY.

UNDER this head will be included all the hæmorrhages which occur in the three last months of pregnancy, because from the danger with which they are attended, they require, and from the situation of the patient, they allow of a similar treatment when required, though not with equal facility. These hæmorrhages are occasioned, 1st, by the attachment of the *placenta* over the *os uteri;* and this is discovered by our being able to feel in a common examination only a fleshy substance within the *os uteri* without any part of the membranes: 2d, by a separation of a part, or of the whole *placenta*, which had been attached to any other part of the *uterus;* and this is known by our being able to distinguish the membranes without any fleshy substance. The first of these may be caused by the approach of labour dilating the *os uteri*, and of course separating, in proportion to the degree of dilatation, the *placenta;* and the second by accidental violence, or by some infirm or morbid affection of the *uterus* or *placenta;* and it sometimes happens without our being able to assign any cause, equal to the suddenness and violence of the effect produced.

Hæmorrhages arising from the first cause have been considered, and generally are, far more dangerous than those from the second; but these have nevertheless sometimes proved fatal. Hence in the estimate of the danger of uterine hæmorrhages at the time of labour, it is necessary not only to discover the cause and to regard the quantity of blood lost, but, above all other considerations, to attend to the effect produced, which is infinitely greater and more alarming in one constitution than in another, and varies in all. If any individual patient therefore be brought into a state of danger by the loss of blood great or small, from either cause, it seems incumbent upon us to put in practice all the means in our power for the removal of the danger. For any judgement formed upon the quantity of blood really or apparently discharged will be liable to great errors, as concealment or accident may deceive us; not to mention that cases sometimes occur, in which there may be a greater quantity of blood lost, than can be known, either by its being locked

up in the *uterus* beyond the child, when the membranes are broken, of which I have known some very dangerous and some fatal instances, or by being effused into the *ovum*, when that has an appearance of being whole. This observation, of the necessity of judging principally by the effect of the loss of blood, deserves the most serious reflection, because, the *time when* we are to execute what reason dictates, or experience authorizes us to do, will chiefly depend upon it. It is also of great importance to recollect, that those hæmorrhages are far more dangerous, in which an equal quantity of blood is lost suddenly, or in a short space of time, than if it flows away slowly or at intervals. The immediate injury to the constitution is greater in the former case, the vessels requiring some time to enable them to be accommodated to the quantity of blood remaining in them, in order to carry on the circulation. A great and sudden loss of blood also creates a suspicion that the return of the hæmorrhage is to be much dreaded, because if it should be equally profuse with that which has already happened, it may occasion the death of the patient, before we have time to put in practice, or reap the advantage, of what we suppose to be the only method of removing the danger.

In hæmorrhages the danger is indicated by the weakness and quickness of the pulse, or by its becoming and continuing imperceptible; by a general paleness and coldness of the body, and by a ghastly countenance; by inquietude, or by continual faintings; by a high and laborious respiration, and by convulsions. The two last are usually mortal symptoms; yet when patients are reduced to a certain state of weakness, they are liable to hysteric affections resembling convulsions, and to other symptoms equally alarming, but by no means so dangerous.

When patients have suffered much from loss of blood, they will often have a sudden and violent fit of vomiting; and sometimes under circumstances of such extreme debility, that I have shrunk with apprehension, lest they should have been destroyed by a return or increase of the hæmorrhage, which I concluded would be an inevitable consequence of so violent an effort. But there is no reason for this apprehension; for though the vomiting may be considered as a proof of the injury which the constitution has suffered by the hæmorrhage, yet the action of vomiting contributes to its suppression, and to the immediate relief of the patient; perhaps by some revulsion, and certainly by exciting a more vigorous action of the remaining powers of the constitution, as is proved by the amendment of the pulse, and of all other appearances immediately after the vomiting, which I have therefore in some cases attempted by gentle means to promote.

A tolerably just opinion may be formed of the danger of uterine hæmorrhages, in advanced pregnancy, by the pain with which they are attended. An equal hæmorrhage without pain is always more dangerous than if the pain be regular and acute, and the danger is lessened as the pain increases. In the most dangerous hæmorrhages, there is no pain whatever, or none of consequence, and patients have often died, or been brought into the most imminent danger, that is, into situations from which it was scarcely possible for them to recover, whilst the practitioner was waiting for the accession of the pains of labour. The reason was before mentioned. The pain proves the degree of the action of the *uterus*, and the action of the *uterus* proves that the powers of the constitution are not exhausted. In very bad cases there is before delivery an effort in the *uterus* to act, just sufficient to cause a renewal of the hæmorrhage; but immediately upon the discharge of a gush of blood, the effort, together with the little pain attending, ceases; and in this manner patients would sometimes proceed to the moment of their death, unless they were relieved by art.

SECTION VI.

HÆMORRHAGES IN WHICH THE PLACENTA IS ATTACHED OVER THE OS UTERI.

Those hæmorrhages, which are occasioned by the attachment of the *placenta* over the *os uteri*, are first to be considered, because they are attended with the greatest danger, and because some part of their treatment will apply in the other cases to be described.

Though the *placenta* be attached over the *os uteri*, the woman usually goes through the early part of her pregnancy without any inconvenience, or any symptom, at least, which denotes that circumstance. But when the *cervix* of the *uterus* is distended to a certain degree, or when the changes previous to labour come on, there must be a hæmorrhage, because such distension, or change, will necessarily separate a part of the *placenta*. This hæmorrhage is often, but not always, in proportion to the space of the *placenta* attached over the *os uteri*, or to the quantity separated, for women have sometimes been in as great danger when the mere edge of the *placenta* was fixed upon the *os uteri*, as if the middle had been placed over it; especially if the part separated be near the insertion of the *funis*, where the blood vessels are large.

When hæmorrhages from this cause once come on, though all women without proper assistance would not die, none are free from danger, till they are delivered. As there is a very doubtful chance

of the accomplishment of the delivery by the pains of labour, and as experience has fully proved the frequent insufficiency of all other methods, intended to suppress the hæmorrhage, and how little reliance ought to be placed on them, though they are always to be tried; it is a practice, established by high and multiplied authority, and sanctioned by success, to deliver women by art, in all cases of dangerous hæmorrhage, without confiding in the resources of the constitution. This practice is no longer a matter of partial opinion, on the propriety of which we may think ourselves at liberty to debate; it has for near two centuries met the consent and approbation of every practitioner of judgement and reputation, in this and many other countries. (See Mauriceau, and almost every succeeding writer.)

There is much comfort in knowing and possessing a remedy, to which we can recur, with a more than equal chance of success, in any case of great and imminent danger. But though it should be allowed, that the artificial delivery of the patient, in every case of dangerous hæmorrhage, in advanced pregnancy, is generally expedient and necessary for the preservation of the life of the patient; and though the practitioner, who should neglect it, would be very reprehensible; yet that necessity, presuming it to arise solely from the loss of blood, or that expediency, which constitutes the authority for the operation, and which is now clear and distinct to another, may not appear to me. Besides, should the necessity be acknowledged, and the practice approved, there may be much dispute and difference of opinion about the *time when* the operation ought to be performed.

It may be observed, however, that patients who are reduced by hæmorrhage to a state of extreme weakness, should not then be delivered by art, even though the hæmorrhage should have ceased; but we are to wait till the patient is somewhat recovered from her faintness or extreme debility, and then deliver by passing the hand and extracting the child, without expecting the pains to return; as the hæmorrhage may return instead of the pains, and the patient suddenly die.

It would be of great advantage in practice, if some mark were discovered, or some symptom observed, which would indicate the precise time when women with hæmorrhages of this kind ought to be delivered. But though we do not at present know any such mark or symptom, and the determination of the time is to be made by the judgement of each individual practitioner, we may be permitted to state what we do know in the most convincing point of view.

Admitting then, in the first place, that women having uterine hæ-

morrhages from this cause, in advanced pregnancy, are not in safety till they are delivered; that the natural efforts are generally unequal to the expulsion of the child; that the hæmorrhage can only be stayed by the evacuation of the contents of the *uterus*, giving an opportunity to the vessels to contract and to close; that these salutary effects may be produced as certainly by an artificial extraction, as by a natural expulsion of the child; and if it be moreover true, that the operation, though performed before it is absolutely necessary, is not attended with danger, if it be performed in a proper manner, and with due care; but that, if the operation be delayed beyond the proper time, it will not answer the purpose for which it is recommended; we may from these premises conclude, that a woman under the circumstance of dangerous hæmorrhage ought to be delivered by art, if the natural efforts be unequal to the expulsion of the child; that it is better to deliver too soon, than to delay the delivery a moment too long; and that in every case of doubt, it is a proof of wisdom to decide, and determine upon speedy delivery; at least, that it be not delayed beyond the proper time.

If, however, we were certain that the *placenta* was attached over the *os uteri*, it would seldom be necessary to deliver women on the first appearance of the hæmorrhage; yet that will be sufficient to awaken our apprehensions, and set us upon our guard. Nor does it often happen that a second or even a third discharge obliges us to proceed to deliver immediately: because each return may not be in such a quantity, as by its violence or continuance to endanger the life of the patient, or apparently very much to reduce her strength; and such an interval may pass between the returns, as to give time and opportunity for repairing the mischief done by one loss of blood, before the return of another. Nor is delivery by art necessary, or usually proper, when the hæmorrhage is abating. There are cases, however, in which the quantity of blood lost, the suddenness of the discharge, and the effect produced, are such with one hæmorrhage, as to make it evidently unsafe to trust a return; and whenever the countenance, and other appearances, indicate that the constitution is much impaired, by repeated, though not profuse discharges, the strength is by degrees undermined, and danger creeps on certainly though insidiously. For we may presume, that every constitution is capable of bearing the loss of a certain quantity of blood, without the instantaneous hazard of life, and this will depend upon the general state of the body. Now the body may be reduced to such a state, that there is barely a sufficient quantity of blood, or of powers, to carry on the business of life, upon a very nice balance; and of course the additional loss of a small quantity may altogether destroy the power of living, and the

patient die of the hæmorrhage, though the quantity of blood which shall immediately precede her death may be small; but unfortunately she was able to bear the loss of none. We should therefore, though careful not to act rashly and unadvisedly, not only be on our guard against the effect of rapid and profuse discharges, but against those which are productive of as much danger, on account of their returns, though less in degree at any one time. We should ever call to mind the possible evil of delay, and recollect that there is little danger in a premature delivery, if the operation be performed with prudence; but that the delay of one hour will sometimes deprive us of all chance of success.

Those who are young in practice, or of timid and anxious dispositions, often suffer much solicitude from the apprehension of danger, when it does not exist in these cases, which, for many reasons, I consider as highly proper for a consultation, when it can be procured.

In some cases, in which it has been presumed to be necessary to deliver the patient on account of the hæmorrhage, the parts have been in such a state, that the operation could not, it was thought, be performed with safety. Whenever the case demands the operation, on account of the danger of the hemorrhage, the state of the parts will on this account always allow it to be performed with safety, though not with equal facility; and though it may often be necessary to determine speedily upon the propriety of the operation, this should never be performed rashly, but always with the utmost deliberation and slowness, even though it might admit of haste. For in hæmorrhages a woman may perish from two errors in practice; from delaying the operation too long, and from the rude, violent, or improper manner, in which it may be performed, even at the most eligible time.

Sufficient notice hath been taken of the danger of precipitating, as well as that of delaying the delivery, in cases of hæmorrhage. With respect to the operation, the first part, that is, as far as relates to the position of the patient, the introduction of the hand, and the dilatation of the *os uteri*, has been already described under preternatural presentations. When the *os uteri* is with great caution sufficiently dilated to allow of the ready admission of the hand, and we come to the *placenta* attached over it, it is of little consequence whether we begin to separate this till we come to an edge, and go up on the outside of the membranes, which may be ruptured at pleasure; or whether we perforate the substance of the *placenta*, and conduct the hand directly into the *ovum*, though by the latter method there is rather more danger of losing the child; but the determination may depend upon the greater or less proportion of *placenta* attached over

the *os uteri*. In either case, without regard to the position of the child, we must proceed to and lay hold of its foot or feet, carefully distinguishing that they are the feet, before we begin to extract them. Immediately on our beginning to withdraw the hand, which should be done with a slow waving motion, the waters of the *ovum* flow away; and while they are flowing, we must withdraw the hand, grasping the feet of the child, till by slow degrees these are brought into the *vagina*. We are afterwards to wait till the *uterus* contracts, and then gently bring the feet through the external parts. It is not improbable but we may then have the power of finishing the operation very speedily; but though the child were extracted, if the *uterus* did not act, and, as it were, follow the child, as there would be a chance of the hæmorrhage returning, the child should be withdrawn according to the degree of the contraction of the *uterus*, which will be known either by the application of the hand to the *abdomen*, or by the pains. Nor is there any occasion at this time for hurrying the delivery, for the hæmorrhage usually ceases as soon as the child is turned, in consequence of the compression made upon the orifices of the vessels by the inferior parts of the child, as well as by the contraction of the *uterus*. If the labour-pains be at all efficient at this time, it would be proper to leave the breech of the child to be expelled by them; but if they be not sufficiently strong for this purpose, assistance must be given, gently extracting by the feet only during the continuance of the pain, not with force sufficient to bring it away, but with the view of aiding the feeble power exerted by the pains; imitating also the pains in the manner of extracting. When the breech of the child has passed through the external parts, the delivery must be hastened, as there is then danger of the child being destroyed by the pressure upon the *funis*. Yet under such circumstances there is often a better chance of preserving the child, by leaving it to be wholly, or in a great measure expelled, than by extracting it with violence, as hath been before observed.

When the child is born, if the operation were slowly performed, there is not usually any continuance or return of the hæmorrhage, unless from the blood previously discharged, and locked up behind the body of the child. This is in some cases in a very considerable quantity, and rushes away violently the moment the child is born, but it ceases almost as speedily, not requiring any immediate manual assistance. But if the hæmorrhage should continue or return, the case must be managed, as will be recommended, when we speak of hæmorrhage with a retained *placenta*. If there be no hæmorrhage, and the *placenta* be retained, we must be particularly cautious not to hurry it away; but in these cases it is commonly ex-

pelled with great ease, and we have less occasion to be solicitous, because from the part where it was originally attached, it more readily admits of assistance if required.

Should nothing uncommon happen in the delivery, children will often be born alive, in cases of hæmorrhage, which were extremely dangerous to the mother; and there have been many instances in which the delivery being too long delayed, a living child has been extracted, after her death. In all cases of danger, these in particular, the safety of the parent, and the preservation of the child, are events which give inexpressible satisfaction, and adorn the reputation of the practitioner.

SECTION VII.

ON HÆMORRHAGES OCCASIONED BY THE SEPARATION OF THE PLACENTA FROM ANY PART OF THE UTERUS.

It was before observed, that those hæmorrhages which are occasioned by the separation of a portion or of the whole *placenta*, originally attached to any part of the *uterus*, except the *os uteri*, were not generally so dangerous as those last described. But if the separation be extensive and sudden, they will be equally alarming, the real danger may be as great, and the same method of proceeding, that is, speedy delivery by art, may, though not so generally, be required. The separation may be occasioned by great violence from external accidents in the latter part of pregnancy; or in some intense fit of fainting or of laughter; and sometimes the whole or a very large part of the *placenta* will be separated suddenly, without any accident or symptom which could give warning or apprehension, that such an event was to be dreaded. The separation of the *placenta* may then happen previous to the commencement, and it is less surprising that it should sometimes occur during any period or stage of labour.

When sudden and violent discharges of blood happen from this cause to women with child, in advanced pregnancy, from external accidents, if the patient be kept in a cool and composed state, the discharge may cease, and without any return, the patient may go on to her full time, and be delivered by her natural pains, as if no such accident had happened; though the child will generally be still-born. Sometimes, however, the hæmorrhage will return, or it may commence in any stage of a labour, and our conduct must be regulated by the degree and probable consequences of it, and by the state of the labour when the hæmorrhage is first discovered.

If any considerable hæmorrhage should come on in the beginning

of a labour, or previous to it, and if the treatment must in any measure depend upon the cause, it is necessary in the first place that we should ascertain whether the *placenta* be attached over the *os uteri*, or be casually separated. Before there is some degree of dilatation of the *os uteri*, be the discharge ever so profuse, and it may even at this time be excessive, I do not know that it is always possible to tell with certainty whether the *placenta* present or not. It may indeed be conjectured, that the *placenta* is there attached, by the cushionlike feel of the *cervix* and lower parts of the *uterus;* but when the *os uteri* is somewhat dilated, instead of the membranes, the fleshy substance of the *placenta* may be readily distinguished. Yet every practitioner knows how very different the state of these parts is in the beginning of labour, and how difficult it must sometimes be to distinguish between a firm *coagulum* of blood and the *placenta;* not to mention that so small a part of the *placenta* may be attached over the *os uteri*, that unless we could pass the finger completely round the circle, which is sometimes almost impossible, it could not be discovered. Taking, therefore, into consideration all the varieties occasioned by either of the causes of hæmorrhage, and knowing that neither the performance of the operation, nor the event, is materially different, whatever may be the cause, provided the discharge and its effects are equal, we must be careful, that we are not deceived by attempts to make too nice distinctions. (See an essay on this subject written by Mr. Rigby, an able and experienced surgeon at Norwich.)

From a casual or spontaneous separation of the *placenta*, not attached over the *os uteri*, a hæmorrhage may happen in the beginning of labour, when the *os uteri*, for example, is not in any material degree dilated; or when it is dilated to a third or half its extent, or any other degree. If the discharge should be so great as to require some present measures for the relief of the patient, the methods before advised must be put in practice, and the common assistance for promoting the dilatation must be given, till we can feel distinctly the membranes of the *ovum*, which are to be ruptured. By the discharge of the waters the distension of the *uterus* will be lessened, the size of the blood-vessels of course diminished, and the hæmorrhage in general immediately removed or very much abated. By the suppression or abatement of the hæmorrhage, the action of the *uterus* will be rendered stronger, and the delivery very often completed in a short space of time without further assistance, especially if the patient have before had children.

In every case of dangerous or considerable hæmorrhage, when we can distinguish the membranes, it therefore seems to be right and justifiable to puncture or rupture them, and to discharge the waters;

especially when we can determine the presentation of the child to be natural.

But if the hæmorrhage should come on in the second stage of the labour, that is, after the full dilatation of the *os uteri*, and the rupture of the membranes, when the child's head has entered and in part descended into the *pelvis;* if the discharge be of sufficient importance either to prevent the action of the *uterus*, or to bring the life of the patient into hazard, by its violence or continuance; then the assistance given must depend upon the progress which the labour has made, and the situation of the child, whether it shall be turned, as in preternatural presentations, or delivered with the *forceps* or *vectis;* or when neither of these is practicable, and the exigency of the case justifies the operation, by lessening the head of the child; that is, the life of the parent must at all events, if possible, be preserved. But such cases are rare, and always require accuracy of judgement, and the greatest circumspection.

Hæmorrhages of this kind are also sometimes combined with preternatural presentations of the child. Then little more will be required, than what may be necessary on account of the presentation, except that it be sooner decided, and more speedily performed; remembering ever, that all operations in midwifery are intended to remove, lessen, or prevent natural or adventitious danger, and not to add to that which before existed.

This method of proceeding, that of accelerating the labour by breaking the membranes, recommended in this kind of hæmorrhage, seldom fails to answer the intention of moderating or suppressing the discharge, and of promoting the labour in such a manner as to remove the danger. The only inconvenience to be apprehended is, that if the hæmorrhage should continue in such a degree, as to occasion the necessity of artificial delivery, the operation would be rendered more difficult on account of the previous discharge of the waters. But in reply to this objection it may be observed, that if the *uterus* should contract round the body of the child, with so much force as to prevent the introduction of the hand to turn the child with facility, that it will probably be expelled without any further assistance, if we wait patiently for the return of the pains, which we may safely do when the hæmorrhage is stayed, or very much abated. But if in common cases there be not sufficient force exerted by the *uterus* for the expulsion of the child, then there will be no great difficulty in passing the hand into the *uterus*. It must however be acknowledged, that this is sometimes amongst the cases, for which no precise rule can be laid down, and in which the practitioner must act according to his own estimate of the danger and difficulty.

SECTION VIII.

ON HÆMORRHAGES WHICH COME ON IMMEDIATELY, OR SOON AFTER THE BIRTH OF THE CHILD.

It is often a mortifying reflection, whilst we are conducting a patient through a labour rendered uncommonly tedious by the inactivity or irregular action of the *uterus*, that we can foresee after the birth of the child an unfavourable separation of the *placenta*, which cannot be prevented. All that art has dictated to be done in this case is, to suffer the body of the child to be wholly expelled by the action of the *uterus*, after the head is born; or in some cases rather to retard its final expulsion, than to use any force or hurry in extracting it, and by this proceeding the lower parts of the cavity of the *uterus* will be restrained from closing before the *fundus* assumes its proper share of action, contracting irregularly, or closing. Yet no method, nor any dexterity will be sufficient in all cases to prevent, after the birth of the child, a troublesome, and sometimes a dangerous hæmorrhage; the proper management of which often requires as acute an intelligence, and as determined a conduct, as any circumstance which relates to the birth of the child. As the powers of the *uterus* or of the constitution are sometimes not exerted, or fail to answer the purpose, and as no woman can be properly or safely left till the *placenta* is excluded, it is necessary to consider this subject in a full and explicit manner.

From a review of what has been said on the management of the *placenta* by Hippocrates, or in the writings contained in his works, it does not appear to have been the general custom to divide the *funis* before the *placenta* was expelled; that if this were retained beyond the common time, no means, or but very gentle ones, were used for the purpose of bringing it away; and in cases of its retention, it was usual to introduce medicated substances into the *vagina*, and to give hysteric medicines for the purpose of favouring its expulsion, which might happen on the fourth or any subsequent day, when it might have become putrid. The introduction of the hand into the *uterus*, for the purpose of bringing away a retained *placenta*, had not been then advised to come into consideration, and cases requiring such conduct would probably very seldom occur. Whether this practice were gradually altered, or another hastily assumed, it is impossible to say; but it is extraordinary, that Celsus*, without

* Medicus deinde sinistra manu, *leniter* trahere umbilicum ita, ne abrumpat, dextraque eum sequi usque ad eas, quas secundas vocant, quod velamentum in-

expecting or relying upon the natural efforts made to eject the *placenta*, of which he seems indeed to have had an imperfect knowledge, should have directed the practitioner to introduce his hand into the *uterus*, immediately after the birth of the child, to bring the *placenta* away, together with any *coagula*, which might have been formed in the cavity of the *uterus*. These two contrary methods have, in different times and countries, been adopted and recommended by succeeding writers; but, unfortunately, the practice of Celsus prevailed more universally. The Arabians, though fond of the study of medicine, seem rather to have preserved, than improved or extended the learning which they gained, when they plundered the eastern part of the Roman Empire. But in the fifteenth century, which may be considered as the era of the revival of learning, Paré published, among many valuable works, observations on the practice of midwifery, under the title of the Generation of Man. Paré *, who had an understanding to see, and to profit by the errors of others, seems desirous of avoiding all extremes; for, with an injunction not to leave the *placenta* behind, he recommends, in strong and repeated terms, the necessity of extreme caution, not to use violence, lest, we should invert, or do other injury to the *uterus;* and there is no doubt, but the opinion of so eminent a man must have had its influence upon the practice and writings of others, particularly of those of his own country. In the latter end of the sixteenth, and the beginning of the seventeenth century, Ruysch was in high reputation as an anatomist at Amsterdam, and he was empowered by the magistrates to inspect and regulate the practice of midwifery throughout that city. Ruysch had great industry and abilities; and his pursuits in anatomy, and his office, as president of the Obstetric College, leading him to the knowledge of many bad consequences, which followed

fantis intus fuit: hisque ultimis apprehensis, venulas membranasque omnes, eadem ratione manu diducere a vulva, totumque illud extrahere, et, si quid intus præterea concreti sanguinis remanet.—*Celsus*, lib. vii. Cap. xxix.

I may be permitted to observe, that many of the popular opinions, on medical subjects, are *now* the same in this country, as those entertained by the Roman writers. It is probable, that they were first introduced by those physicians and surgeons who attended the Roman army in Britain, and not acquired by the study of their writings.

* Not having the French edition of *Paré*, I transcribe the following from the Latin translation. *Molli* si fieri potest umbilici tractu; quod si sic non licet, obstetrix oleo inunctum manum, *blande* in uterum immittat, ducem secuta umbilicum, sicque comprehensas, si adhuc hæreant utero, *leniter* hac et illac concutiat, et sic concussas, *leniter* extrahat; *non autem violentius* educat, ne unà sequens uterus procidat.

the common method of managing the *placenta*, particularly the inversion of the *uterus*, he laboured the point with great knowledge and ingenuity in many parts of his works; discountenanced the practice, and forbad the *placenta* to be extracted hastily, choosing clearly to run the hazard of the evils, which might follow the imperfections of nature, rather than of those which would be incurred by the harsh and violent method then in use *. For many years after the time of Ruysch, the practice of Celsus was followed in this country, by some even down to this time, but not universally; for in a large manuscript, written on the subject of midwifery by Dr. Percival Willoughby, Physician at Derby, in the time of the Civil War, a copy of which came into my possession by the kindness of my very able and intelligent friend, Dr. Kirkland, there is this observation: "the after-birthe oft cometh of itselfe, yet it is not amisse to assist nature for the producing of it. There bee some midwiues, that *never* offer to fetch the after-birthe, but suffer nature to expell it, and their women have done well." The practice of extracting the *placenta* immediately after the birth of the child was nevertheless common in this country, which I am certain must often have produced both much immediate and future mischief. It was taught in the second school of midwifery established in London by Chapman in 1733; by Sir Richard Manningham, in the public establishment set on foot for the purpose of teaching midwifery, in the St. James's Infirmary, in the year 1738; and by Smellie, who I think came to London about the year 1742. Soon after this time, in 1746, Dr. William Hunter began to give lectures in anatomy; as an appendage to which, he added a certain number of lectures on the anatomy and physiology of the gravid *uterus*, interspersed with many important practical observations. With a mind composed and finely turned for observation, with a judgement exceedingly correct, and with unwearied application, Dr. Hunter soon acquired very high and deserved reputation; and the great character he established in the practice of midwifery, for which his person and manners were admirably well calculated, and in which he was soon and very much engaged, give a

* Prudentius ergo relinquere placentam, donec natura hanc separat, aut donec laxata, magisque libera, manu evellere hanc detur, quam lethali festinatione occidere ægram. Putetne quis, boni quid contigisse trucidatæ mulieri, quod mortua sit sine placenta? Quæ cum illa poterat vixisse! *Ruysch. Advers. Anat. Dec. Secunda.*—Some allowance is to be made for the arguments of *Ruysch*, which were intended to overset the bad practice of his time. For if the *placenta* were to be left entirely to nature in all cases, there would not be wanting many examples of mischief and fatal consequences from the very method which he recommends.

more than usual authority to what he advanced on the subject. Being* an associate with Dr. Sandys for the care of the lying-in department in the Middlesex Hospital, he proposed to Dr. Sandys, that they should try the event of leaving the *placenta* to be expelled by the action of the *uterus*, without attempting to give any assistance. After much consideration and some delay from the dread of censure, they agreed upon the trial; and in the first instance, the *placenta* remained twenty-four hours. No ill consequence however followed; and the trials being repeated with success, it became a very frequent, and almost general rule, to leave the *placenta* to be expelled without any assistance. Several untoward and some fatal accidents having followed this practice, it was altered; at least it became necessary to admit many exceptions; and, after a variety of changes and observations, I believe we are at length arrived at a state of practice, with regard to the management of the *placenta*, that will with difficulty be improved; a practice founded on common sense and observation; that the *placenta* ought to be, and is generally expelled by the action of the *uterus*, in the same manner as the child; feeling ourselves at liberty and called upon to assist, only when this action is not equal to the purpose, or when hæmorrhage or other dangerous circumstances demand our assistance.

SECTION IX.

ON THE EXCLUSION OF THE PLACENTA.

In the course of ten or twenty minutes, or a short time after the birth of the child, sooner or later, according to the condition of the patient at the time of her delivery, the action on the *uterus* returns for the purpose of expelling the *placenta* and membranes, which collectively have the common name of secundines, or *afterbirth*. This action is indicated by pains in all respects like those the patient had before the child was born, excepting their degree. When these pains come on, it is customary to take hold of the *funis*, by which, if we pull slightly, the evacuation of the *placenta* out of the *uterus* will be forwarded, without the risk of doing any kind of injury to the *uterus*. The *placenta* and membranes formed a complete lining to the *uterus;* but the *placenta* coming away first, and then the membranes, the whole is usually expelled in an inverted state; yet not always, as the separation of the *placenta* is in some cases so speedy, that it drops into the *vagina*, and pushes the membranes before it. But though the *placenta* is generally expelled in a short

* This account I had from Dr. Hunter himself.

time after the birth of the child, and with the return of a few pains, it is sometimes retained, on account, 1st. of the inaction of the *uterus;* or 2d. of the irregular action of the *uterus;* or 3d. of a scirrhous adhesion of the *placenta* to the *uterus.* It may be retained beyond the usual time, without any hæmorrhage, but whenever there is a discharge of blood, the whole or a portion of it must have been previously separated; and the hæmorrhage may continue, or increase, or cease and return in these cases, till the *placenta* is extracted or expelled. Every discharge of blood at this time, properly speaking, is hæmorrhage; but to this term, together with the other parts of the definition, we annex the idea of such a loss of blood, as, by its continuance or degree, may be apprehended to occasion danger, which we are ever to bear in mind; otherwise on every slight discharge of blood we might be led to make unnecessary attempts to extract the *placenta* by art.

A very strenuous and long continued exertion of all the powers of the constitution is often required for the expulsion of the child. These powers, though generally adequate to this effect, sometimes fail before it is accomplished. But experience having shown, that difficulties, to our apprehension insurmountable, are very frequently overcome by the natural efforts, both reason and humanity forbid or discourage all hasty determinations to pursue such measures, as may affect the safety of the mother or the child. But as there is a leaven of imperfection in all human actions, animal as well as moral, we may sometimes be led, by the most commendable motives, to defer that assistance, which any particular case may require, so long, that after the birth of the child, the patient may be in such an exhausted state, and the *uterus* so completely divested of all power of further action, that it is neither disposed nor able to separate or eject the *placenta;* and she is scarcely able to support the necessary consequences of her delivery. The mere debility of the patient is therefore often a powerful reason why we ought to wait, without making any attempts to hasten the separation or extraction of the *placenta;* as an immediate separation, natural or artificial, would render her still more exhausted and feeble, and greatly increase the danger arising from that debility, which before existed. Sometimes also, when a labour has gone on with great activity, there is, for a considerable time after, and from the moment of the expulsion of the child, even though the labour may not have been very fatiguing or slow, a total inaction of the *uterus,* for which no reason can be assigned. But if the time, which passes between the birth of the child and the expulsion of the *placenta,* be employed in composing the patient's mind, in cooling her when overheated, or in supplying her with proper cordials when much fatigued and wearied with

the preceding circumstances, in short, in restoring her to her natural state, it generally happens, and we may reasonably expect the action of the *uterus* to return, and make its efforts to throw off the *placenta* in the usual manner, though more time may be required. But during this time of waiting for the action of the *uterus* to return, should hæmorrhage come on, we must apply ourselves to the use of those means, by which the separation and exclusion of the *placenta* may be forwarded; there being (in a case of hæmorrhage equally urgent) as justifiable a reason for the removal of the *placenta*, when that is retained, as there was for the extraction of the child. But every discharge of blood is not a sufficient reason for the introduction of the hand, or for the artificial extraction of the *placenta*, as some loss of blood most frequently precedes, and always accompanies both the separation and exclusion. We must therefore form a judgement of the necessity of extracting the *placenta*, by the opinion we entertain of the hæmorrhage being so profuse as to endanger the life of the patient by its continuance or probable increase. Sometimes also *coagula* are discharged in considerable quantities, which, from their appearance, might be suspected to have been formed in the time of or before labour, by an effusion of blood into the *ovum*, from the rupture of some vessel which ran over the surface of the *placenta*; which *coagula* do not indicate any danger. It is not exactly in order, but it must nevertheless be observed in this place, that when I have been attending women, who were prone to violent hæmorrhages after the birth of the child in former labours, I have made it a rule to keep them in an erect position, till the waters were discharged by the spontaneous breaking of the membranes, and the child was on the point of being born. By this method it appeared clearly to me, that the *uterus* acted more favourably, the *placenta* came away more naturally, and the quantity of blood lost was often very much diminished.

When the *placenta* is not separated or ejected in due time after the birth of the child, with or without hæmorrhage, means must be used for the purpose of its exclusion or extraction. If there be no hæmorrhage, or none of importance, it is always better to wait than to interfere, because slight attempts to extract the *placenta* by pulling by the *funis* may be just sufficient, by loosening a portion of the *placenta*, to occasion or increase hæmorrhage, and not equal to the extraction of the *placenta*; and such conduct is a very frequent cause of a degree of hæmorrhage, which may afterward lay us under the necessity of introducing the hand into the *uterus*, in order to bring away the *placenta*, which operation might not otherwise have been required. But after a certain time, which is too indefinite a term if we were authorised to employ one more precise, but cer-

tainly not within one, perhaps two, or even more hours, after the birth of the child, unless we are compelled by hæmorrhage or some untoward symptom, only very gentle means are to be used to favour its exclusion; and the most gentle must be first tried, as by giving and frequently repeating some actually warm and temperate cordial, which may renew the disposition in the *uterus* to act, by change of position to the opposite side, should the *uterus* decline in an unsupported way to the side of the *abdomen*; when it is always to be held in a proper direction by a pillow, or some such means; by making a moderate pressure with the expanded hand upon the *abdomen* to aid the action of the *uterus*; or by pulling very moderately by the *funis*, to try whether it be disposed to come away. As the term *moderate* has no precise meaning, and what I call violent may by another be called moderate, we will say that so much force is on no account to be used in pulling by the *funis*, as to incur the risk of tearing it from the *placenta*, or of inverting the *uterus*; and that it is better to make it a general rule, to prefer the introduction of the hand into the *uterus*, to separate and bring the *placenta* away, than to incur the hazard of either of these accidents. It is however to be observed, that when the hand is introduced for this purpose, there is not always a necessity of acting; for the very irritation thereby occasioned will often excite the *uterus* to its natural action, and the *placenta* be both separated and expelled, as will be recollected by every one accustomed to this operation. But the hand ought never, on any account, to be introduced into the *uterus*, except as a matter of necessity, and then with the utmost care and tenderness; and when introduced, should never be withdrawn, till the end for which it was introduced is, if possible, accomplished.

In writings, and in conversations on this subject, the introduction of the hand, for the purpose of bringing away a retained *placenta*, is often mentioned as a slight thing; but I am persuaded, that every person, who attends to the consequences of practice, will think it of importance, and that, if possible, it always ought to be avoided.

To promote the separation and exclusion of the *placenta*, the application of the half-closed hand to the *abdomen*, so as to make a moderate pressure, is sometimes of use, by aiding the *uterus* in its contraction; but this assistance cannot be given in the worst cases, that is, when the *uterus* is not at all contracted, or contracted irregularly. The respiration of the patient has also an evident effect upon the *uterus* and *placenta*, of which we shall be sensible, if we retain the *funis* in our hand, in the act of expiration, when it descends, and in the act of inspiration, when it is somewhat retracted. By supporting the *funis* with just so much force as will prevent its retraction in the

act of inspiration, we shall soon be sensible, that the *funis* is lengthened, which will prove that the *placenta* is descending; and the purpose of extracting the *placenta* will be completed, without the use of any other means: but this method requires much time and attention. Sometimes also the exclusion of a descending *placenta* may be favoured by pressing it, with one finger carried along the *funis* towards the *sacrum* or *ossa pubis*, in such a manner, as to bring down an edge instead of the whole mass; but this is not the case of which we are speaking.

In all cases of dangerous hæmorrhage, when the *placenta* is retained, it was said to be equally justifiable and necessary to extract the *placenta*, as it was to deliver the woman of her child under the same circumstances. But this general rule requires explanation, and some skill in the application. When there is a present hæmorrhage, so important as by its violence or continuance to threaten danger, the *placenta* ought to be immediately extracted out of the cavity of the *uterus*. This is not an opinion, but a rule of practice. But if there have already been hæmorrhage, so profuse as to occasion danger, and the common consequences of loss of blood, as fainting and the like, have already followed; the *placenta* ought not then to be extracted, nor the patient disturbed, nor any change made, till she is somewhat revived from her extreme debility; as the danger would be thereby increased, and the patient die, during or immediately after the operation, as I have seen and known in several instances. In other words, the extraction of the *placenta* is to be considered as a remedy for a present or an apprehended dangerous hæmorrhage, but cannot remove the effects of one which has already ceased.

In cases also in which there is no hæmorrhage, if the *placenta* be not ejected, or if none or but very feeble efforts be made by the *uterus* for this purpose, a time will come, when we must determine upon its extraction, or leave it behind; and the latter being unsafe and unjustifiable, the mere retention will be sufficient authority for us to extract it. Upon this point there can be no dispute, except as to the time; and we will say, leaving the matter at large, for the exercise of individual judgement, that if the *placenta* be not expelled at the end of four hours from the birth of the child, it is generally wise to determine upon extracting it; and the determination of choosing that time is, I believe, to be founded on the opinion, that the parts have not closed since the expulsion of the child. I can however recollect many examples of a retained *placenta*, without a hæmorrhage, to which I have been called at any time within twelve or even twenty-four hours after the birth of the child, in which the *placenta* has been very easily managed when the exigencies of the case required it.

In this place it is necessary to mark another distinction. Though

the *placenta* may be retained for many hours after the birth of the child, if we be convinced of some degree of descent, especially if we can feel that part of it into which the *funis* is inserted, we have no occasion to be alarmed, or to hurry its exclusion, unless there be an existing hæmorrhage. Then the *placenta* may be suffered to remain, till it is excluded by the action of the *uterus*, or as it descends, the most gentle assistance may be given by pulling by the *funis*, to extract it without any apprehension of danger, whether it be detained two, or even twenty-four hours; because we have at all times, under such circumstances, an easy and certain command of it.

In the case of a lady of the highest rank, to which I was called in consultation, we suffered the *placenta* to remain twenty-two hours before it was extracted, but there was no hæmorrhage; and the part of the *placenta* into which the *funis* is inserted, was very perceptible.

SECTION X.

ON THE EXTRACTION OF THE PLACENTA.

WHENEVER we have determined upon the necessity and propriety of extracting the *placenta* by art, we must proceed in this manner. The patient being placed in a convenient position, as when we deliver with the *forceps* or *vectis*, and every thing in order, the *funis*, which is our guide, is to be held with a moderate degree of tightness. The external parts are usually in such a state, as not to require much dilatation; but if this should be necessary, it must be done tenderly, and in the manner before directed with the right hand or left, as may be found most convenient; as must also the *os* or *cervix* of the *uterus*, should either be contracted. When the hand is in the *vagina*, the *funis* is to be slowly followed into the *uterus*, which though in a state of total inaction before, may then be irritated to a sufficient degree of action, to separate and expel the *placenta*, without any further assistance on our part. But if the spontaneous action of the *uterus* should not come on, we must proceed with the hand to the *placenta*, which may either adhere with its whole surface, or it may be partly, or even wholly separated and lying loose in the cavity of the *uterus*. Should there be a total adhesion, we must search for the edge of the *placenta*, on the outside of the membranes, cautiously distinguishing between the *placenta* and the *uterus*. When the edge of the *placenta* is raised, the further separation must be made with the blunt ends of the fingers, and the closer and firmer the adhesion, the slower the separation ought to be made; not proceeding rashly, or affecting dexterity, but giving our heads time to guide our hands, as if the operation were performed under inspection. By slow proceeding, and by demurring a short time if we meet with more than ordinary dif-

ficulty, the separation will be perfected; or, when the greater portion is loosened, if we grasp it slightly in the hand, and bend it backwards, the remaining part will often peel from the *uterus*, without trouble; but this requires much caution. Should the *placenta* be found partly separated, we must proceed in the same manner. But whether on the introduction of the hand we found the *placenta* separated, or whether it were necessary to separate it, we are not to extract it immediately, but to wait till the *uterus* begins to contract, and then to withdraw the hand including the *placenta*, more quickly or slowly, according to the degree of contraction; for the hæmorrhage may not be occasioned because the *placenta* was retained, but because its retention, or some other cause, hindered the contraction of the *uterus*. If there be no action of the *uterus* whatever, it is of service to throw the fingers gently backwards against the sides or *fundus* of the *uterus*, to irritate and bring on its action, previous to our withdrawing our hand. But when the *uterus* is perceived to act, then gently withdraw the hand, till the *placenta* is brought into the *vagina*. Whatever was our motive for introducing the hand to separate the *placenta*, when it is brought into the *vagina*, it ought to be suffered to abide there, till the patient is composed, and recovered from her fatigue, and till the *uterus* has had time to contract in such a manner, as to prevent the return of the hæmorrhage, at least, in a dangerous way. For many years I have made it a rule to leave the *placenta*, naturally, or artificially separated, to abide in the *vagina* one hour, after it was voided out of the cavity of the *uterus;* and I am convinced by this method there is an infinitely less chance of an ensuing hæmorrhage, on its coming or being brought away, and less after-pain. For the blood discharged in consequence of the separation of the *placenta* usually forms into *coagula*, which are collected into the membranes as in a net, and the *uterus* is left perfectly void of any thing, which can become the cause of any considerable pain; but many, I must acknowledge, have doubted the propriety of this practice.

With regard to those cases in which the *placenta* is retained by the irregular action of the *uterus*, which is in some instances evident for several weeks before the time of labour, there is generally some degree of hæmorrhage, and often a very profuse one; though sometimes there is no discharge, or none of importance, only a retention of the *placenta* beyond the common time of its expulsion. Should all the parts of the *uterus* act with equivalent force at the same time, the united action would contribute to the expulsion of whatever may be contained in its cavity. But if one part, the inferior for instance, should act, when the other is at rest, a contrary effect might be produced. The forms, which the *uterus* may assume in consequence of this irregular action, are innumerable, but the most common is the

longitudinal, which is produced when all the parts, except the *fundus*, act; or the hour-glass form, when the middle of the *uterus* only acts, by which it is divided as it were into two chambers or cavities. When it was the custom to bring away the *placenta* immediately after the birth of the child, three reasons were assigned for the practice; first, that it was a dead substance, without any power like that which was supposed to be inherent in the child; secondly, that it was an extraneous mass, which became pernicious every moment it remained; and thirdly, that if not immediately extracted, it would be almost impossible to bring it away, the *os uteri* closing in such a manner, as absolutely to prevent its exclusion. These opinions are proved to be groundless, for both the child and the *placenta* are equally passive substances, expelled by the action of the *uterus;* and the latter, like a dead child, may without prejudice remain in the *uterus* many hours or even days without doing any mischief; and the opinion of the *os uteri* closing so soon after the birth of the child is without foundation, as this seldom or never happens; what has been esteemed the natural closing of the *os uteri,* being in reality an irregular contraction or spasm of some portion of the *cervix,* from which we are assured with common care no harm and little additional difficulty can arise *.

When the *uterus* is contracted thus irregularly, as the *placenta* cannot be expelled, it must be extracted by art, whenever on account of a hæmorrhage, or of the time that is past since the birth of the child, it may be thought expedient or necessary. There is generally no way of judging of this kind or degree of contraction, unless by the uncertain information we may acquire by the application of the hand to the *abdomen,* till we introduce our hand into the *uterus;* and before this operation, it is always proper to try, whether the *placenta* may not be disposed to come away by any of the gentle means before recommended. On the failure of these, and being fully convinced of the necessity, the hand must be conducted in the manner before mentioned, till we come to that part which is partially contracted, whether it be at the *cervix,* or in the cavity of the *uterus.* The hand must then be reduced into a conical form, in the way directed for the dilatation of the *os uteri* or external orifice in preternatural labours. Should the spasm be in such a degree, as to make a perfect closure of the *uterus* round the *funis,* one finger must be

* Scire enim est post natum infantem, in utero nullum reperiri tale os ut olim fuerat; sed ita omnino se res habet, ut in bursa nummaria, quæ loris transmissis constricta, rugosum os format; laxatis autem hinc vinculis, ubique æque lata et expansa. *Ruysch. Advers. Anat. Dec. Secunda.*

The tenth chapter of the second Decade is full of useful observations regarding the management of the *placenta,* given in very honest and animated language.

first insinuated along the *funis*, and this being turned with a semi-rotatory motion will soon make room for a second, and so on, till all the fingers, in a conical form, may be admitted. The dilatation is sometimes to be made in opposition to a very firm contraction, yet it must be done steadily and resolutely, though not rashly or violently. Before the hand is passed beyond the contracted part, this must be amply dilated, otherwise it may clip round the wrist, and impede the subsequent part of the operation. When the contracted part is amply dilated, the hand must be carried forwards into what may then be called the upper chamber of the *uterus*, in which the *placenta* is contained. Whether this be separated wholly or partially, or be yet adhering, we must proceed according to the method before mentioned. Immediately upon the separation of the *placenta*, the hand containing it is to be drawn out of the upper cavity, to that part of the *uterus* which was before so closely contracted, and held there, till by the pressure behind, we are sensible of the action of the *fundus*. The hand containing the *placenta* is then to be withdrawn by slow degrees, till it arrives in the *vagina*, where the *placenta* may be suffered to remain for one or several hours; or we may wait till it is wholly expelled by the pains, in order to avoid the hazard of a subsequent hæmorrhage.

When the *placenta* is either expelled by the action of the *uterus*, or extracted by art, it should be a general rule to apply the hand to the *abdomen* afterward, that we may be assured the *uterus* is not inverted; but this method is not always satisfactory, for in one case to be afterwards described, though the volume of the *uterus* was felt, apparently contracting properly, the inverting *uterus*, as it receded, was mistaken for a regular contraction.

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 *placentæ* 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 there is found, on the introduction of the hand into the *uterus*, 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, as these 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 *fœtor* 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 existing 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 made, 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 to the practitioner only, 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.

The *funis* is commonly inserted about one third of its 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*; and the ease or difficulty, with which this may be brought away, somewhat depends upon the insertion of the *funis*. The chance also 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 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 we should be called to assist others, we must determine whether the case will allow of further waiting, or whether there be a necessity of 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 inconveniencies 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, we should therefore 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.

SECTION XI.

ON HÆMORRHAGES WHICH FOLLOW THE EXCLUSION OR EXTRACTION OF THE PLACENTA.

The hæmorrhage, which follows the exclusion or extraction of the *placenta*, may be a continuation of that which came on before the birth of the child, or between the birth of the child and the expulsion of the *placenta*; or it may be unconnected with either of these, and be merely a consequence of the separation and exclusion of the *placenta*. This has usually been described by writers as an immoderate flux of the *lochia*, but is with more propriety arranged under

the class of hæmorrhages, and though generally not so dangerous as either of the varieties last described, it is often alarming, and, under particular circumstances, has sometimes proved fatal.

The discharge of blood, which follows the separation and exclusion of the *placenta*, varies in different women, being in some very small, and in others there is, after every act of parturition, a disposition to a very profuse hæmorrhage, which suddenly reduces the patient into a frightful state. It is a popular opinion, that the greater these discharges are at the time of delivery, the safer women will be from the chance of diseases during childbed; and this opinion very much lessens the terror of the by-standers, when discharges come on with great profusion. But the practitioner who knows the possible effect of sudden and violent hæmorrhages at this time, especially in patients who were before much weakened, cannot feel at his ease, though supported by the general experience of their being seldom dangerous. Nor is the opinion true, that the greater the discharge, the safer the patient will be; for whatever weakens the patient extremely, must render her more liable to diseases of various kinds in childbed. For the prevention of this hæmorrhage in those who have suffered from it in former labours, I have recommended their taking some tonic medicine, as one grain of *zincum vitriolatum* two or three times a day for several weeks before the time of their delivery, and the use of the cold bath throughout the latter period of pregnancy, even to the day of their delivery. But when, from former events, there is reason to be apprehensive of hæmorrhage subsequent to the exclusion of the *placenta*, that has been altogether prevented, or very much lessened, by delaying the time of the patient's going to her bed, till the child was upon the point of being born; or even suffering it to be born while the woman sat upon the lap of one of her attendants.

It has often been a matter of great surprise to me, when I have seen a patient bear a sudden discharge of what seemed an enormous quantity of blood on the coming away of the *placenta*, without fainting, or showing any signs of the common consequences of great loss of blood; but it may be explained in this manner. Should every drop of blood, which circulates in the *uterus*, be discharged in an instant, it would be of no immediate consequence to the patient, the very existence of the *uterus* not being necessary for her life. When all this blood is discharged, if the *uterus* should contract speedily, so that the vessels should be reduced to a small size, there would not be a continuance or return of the hæmorrhage, and the patient would exhibit no signs of suffering from that which had happened. But after the discharge of the blood contained in the vessels of the *uterus*, as before stated, if there should be no contraction of the *uterus*, then

the vessels remaining of the same size, and the communication between the body and the *uterus* being preserved open, as in pregnancy; the vessels of the *uterus* would be replenished from the constitution, and the same effect would be produced in the patient, as if it were really lost. Should this second quantity of blood supplied to the *uterus* be discharged, and another be claimed from the constitution, then, according to the quantity demanded, the quickness, and the number of the times the demand was made, would of course be the danger of the patient. In some cases the hæmorrhage does not follow the extraction of the *placenta* immediately, but comes on after a certain time; and then it may be supposed, that the communication between the body and the *uterus* was closed, but not being confirmed, was opened again by some effort too soon made, or more violent than the situation of the patient could endure. These circumstances point out very clearly the necessity, in the management and for the prevention of uterine hæmorrhages, of ever remembering, that the danger attending them is lessened, and the safety of the patient secured only by a proper contraction of the *uterus*. Hence in hæmorrhages of this kind, however vehement, the accession of uterine pain immediately proclaims, that the danger is passing, or is past.

With respect to this variety of hæmorrhage, two things are to be considered; 1st. by what method or means it is to be prevented; 2d. how it shall be remedied, when it does exist.

When the hæmorrhage depends upon the imperfect or irregular action of the *uterus,* excited for the end of expelling the *placenta,* it may not be in our power to regulate these. But as far as relates to the force used in the separation, or hurry in the extraction of the *placenta,* we may always act reasonably and calmly, and proper conduct will generally insure success. It was before advised to leave the *placenta* in the *vagina* for one hour after its exclusion from the *uterus,* in common cases, unless it were sooner expelled by the natural efforts. Objections have been raised to this, because it confines the patient to an uncomfortable situation for a long time; and it has been said, that it was cruel to leave her friends under anxiety, with the delivery incomplete, when we have the power of readily bringing the *placenta* away. Now, if we are speaking of a case of real or presumed danger, the argument of uncomfortableness is not to be put in competition with a conduct, on which the increase or diminution of that danger may turn; nor does the censure of a good action make it degenerate into a crime, or convert that, which is in its own nature honest and intelligent, to cruelty. On the contrary, it may be the height of tenderness, in me, to encourage the patient to bear a small degree of present pain or inconvenience, by which her safety is insured, rather than by an officious interposition to add to the hazard, by com-

plying with the solicitation of those, who are not qualified to judge. When the *placenta* is brought into the *vagina*, we have then the absolute command of it at our pleasure; but the very ease, with which it could be brought away, is often a good reason why it should be suffered to abide, as it proves, that there is no natural contraction of the parts for its exclusion, otherwise it would be expelled without any assistance. In what other manner a *placenta* remaining in the *vagina* may contribute to the checking or the prevention of hæmorrhage, except that, by the irritation made upon the *os uteri*, it urges the *uterus* to act, it may be hard to say: though I am convinced of the benefit thence derived. Nor have I, when attending patients who have been prone to a hæmorrhage in former labours, been satisfied with leaving it in that situation for one hour, but have prolonged the time to two hours, or more, unless it should be in the mean while ejected by the pains, which, proving the increased action of the *uterus*, would give an assurance of safety. Moreover, after waiting so long as seemed reasonable and proper, I withdraw the *placenta* very gently, not increasing the force on account of every obstacle, but demurring and waiting longer. Even after the *placenta* is wholly excluded, if the membranes stick, I wait yet longer, and proceed more slowly, knowing that a few minutes occasion a difference between the loss of one, and seven or eight ounces of blood, which sometimes may be of the utmost importance; nor, under these circumstances, can any harm arise from delay.

When we have the management, or are called to cases of preceding or present hæmorrhage, the *placenta* being extracted, it should be an unfailing general rule to examine the patient, to be sure that the *uterus* is not inverted; or perhaps by slight irritation about the *os uteri*, to endeavour to bring on its action. Then all the means before recommended for the suppression of hæmorrhages are to be put in practice, speedily and strenuously; and we are also to endeavour to promote the action of the *uterus*, if at rest, or to strengthen it if feeble, by moderate pressure upon the *abdomen* with a very cold hand.

After the exclusion of the *placenta*, on the application of the hand to the *abdomen*, it is sometimes clear, from the volume of the *uterus*, though contracted, that there are very large *coagula* contained in its cavity. We have been directed by gentle dilatation of the *os uteri*, to give these an opportunity of coming away, or even to introduce the hand for this purpose (see the quotation from *Celsus*, at page 361.), as by their continuance, they are supposed to keep up the distension of the *uterus*, and to occasion a continuance of the hæmorrhage, as well as other mischief. Of any advantage said to be derived from this practice I am very doubtful, or whether it may not

be suspected to renew or increase, rather than to suppress, the hæmorrhage. I have never attempted it, nor even troubled myself with the state of the *uterus*, (unless it were inverted), after the *placenta* was brought away, but have left whatever *coagula* it contained, to be expelled by its own action. Some have believed, that this sort of hæmorrhage was to be prevented by giving, after the birth of the child, without hesitation, two or three glasses of wine, or even a stronger cordial, with a view of bringing on a speedy contraction of the *uterus*, and I have really thought sometimes with great success.

The fainting which follows hæmorrhages was considered as an effect produced by, or as a remedy provided for, their suppression. It was also said, that the medicines given, or the means used, did service according to the degree of chillness they occasioned, and the slackness of the circulation which followed. We were cautioned not to remove this faintness by the hasty exhibition of cordials, lest with the return of the circulation, there should be a renewal of the hæmorrhage; at least till we had given sufficient time for the contraction of the vessels and other circumstances to take place, before the patient revived. But when the patient becomes cold, and there is apparently the most imminent danger of her dying, we must presume those effects are produced, or no longer regard them, but give without delay nourishment and cordials in small quantities, very often repeated, and the patient must be as it were compelled to live, by the strenuous and constant support we give. Nor is the exhibition of cordials to be confined to any particular quantity or time, we are only to be guided in both respects by the continuance of danger. Wine, brandy properly diluted, or any domestic cordial, will be suitable on these terrible occasions, and they must be made actually warm. In some cases, volatiles have a good effect, and the *julap. vitæ* of Bates, which is composed of warm wine and the yelks of eggs, with the addition of a few drops of oil of cinnamon, has proved an admirable medicine. Yet I must confess, that the best and most general cordial is very cold air, at least this is indispensably necessary; and the strongest stimulant in extreme cases is, to sprinkle the face repeatedly with cold water, which the patient, sensible of the benefit she receives, would often require to be done with great earnestness. (Chapman mentions a compliment paid him by Sir Richard Blackmore, in a case of this kind, which shows great accuracy of distinction. If, said Sir Richard, you had used less cold applications, this patient would have died from the loss of blood; and if you had continued them longer, you would have extinguished the powers of life.)

On the same ground on which these medicines are advised, opiates, though in some cases they may prevent, were esteemed improper, during the continuance of a hæmorrhage, and they certainly

ought not to be given too freely, when the patient is reduced to a state of great weakness. Above all, she is not to be disturbed, or raised to an erect position, but the small portion of the principle of life is to be carefully husbanded; and there is often a power of living in a quiescent state, or in a recumbent position, when the patient would be destroyed by the least exertion, or by being raised to an erect position. Whether an hour or a day be required for this purpose, after a profuse hæmorrhage, the patient ought not to be raised, or even moved, before she is quite revived, and then with the utmost care and circumspection; for through want of attention to this matter, sudden death has sometimes happened, when we were not suspicious of danger. But when immediate danger is no longer apprehended, and the patient has been reduced to a very low state, the views of practice are changed, and it will not even then be prudent to replenish the emptied vessels too hastily, or to stimulate them to strong action. In some cases I have really been fearful of changing the position of the patient, for twenty-four hours.

It is lastly to be observed, that in the violent and pertinacious headach *, and other nervous complaints, which follow profuse hæmorrhages, and sometimes continue for many weeks, it will be of great service to procure two or three stools every day previous to the exhibition of the *bark*, or other tonic medicines, though the patient be pale and in a weak state. For the present relief of headach, cold applications to the temples, as white of egg mixed with powdered *bay* salt, or crude *sal ammoniac*, always keeping the legs and feet warm, will sometimes be of service, as will also occasionally all the nervous medicines in common use.

These observations I have written with great pleasure, hoping they may be of service, and I may recommend the method founded on them with some confidence, having in practice seen innumerable instances of its good effects, though the subject may yet admit of much improvement.

SECTION XII.

ON THE INVERSION OF THE UTERUS.

The inversion of the *uterus* has been more than once mentioned, but the subject is so important, as to require some further consideration.

In every case in which there was reason to suspect this terrible accident, especially when it had been found necessary to extract the *placenta* by art, we were generally advised to apply the hand to the *ab-*

* Douleurs du teste apres grandes pertes du sang.—*Mauriceau.*

domen, for the purpose of trying whether the tumour of the contracted *uterus* could be felt, and if there were any remaining doubt, to examine *per vaginam*. When it is inverted, instead of feeling through the integuments the volume of the contracted *uterus*, there is a considerable vacuity at the lower part of the *abdomen*, which gives sufficient reason to suspect the inversion, and by the latter examination it is proved. In one case which was under the care of a person, who might have been allowed to be a competent judge and expected to act more wisely, when he applied his hand to the *abdomen*, the recession of the inverting *uterus* was mistaken for its contraction; and it was actually inverted, though he entertained no suspicion of what had happened.

The reasons advanced to prove the necessity of ascertaining the inversion are, 1. that the patient may be relieved from her present danger; 2. that a part of so much consequence may not be suffered to remain in that state, even if there were no hæmorrhage or other symptoms of immediate danger; 3. that if it were not soon replaced, it could not, after a very short time, be restored to its proper situation.

The inversion of the *uterus* is commonly attended with alarming nervous symptoms; but whether this is considered as the first cause of the hæmorrhage with which it is almost universally attended, or, merely of its continuance, or if there was no dangerous hæmorrhage; the reasons for replacing it speedily would be of equal force. Not that all women would die though the *uterus* were inverted, but that they would probably be in the greatest and most imminent danger; not to mention the shocking state they would be in for the remainder of life if they escaped. The impossibility of replacing it, if not done soon after the accident, has been proved in several cases, to which I have been called, so early as within four hours, and the difficulty will be increased at the expiration of a longer time. Whenever an opinion is asked, or assistance required in those cases which may not improperly be called chronic inversions, it is almost of course, that the reposition should be attempted; but I have never succeeded in any one instance, though the trials were made with all the force I durst exert, and with whatever skill and ingenuity I possessed; and I remember the same complaint being made by the late Doctors Hunter and Ford; so that the reposition of a *uterus* which has been long inverted, may be concluded to be impossible. It seems as if the *cervix* of the *uterus* continued to act, or had soon acted in such a manner, as to gird the inverted *uterus* so firmly, that it could not be moved; yet the inverted surfaces of the back of the *uterus*, though lying in contact, have not been found coalesced together, so as to form one mass, as has been surmised. All that art can do in such cases, in which the patients are commonly subject to profuse mucous discharges, or to frequent hæmorrhages, but without any un-

bearable pain, is to alleviate their sufferings, to moderate symptoms, and sometimes to support the perpending *uterus* by a flat pessary. In a plate published many years ago, there is an exact representation of an inverted *uterus* of long standing, from a beautiful drawing, by Dr. R. Atkinson; and a patient lately died with an inverted *uterus*, for whom I was consulted near twenty years ago.

Besides the complete inversion of the *uterus*, in which the *fundus* may be brought into the *vagina*, or without the body, dissections have shown, that there is what may be called a partial or semi-inversion, in which the *fundus* of the *uterus* has been bent inwards, but not passed through the *os uteri*; yet if it descended no lower the case might have remained wholly unknown during the life-time of the patients. This is accompanied with symptoms like those of the complete inversion, and had it been discovered, would have required equal care, and the same methods to be used for replacing it. Many years ago, in a case of retained *placenta*, I perfectly well remember feeling a beginning inversion, which was prevented by first restoring the *uterus* to its place, and then waiting a short time, before I made any farther attempts to separate or bring down the *placenta*; keeping my hand afterward in the *uterus* till it was contracted.

With respect to the causes of the inversion, it has generally been attributed, solely, to the force used in pulling by the *funis*, in order to bring away a retained *placenta*. But there is reason to believe, that the *uterus* has been inverted, when on account of a hæmorrhage, or some other urgent symptom, the hand has been introduced into the *uterus* while in a collapsed or wholly uncontracted state, and the *placenta* being withdrawn before it was perfectly loosened, the *fundus* of the *uterus* has unexpectedly followed, and a complete inversion been occasioned. I have also been assured, that in some cases there has been a spontaneous inversion; that the accident happened, at least, when no force, or none capable of producing the effect, had been used; and then it was imputed to the shortness of the *funis*, giving the disposition before the birth of the child; or to some untoward action of the *uterus*. But with this assurance, or explanation, I do not feel quite satisfied, because degrees of force must always be vaguely estimated; though if a disposition to an inversion be first given by the force used in pulling by the *funis*, it may be completed by the action of the *uterus*; or if the least possible degree of inversion were given by the shortened *funis*, it might certainly be completed by a very slight additional force in pulling by the *funis*, or by the mere weight of the *placenta*.

Ruysch, whose animadversions on the conduct of midwives are sufficiently severe, especially with respect to the hasty or violent me-

thods of extracting the *placenta*, to which only he attributes the inversion of the *uterus*, afterward acknowledges that the accident may, and did happen in his own practice, when no violence was used. His words are very striking: *Quamvis hoc malum oriatur nonnunquam ab obstetricibus minus expertis, funiculum umbilicalem plus quam par est attrahentibus, aliquando tamen ortum ducit a conatibus post partum remanentibus.* In the cases, however, to which Ruysch alludes, it seems probable that there was some preceding partial inversion, and that this was completed by the subsequent action of the *uterus*.

Uterine hæmorrhages following the exclusion or extraction of the *placenta*, though often apparently dangerous, very seldom prove fatal; yet now and then we hear of a patient dying from this cause. May it not be suspected, that in such cases there was an inversion of the *uterus*, partial or general, which together with hæmorrhage is always attended with dreadful disturbance of the whole nervous system? Whether the *uterus* be inverted or not, should therefore in the first instance be ascertained by the methods before mentioned, in every case of profuse uterine hæmorrhage after the birth of the child, and particularly after the exclusion of the *placenta*.

Seeing then the causes by which an inversion of the *uterus* may be occasioned, knowing the immediate danger arising from it, and, as far as experience has proved, that after a certain time it cannot be replaced, we shall want no other inducements to use all possible care to avoid doing two things, which have not been uncommon in practice, though it is evident, that in various ways they must be injurious; first, pulling by the *funis* prematurely, or violently to bring away the *placenta;* secondly, hasty introductions of the hand for this purpose. Should, notwithstanding all our care, a case of this kind occur in our own practice, or should we be called to one, which had happened in that of any other person, we should find no difficulty, or very little, in restoring the *uterus* to its perfectly proper situation, if, which is of prime importance in every case of difficulty or alarm, we maintained the composure of our minds; if, paying due regard to the state of the patient, we made our attempt without delay, but at the same time without violence, or precipitation. The only point of practice, which occurs to me, as likely to raise any doubt of the conduct we ought to pursue, is, when together with an inverted *uterus* there is an adhering *placenta*. It would probably then be right to say, if the *placenta* be partly separated, it will be proper to finish the separation, before we attempt to replace the *uterus;* but if the *placenta* should wholly adhere, it will be better to replace the *uterus*, before we endeavour to separate the *placenta*. The ground of this opinion is, that while we are separating the *placenta*, the *cervix* of the

uterus is speedily contracting, and the difficulty of replacing it increasing which is a far greater evil than a retained *placenta.*

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 force, and together with this the *uterus* completely 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 a 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, at least they 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 right to deliver her with the *forceps,* and the operation was easy and safe. This child

she suckled for near twelve months, and then became again 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*. But while I was thus deliberating, a violent pain came on suddenly, by which the child was expelled with such force 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, 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, by which 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*, which 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 she could not suffer to remain. She suckled and nursed her child, but removing into the country, I could obtain no further account of her.

I now attribute my failure to replace the *uterus* to the time which passed between my first discovery of the accident, and my making 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*.

CHAPTER XVI.

ANOMALOUS, OR COMPLEX LABOURS.

ORDER SECOND.—LABOURS ATTENDED WITH CONVULSIONS.

SECTION I.

GENERAL OBSERVATIONS.

The rules given by different writers, for the management of labours attended with convulsions, seem to have been founded on less certain principles, and to have been less confirmed by experience, than those which have been given for almost any other cases that occur. These rules have nevertheless led to two methods of practice, offered with sufficient confidence, though diametrically opposite to each other. According to the first *, which has been most generally approved and followed, it was deemed indispensably necessary, to deliver the patient by art, as expeditiously as possible, to free her from the cause of her impending danger. But according to the second †, it being presumed that the convulsions appertained to the labour as symptoms, this, if natural in other respects, was to be suffered to go on without interposition, as if there were no convulsions; while we were to be engaged in using the most efficacious means for preventing their return, or for lessening the effect which might be produced by them. Without success, whatever has been done or omitted, has occasionally been blamed or regretted; and, in consultations on cases of this kind, I have generally observed, that the person, who advanced his opinion in the most confident manner, prevailed on the rest to acquiesce in his sentiments; the records of experience having been thought insufficient, or not so duly weighed, as to satisfy our minds, or to justify our forming an irrefragable rule of practice.

* La convulsion est un autre accident qui fait souvent perir la mère et l'enfant, aussi bien que la perte de sang, si la femme n'est tres promptement secourue par l'accouchement, qui est le meilleur remède qu'on puisse apporter à l'une et à l'autre. *Mauiceau*, vol. i. chap. xxiii.

† Naturæ partus, quoad cætera sanus, relinqui potest.—*Roederer. Element. Art. Obstetric.* Aphorism. 679.

The true puerperal convulsions have not been accurately described; yet there are some peculiarities in the symptoms preceding their appearance, and in the convulsions, or the manner of their return, which distinguish them from every kind of hysteric symptom; and perhaps from convulsions proceeding from any other cause. Together with the symptoms of the epilepsy *, which they very much resemble, there is not unfrequently a *stertor*, which has been considered as peculiar to the apoplexy; or the patients, in the intervals between the fits, are obstinately comatose. With the foaming at the mouth there is also a sharp hisping noise, produced by fixing the teeth, and by the sudden motion of the under lip, as if attempts were made to retract the *saliva* back into the mouth; and by this noise I have generally been able to discover the state of a patient in convulsions, though she was in another room. The intervals between the convulsions, which are of a shorter or longer duration according to the advancement of labour, evidently depend upon the action of the *uterus*, as will be proved merely by the application of the hand to the *abdomen*; and when they abate, the patients in some cases seem as if they were awakened by surprise, and soon recover the use of their faculties; but in others, they lie in the intervals in an insensible state, as if they were truly apoplectic, which they are not, though there have been instances of patients dying in the first attack, when there was no token of labour, as far as could be judged by the state of the *os uteri*. By the degree of the derangement in the intervals between the convulsions, the danger of the patient is to be estimated, as well as by the violence of the fits, or by the symptoms which preceded them. In the examination of many women who have died in convulsions, I have never seen an instance of effusion of blood in the brain, though the vessels were extremely turgid; but it is remarkable, that in all, the heart was found unusually flaccid, and without a single drop of blood in the auricles or ventricles; and in several there instantly appeared many large livid spots on the extremities and surface of the body. They all died immediately after the *diastole* of the heart.

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

* Epilepsia.—Agitatio convulsiva universalis, chronica, cum oppressione sensorum, exituque spumæ ex ore.—*Vogelius*.

Epilepsia.—Musculorum convulsio cum sopore.—*Cullen*.

Convulsio.—Musculorum contractio, clonica, abnormis, citra soporem.—*Cullen*.

Spec. 2. 1. Idiopathica. 2. Symptomatica.

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; but the heart was found flaccid, perhaps somewhat enlarged, and not a drop of blood in either the auricles or ventricles. Yet the late Mr. Hewson informed me of a case of convulsions, in which, on examination after death, he found an effusion of blood, in a 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 near 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.

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

SECTION II.

ON THE REPUTED CAUSES OF CONVULSIONS.

It is remarkable that puerperal convulsions occur so rarely in the country, that I have not been able to make some very intelligent men, of great experience, comprehend them, 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 under 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 makes them still more disposed to the same affections, and from slighter causes, to convulsions, than those women who, by education, and habits of living, are seasoned, as it were, against impressions which might affect either their minds or constitutions; for it is to both these we are to look for the causes of convulsions.

That the state of the mind does very often dispose women to puerperal convulsions, and other dangerous nervous affections, there are numerous proofs to be drawn from the histories of practice, and of which there is a very interesting case in the Bible (1 *Samuel,* chap. iv.); and three remarkable circumstances are mentioned; first, the cause, the violent agitation and distress of the mother's mind; second, her state of insensibility at the time of her delivery; third, that 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, this was preceded by convulsions, in which she died undelivered.) In some cases however, from a state of apparently perfect health, and without any known predisposing cause, 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, as 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; as I recollect two instances of women who had convulsions at the time of labour, preceded by violent headachs, brought on, as it appeared, by the use of some mercurial preparation mixed with the powder used for their hair.

But it is not only in weak and very nervous habits that convulsions occur, as they 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 plethora and fever, the method of treatment must of course vary; and great judgement will be required to suit the proper method, if that can be discovered, both in the degree and extent to which it ought to be carried, to the state of every individual patient.

Besides the general affections of the body, which may be supposed to give a disposition to convulsions, affections of different parts, as of the intestinal canal or bladder, if they should be too much loaded or distended, may have the same power*. But in the female constitution of 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 in pregnant women, on the first tendency to labour, that the changes, which that part 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

* Ad spasmodica, quæ ex uteri vitio proveniunt, pathemata concitanda, non opus semper erit, ut materia corrupta et vitiata, utero inhærens, proximè et immediatè id efficiat. *Hoffmann, de Mal. Hysteric.*

that part in the course of labour, when it is unusually rigid; or with 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 the 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 the blood to the superior parts of the body, to the head in particular, by overloading the vessels of the brain, produced convulsions. This opinion applies to a cause very general indeed, and, if true, must have had its 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; as 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.

SECTION III.

ON THE MEANS OF PREVENTING CONVULSIONS.

For the prevention of common accidents it appears reasonable and proper, that women in pregnancy should avoid all irregularities in their manner of living, and every situation where they may be under restraint; or they will be liable to many complaints and inconveniencies. (Gregarious animals, when pregnant or giving suck, choose a place in the herd, different from what they take at other times.) At the time of labour it is a rule generally observed, that their minds should be kept composed, their apprehensions quieted, their present sufferings soothed by the tenderness of their friends and attendants; that they should be encouraged with the hope of a happy

event, and that the knowledge of every thing which might agitate or distress them should be concealed. But when any symptoms of disease appear, besides these precautions, such means, as the consideration of any particular case may indicate to be necessary, are to be used; and no symptoms can require more attention than those, which have been recited as threatening convulsions.

Bleeding is known to lessen, in a very effectual manner, all the complaints in pregnancy which arise from uterine irritation, and to a certain degree, in pregnant women, from most other causes. It is therefore, I may say, universally recommended in all cases, when convulsions exist, or are to be apprehended. In these, the quantity of blood to be taken away, and the repetition of the operation, which in the course of a few hours may in some cases be several times required, must depend upon the strength of the patient and the violence of the symptom: but certainly, I have not seen or heard of any case where the patients sunk from the loss of blood; though when they have been much reduced by the previous bleedings, it has afterwards been necessary to support with proper nourishment or cordials. But in some very urgent cases of this kind, besides the blood which may have been thought necessary to take from the arm, it will be also found necessary or preferable, especially when the head is particularly affected, to use local bleedings, by scarification and cupping at the nape of the neck, or by opening the jugular vein, or sometimes by cutting the temporal artery; a thing so easily done as not to deter us from the practice, and often so efficacious as to invite our doing it on many other occasions.

When these symptoms have been preceded or are accompanied by thers, which denote much disturbance of, or the lodgement of any offensive matter in, the stomach, gentle emetics may be given with safety and advantage. A lady had many severe attacks of this violent pain in the head, in the latter part of her pregnancy. In many affections of the brain it has been thought that emetics afforded singular benefit. (See *Pitcairn's Praxis Medicinæ.*)

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

Objections have been made to the frequent or habitual use of opiates for slight complaints in pregnant women; and there is much reason to suspect, that they sometimes, acting perhaps like spirituous liquors, prove injurious to the child. But these objections do not apply to their occasional use when they are really necessary.

Yet as, in very large doses, opiates have been known to produce convulsions, it seems better to give them in these cases, in small quantities often repeated, than in a large dose at one time.

Nervous medicines of various kinds are usually given on these occasions, rather from custom, or with the intention of procuring temporary relief than permanent advantage; but if they could be swallowed, no benefit has accrued from their use. On the whole, it appears that in bleeding, and keeping the stomach and bowels in a healthy state, in giving opiates, and in the occasional use of the warm bath, we have the principal means which medicine affords, as far as can be judged either by reason or experience, of preventing puerperal convulsions, of insuring, in general, a safe labour, and a happy recovery *.

It may lastly be considered, whether in cases of convulsions existing or threatened after delivery, and indeed at all other times, especially when there are twins, it might not be expedient and beneficial to make a uniform pressure by passing a napkin round the body, as soon as it can be conveniently done, between the birth of the first and second child, in order to give a support equivalent to that which is lost by the sudden evacuation of the child.

SECTION IV.

OF THE TREATMENT OF CONVULSIONS.

From the attack of convulsions without any previous symptoms, or from the want of attention to those symptoms, we have more frequently an opportunity of exercising our judgement in curing than in preventing convulsions. These, it was before observed, may come on in the beginning, or in the course of a labour; or, which is more rare, though not less dreadful, soon after the birth of the child; and some difference of treatment may be requisite, according to the time of their appearance. But whenever they do come on, the danger is so manifest and so alarming, as to call for the immediate exertion of all the powers of medicine for the relief of the patient.

The first and most obvious remedy in a case of such violent agitation of the whole frame, and such obtusion or perversion of the mental faculties, is, to take away a proper quantity of blood from the arm; for the direct good, which may be expected to be gained by bleeding speedily, as well as for the prevention of the mischief, which might follow the convulsions. One copious bleeding has sometimes entirely removed the convulsions, which have not return-

* Mulieri ex partu convulsione tentatæ, si febris succedat, bonum est.—*Hippocrat.* Lib. i. *de Morbis.*

ed, after as well as before delivery; but should these continue with equal force for a certain time, it will be expedient to repeat the bleeding, or for the particular easement of the head, to try the effect of local bleedings. Leeches are too slow in their operation, though they may be safely applied, and affording some relief, should not be neglected; and scarification, with cupping, could not be done without much difficulty, so that the two methods, most applicable and adequate to the urgency of the case, are, to open the temporal artery, or the jugular vein; and the latter has certainly been found preferable, perhaps because the blood is thereby discharged with greater velocity. For a patient, who was lying in a state which deprived me and several physicians of all hope of her recovery, Dr. Reynolds proposed, that the jugular vein should be opened. The good effects were almost instantaneous; the patient recovered, and has since had many children. Objections are sometimes made to bleeding in this vein, lest there should be a difficulty in restraining the blood while the patient is so much disturbed; but there is no hazard, and the case does not admit of delay. The bleeding, from whatever part the blood may be drawn, is to be repeated according to the effect produced, the strength of the patient, and the violence or continuance of the convulsions. (The late Dr. Bromfield informed me of a case of puerperal convulsions, for which he had bled the patient without much benefit. In the violence of some of her struggles the orifice opened, and a considerable quantity of blood was lost before the accident was discovered; but the convulsions from that time ceased).

In the course of a few hours, I have by different operations seen more than forty ounces of blood taken away with the happiest effect; and in a labour of long duration, when the convulsions have continued, and been severe, at various times, not less than sixty or seventy ounces.

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

On a supposition that the remote cause of these convulsions is in the too great irritability of the constitution at large, and the immediate cause in the excitement raised by some new stimulant, as the labour, or the like, opium in any convenient form has been freely given, and sometimes with evident advantage; though I have seen many cases, in which it had no power to remove, or even to abate, this disease. From the exhibition of large doses, the patients have sometimes been brought into a comatose state, but the moment they are roused, the convulsions have returned with their former violence. Nor has more satisfaction been obtained by the various nervous medicines commonly prescribed; even musk, often repeated in very large quantities, that is, ten grains every hour, has done as little service as the rest. I do not recollect having tried the introduction of from two to three or four grains of purified *opium* into the *rectum*, though in many cases of great uterine pain and disturbance, *opium* used in this manner, has had a very powerful effect.

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 it. 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; and 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*.

On every principle, of removing the cause of the convulsions, of substituting new modes of irritation different from that which produced the convulsions, of preventing their ill consequences, or of abating that exquisite irritability which renders patients subject to them, almost every measure and method has at one time or other been tried. Harvey (*Exercitat. de Partu.*—Page 554,) recommended the irritation of the nose in a comatose patient who was in labour, and gives an instance of its success. Many years ago I was led by accident to try the effect of sprinkling, or dashing cold water in the face; and in that and other cases the benefit was beyond expectation or belief; but in some cases, in which I used this method

with equal care and assiduity, no good whatever was derived from it.

I subjoin the following case, to explain the manner of using the cold water. On a patient in convulsions, who had been bled, and for whom many other means had been fruitlessly used, I determined to try the effect of cold water. I sat down by the bed-side with a large basin before me, and a bunch of feathers. She had a writhing of the body, and other indications of pain, evidently occasioned by the action of the *uterus*, before the convulsions; and when those came on, I dashed with some force the cold water in her face repeatedly, and prevented the convulsion. The effect was astonishing to the by-standers, and indeed to myself. On the return of the indications of pain I renewed the use of the cold water, and with equal success; and proceeded in this manner till the patient was delivered, which she was without any more convulsions, except once when the water was neglected. The child was born living about fifteen hours from the time of my being called, and the patient recovered perfectly.

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

Nor has the application of sinapisms to the feet, or blisters to various parts of the body, afforded any advantage, except, perhaps, when the convulsions had ceased, and the patient remained comatose. Latterly it has been the custom in cases of convulsions, and in other cases of delirium, *mania*, and other violent affections of the head, to apply and to keep applied to the head, crushed ice, it is said, with evident and very great advantage. In the less degrees of affections of the head, or when ice could not be procured, folded napkins wet with cold water have been substituted.

When all the means which reason can suggest, or which experience has proved, have been tried to their full extent without success, the convulsions may remain, with evident and extreme danger of the patient dying every time they return, and having taken away as much blood as we can venture to do, we shall be driven by necessity to wait quietly for the termination of the labour in a natural way, hoping she may struggle through; or we shall be obliged to seek further resources in the delivery of the patient by art. But this part of our subject shall be considered in the next section.

SECTION V.

ON THE DELIVERY BY ART.

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

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

Women sometimes fall into convulsions before there is any discoverable tendency to labour, when there is not the smallest degree of dilatation or relaxation of the *os uteri*, and when there is no way of judging that it will be labour, except from the state of pregnancy, the peculiarity of the convulsions, or the manner in which they return, for by these they may in general be readily distinguished from those proceeding from any other cause. In some cases also, after a long continuance of the convulsions, the *os uteri* has remained closed; and then it has sometimes been presumed, that they were not, properly speaking, puerperal. Yet, after a long delay, it has usually happened, that the dilatation both of the internal and external parts has begun and proceeded very rapidly; so that, in a short space of time, from no degree of dilatation, the *os uteri* became unexpectedly but completely dilated, when all hopes of delivery had been laid aside, and the very existence of the labour had been denied. (In a well known case of this kind, the midwife, presuming that it would not be labour, left the patient, who was found dead in the morning, with her child, also dead, lying in the bed.)

When women have before had children, the infant and *placenta* have been sometimes expelled with wonderful rapidity, by the mere force of the convulsion acting upon the *uterus*. But even in such cases the convulsions may continue with equal danger after delivery, and then they will require a nicely distinguishing and yet resolute conduct.

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

terred from proposing it; and I think, be justified in forming this general rule of practice, subject perhaps to some exceptions, that women, who fall into convulsions in the beginning of labour, ought not then to be delivered by art.

I presume, that, with all the assistance which art enables us to give, or if the labour be resigned to nature without interposition on our part, patients will sometimes, though of late years such cases have very rarely happened, die in a deplorable manner. I also know that, if the patient should die when no attempts were made to deliver, the omission is always regretted; or, if she should be delivered by art and die, that the operation is lamented. Yet there must be a rule of conduct to be preferably followed, and with few exceptions; and this is to be made, not according to the timidity or boldness of the person under whose care the patient may be; nor according to the impatience or tenderness of friends; but according to a judgement formed by a sense of duty, maturely weighing all that the knowledge of a present case, or the experience of others, has enabled us to collect. (Dr. Ross, who, many years ago, was one of the physicians of St. George's Hospital, was the first person of late years, who had courage to declare his doubt of the propriety of speedy delivery in all cases of puerperal convulsions. The observation on which these doubts were founded was merely practical, and the event of very many cases has since confirmed the justice of his observation, both with respect to mothers and children.) But I have not for many years seen, or heard of a patient dying with puerperal convulsions, if bleeding had been timely and sufficiently performed. In the very fit of a convulsion, by which the patient was apparently killed, I have advised blood to be drawn from the arm, and she has recovered.

2. Though convulsions often happen in the beginning of a labour, and continue to its termination, the first stage is, in some cases, passed over without any unusual disturbance or irregularity, and they come on in the second stage of the labour, when the symptoms which usually precede them did not appear, or rather passed without observation. The propriety of delivering by art is then to be determined on other grounds than in the preceding statement, whether the convulsions have continued to, or commenced at, that time. For, if it should be thought necessary to deliver by art, this may frequently be done without any peculiar force upon the parts concerned, as the *os uteri* will then either be dilated with the membranes whole or lately broken, and the child may be turned without difficulty, and safely extracted by the feet; or the head will have descended so low into the *pelvis*, as to allow of the easy use of the

forceps or *vectis*; or things may be so unhappily circumstanced, as to leave no other option of the mode of delivery, but we may be compelled to lessen the head of the child, to preserve the life of the parent. Whichsoever of these methods may be thought proper or absolutely necessary, the rules before given for the management of difficult or preternatural labours will be sufficient guides for our conduct: and before any thing else is done, the membranes may be ruptured, and the water discharged; from which alone, in some cases, much benefit has been derived, by hastening the delivery. But, from a review of what has passed in my own practice, I feel it an indispensable duty to caution the operator against a forwardness to sacrifice the child in cases of convulsions, as many of these, with very unfavourable appearances, have terminated happily and safely both to the mother and child; and against hurry in any operation, as he would thereby lessen his chance of saving the child, and probably with disadvantage to the mother; and no good can result to society, or reputation accrue to the profession, from a practice by which neither of their lives is preserved. Should the convulsions continue after the birth of the child, the methods before advised must be tried and persisted in, or new ones adopted, as the state of the case may then require or allow; and under these circumstances it will often be found preferable, to satisfy ourselves with giving time, proceeding gently and circumspectly with general care, rather than to use incessantly the more active means, which it has been sometimes necessary to recommend.

With respect to those convulsions, which first appear after the birth of the child, the exigence of the case must govern the treatment, and great attention is to be paid to the *placenta*, which, I believe, should not then be hastily extracted. There is in these an appearance of instant and unexpected danger, beyond what is found even in convulsions before delivery, frightful as they always were. These convulsions are preceded or accompanied by the same symptoms as those which come on in the commencement or course of a labour; and notwithstanding the delivery, they require and allow of the same means being used for the relief of the patient, provided these are accommodated to her general strength and circumstances. In convulsions which come on after delivery, if women escape from the first fit, there is a great chance for their recovery; but should they remain comatose, or whatever their state may be, the particular symptoms are to be considered, and from all that has been said upon this subject at large, we shall be at no loss to discover what may be applicable in any individual case of this kind.

But there is yet room for much improvement in our knowledge of

the causes, effects, and treatment of convulsions depending on pregnancy and parturition; though the greatest confidence may certainly be placed in sufficient and timely bleeding.

Before the conclusion of this subject, it will not be amiss to speak of the sudden deaths which sometimes happen soon, or a considerable time after delivery, when there was no apparent reason for suspecting such events.

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:

First, when before delivery the patients were subject to frequent returns of spasm or cramp-like pains in the stomach, spreading 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.

Secondly, 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 constitution are not able at that time to recover vigour of action sufficient to sustain life.

Thirdly, 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.

Fourthly, in cases of extreme debility from other causes, particularly in the edematose 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, and death seems more unexpected and instantaneous under these than any other circumstances; in some cases 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, 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 exigencies of the case; and the stomach should be very often supplied with some actually warm drink, as weak broth, tea of various kinds, especially those made from ginger or pepper; with actually hot applications.

With regard to the second and third causes, there is no way of preventing their effects so reasonable, as by 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 pressing her too hastily to a convalescent state.

And with respect to the fourth cause, of which I have seen three instances, we are to be very circumspect, that we do not permit, or persuade patients to make much exertion, while they are very weak, but leave them to act according to their own feelings and judgement. But of this we shall speak hereafter.

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 under these circumstances; and it deserves more accurate observation, and greater consideration than have hitherto been given it.

CHAPTER XVII.

ANOMALOUS, OR COMPLEX LABOURS.

ORDER THIRD.—LABOURS WITH TWO OR MORE CHILDREN.

SECTION I.

The common order of generation, or the continuance of any particular kind of animal, according to the properties of each kind, is more frequently invaded by an extension than a failure of the principle; instances of unusual increase being often found both in animals and vegetables, though examples of this oftener occur in some classes than in others.

With respect to generation, all animals may be divided into two classes, uniparient and multiparient. Of the multiparient the num-

ber of young produced at one birth seems to be indefinite and governed by accidental circumstances, as the frequent intercourse with the male, plenty or want of food, and perhaps by the casual fixture of the first conception in the first chamber or partition of the *uterus*. It very seldom however happens, that animals multiparient by nature bring forth only one *fœtus* at a birth; and perhaps the uniparient do not more frequently bring forth more than one, though in every species there are exceptions to this general rule. As to the economy of this important end of the animal creation, it would probably be found, that the female multiparient animals have no exclusive attachment to any individual male; but that the female uniparient have naturally such an attachment.

In some species of animals, the propensity to bring forth more than their common number of young is greater than in others; in sheep, for instance, more frequently than in cows, in these than in lions. Climate, and state or degree of civilization, seem to have their influence in this respect on human beings: for in the account of the women admitted into the Middlesex Hospital in this city, in 8636 births, there were only ninety-three cases of twins, and none of a greater number. Of that number there were 3263 boys; 310 were still born, and of this number 180 were boys; and somewhat more than half of the twins were boys. But in the accounts published by Dr. Clerke of Dublin (see Philosophical Transactions), the number of twins was in greater proportion to the births, and there were several examples of three children.

It has been supposed, that there is a disposition in certain families to this multiplied generation, which may be transferred either by the male or female; but if this be the case, there are no tokens by which this disposition would be suspected, either from the form, size, strength, or other appearance.

It is not very usual for women to have twins, though these are to common observation more frequent in particular years than in others; and it can scarcely be doubted, but there is some relation in those years between the animal and vegetable creation. In the course of more than thirty years I have met with only one instance of three children, and never of more. I have been informed of several cases of four children, and there have been published a few cases of five children born at one birth, but beyond this number there is no well authenticated or credible case upon record.

The size of children born at one birth is generally in a reverse proportion to their number, as is also the probability of their being born alive, or continuing to live. Twins are frequently born living, and not much, if at all beneath the size of a single child; sometimes three have been born living, and been reared; but not often; and when

there have been more, the chance of all or any being preserved is very little, should the woman go to her full time. With more than two children women seldom go on to the full period of uterogestation, and even with two, there is a great likelihood of a premature birth, especially in the first pregnancy. There must of necessity be somewhat more complex and sometimes hazardous when there are two or more children than in a single birth, but he who understands the proper management of a twin case will meet with no difficulty to embarrass him, how many children soever there may be; we shall therefore consider and speak of all births of this kind under the denomination of twin cases.

SECTION II.

ON THE SIGNS OF TWINS.

1. Women are said to be always of a greater size in the advanced state of uterogestation when they are pregnant with twins, than when they have a single child. This is a very uncertain sign, and popular opinions being usually founded on this circumstance only, are therefore far more frequently fallacious than true. But if a woman be unusually large in the early part of pregnancy, and increase proportionably to the full period, there is good reason for suspecting she will have twins. But as the term *size* is indefinite, and what one, not much conversant in such matters, may consider as large, another may consider as moderate, there can be no surprise, if conjectures on this subject often prove to be erroneous.

2. The *abdomen* of all women with child is in general uniformly distended, without any inequality. It sometimes however happens, that the tendons, which form what is called the *linea alba,* which leads from the navel to the middle of the *ossa pubis,* being less distensible than the sides of the *abdomen,* which are muscular, divide the *abdomen* as it were into two equal parts by a *raphe* or indentation through its inferior part. This presumed sign of twins is as ancient as the time when the human *uterus,* like that of quadrupeds, was supposed to be divided into *cornua,* a child being thought to be contained in each horn. But as the form of the human *uterus* is now well understood, and known to be equally distensible to its contents, whatever the form of the *abdomen* may be, unless it be constrained by external means, even less regard is paid to the form of this, than to its degree of distension, when we are judging whether it be probable, that a woman is pregnant with more than one child, were it of any consequence to decide.

3. Women with child, especially those who have before had children, are sometimes apprehensive that they have twins, from a greater,

a distant, or some uncommon motion they feel during pregnancy. Some regard must at all times be paid to the representations of those who have had experience, though they may be ignorant of doctrines; yet I have seldom found these opinions verified by the event.

4. In the course of a labour, sooner or later, according to the strength of the membranes and of the pains, the waters of the *ovum* are discharged at once, by one large, or a repetition of less discharges, when there is only one child. Mention is sometimes made of a second discharge of water, before the birth of the child, as a sign of twins. This second discharge may be occasioned by an imperfect first discharge, or by water collected in a considerable quantity between the membranes, on the rupture of the second membrane. When however a child is far advanced towards birth, a sudden discharge of any considerable quantity of water from a part beyond the child does create a just suspicion of there being another child, the membranes of the second breaking by the efforts made to expel the first.

5. Extreme slowness of a labour, which has been considered as a sign of twins, may be produced by a variety of other causes, as we have often mentioned, and of course this must be a very uncertain one. It is true, when there are twins, the first labour is almost universally slow, and this slowness has been not unreasonably attributed to the great distension of the *uterus*.

But our ignorance of the number of children of which a woman may be pregnant, fortunately does not lead to any errors in practice; because if we knew with certainty that there were twins, our conduct with regard to the birth of the first child should not be altered. It would then be our duty, as at all other times, to wait for the expulsion of the first child, if the labour were natural, and any difference in practice would only relate to the second child.

After the birth of a child, it was formerly the custom to introduce the hand into the *uterus* to bring away the *placenta*, or any coagulated blood which might be collected in its cavity, and to ascertain whether there were another child. This practice has been for many years justly held both unnecessary and pernicious, the *placenta* generally coming away without any, or with very little assistance, and *coagula* being also safely expelled without any or much difficulty; and the application of the hand to the *abdomen* giving full satisfaction as to the other intention. By this method we can often feel distinctly if there be another child, and its limbs, together with the different parts of the body, through the integuments of the *abdomen;* but it is generally by the degree of distension which remains after the birth of the first, that we judge there is a second child. Yet on this principle I remember being mistaken in a case in which a young

woman with her first child had an *ascites* during pregnancy; and the error must always be of that kind, to lead us to believe there are twins when there are not, but can never suffer us to overlook the case, or to leave a child remaining in the *uterus*, which through inattention or ignorance has sometimes happened, though it be not always easy to decide.

In another case I remained for some hours in doubt whether there was not another child, from the awkward contraction and position of the *uterus*, the patient being much deformed.

In twin cases, priority of birth does not depend on superior strength, but on convenience of position; that which is nearest the *os uteri* or the aperture of the *pelvis* must first be born, whether it be strong or weak, living or dead. When one child is beyond comparison strong, and the other feeble, it is not unusual for the feeble one to be killed, apparently by pressure of deprivation of sufficient nourishment, though it may not be expelled before the full period of uterogestation; so that one may come into the world fat and full grown, and the other may be very small, withered, and compressed so as to be quite flat. This dissimilarity in size and appearance was once considered as a proof of the obsolete doctrine of superfetation.

SECTION III.

ON THE MANAGEMENT OF TWIN CASES.

It is a constant rule, to keep patients, who have borne one child, ignorant of there being another, as long as it can possibly be done.

In far the greater number of those twin cases, which have occured to me in practice, while I have been waiting for the circulation in the *funis* to cease, or employed in tying it, or waiting for a pain to exclude the *placenta*, the patient has complained with more than ordinary eagerness. On examination, I have found the second child on the point of being born, or the membranes protruding with great firmness, so that instantly on their breaking, the patient has been delivered with great rapidity, almost before I had time to give notice to the attendants, to prepare for its reception. Of course, in labours like these, nothing particular could be required to be done, as they terminated with as little trouble, as if there had been only a single child. Our intelligence and care can then only be exercised on one or other of these occasions.

1. Whatever may be the presentation of the first child, and whatever method it may be found necessary to pursue for the delivery of the patient, these are to be precisely the same, and there will be no greater difficulty, than if there were only a single child. One cir-

cumstance alone demands attention, that if the presentation of the first child be such as to require the child to be turned, when we have introduced our hand into the *uterus*, we must be careful not to break the membranes of the second child, if they be yet whole; or if we should find them broken, we must take care to bring down the feet of the same child. In all other respects I think I have found the turning of the child less difficult, when there were twins; and if we have been under the necessity of turning the first child, it will generally be expedient, to extract or get the command of the second, by repassing the hand into the *uterus* and bringing down its feet into the *vagina*.

Should the second child present with the breech or inferior extremities, there can be no solicitude about the case. We must act as was before advised in such cases, that is, we must wait for the expulsion of the child by the natural efforts, if they be excited, or be equal to the effect; otherwise we must give assistance.

The most fortunate presentation of the second child in a twin case is certainly with the inferior extremities, because it may in this position be extracted without injury or difficulty, and if assistance be required, this may be given with safety and convenience.

In cases of the second child presenting with the head, the same observations will hold good. That is to say, the child will probably be expelled by the natural efforts; or if further assistance be requisite, the *forceps* or *vectis* may be as conveniently used as in other cases, and according to the same rules and principles. As to lessening of the head of the child, this operation cannot possibly be needful, if there were room for the first child to pass without diminishing its bulk; unless from some very unusual circumstance, as hæmorrhage or convulsions, threatening the immediate death of the parent.

2dly. When after the birth of the first child there is a suspension of the pains of labour, and no efforts are made to expel the second child.

The process of the labour with the first child will usually have its effect on that of the second. If we were compelled to make the first labour artificial, it might be, and often is necessary and expedient, to deliver the patient of her second on the same principle, unless the natural efforts should be efficaciously made very soon after the birth of the first child; which is not the statement I now wish to make. But when after the birth of the first child, expelled in a reasonable time and by the natural efforts, from some cause which we cannot comprehend to counteract, no efforts whatever are made for the expulsion of the second child, the patient being as much at her ease as if there had been no previous labour. This is a state of great solici-

tude to every person careful for his patient, and of his own character, as he must know she will be in some degree liable to unpleasant, and even to dangerous symptoms, till the second child is also born and the business completed. The rules of practice have been on this subject not only various, but directly opposite. By the older writers we have been generally taught, that it was necessary and proper, if the second labour were not speedily finished immediately after the first, to extract the second child, according to its position or situation, by properly adapted artificial means. Others, on the contrary, averse on every safe occasion from the interposition of art, have advised us to wait patiently, till the efforts to expel the second child were renewed; unless some symptom should arise, which should call for more speedy assistance. The latter appears to be a more judicious principle on which to act in general, and it is supported by some facts under the eye and direction of very able men, as well as by many popular accounts; not to mention the guard it provides against the misconduct of those, who may not be perfectly competent to give that assistance, which they presume to be required. Like all other general principles in practice, it requires nice distinctions to be made in particular cases, otherwise the cause of danger will sometimes creep on insidiously, and come by surprise. No person can object to waiting for a certain time after the birth of the first child, provided there be no pressing occasion for his interposition, before he determines on the extraction of the second child by art. We can then only debate upon the length of time which it may be expedient to wait; and as we say with regard to the *placenta*, it shall neither be so short as to run the risk of injuring the patient by hurry or rashness, nor so long as to increase the danger should any exist, nor the difficulty of delivering the patient, if we should be at length obliged to use art for this purpose. Without regard to those who are fond of speculative opinions, or the determination of those who are guided by a few instances which have occurred in practice, I have concluded that we may safely, and ought to wait for four hours at least after the birth of the first child, before we deliver the patient by art of the second child; if there be no particular cause for delivering her sooner. By this decision we shall certainly avoid many unnecessary operations, without detriment to the patient, without increasing our own difficulties, or hazarding our reputation; and on particular occasions, it will not prevent our waiting a longer time. There have been many examples of women passing several days after the birth of the first child, with perfect security, before the birth of the second, which has then been completed by the natural pains.

The proper management of the patient after the birth of the first

child is very obvious. There is no reason for alarming her fears, and the case will terminate more favourably by keeping her ignorant of the circumstance, or if it be discovered by cheering her mind; and she will go on better, and with more resolution, by being assured that assistance shall be given, if she should not be delivered naturally before some fixed time.

3. When hæmorrhage, convulsions, or other dangerous symptoms come on, or are threatened immediately after the birth of the first, or before the birth of the second child.

Though there may be many aberrations, every labour has its denomination from the most important circumstance, with which it is attended, and such circumstance principally governs the practice, which it may be necessary to pursue. Among these, hæmorrhages and convulsions stand in the first place, and whatever may be the nature of a labour in other respects, that must be of secondary consideration. In twin cases, however proper or expedient it might be to wait, for a limited time, for the natural expulsion of the second child, the appearance of convulsions, or hæmorrhage, or other dangerous symptoms, would decide the matter, and put the propriety of waiting any longer out of the question. The patient, if these cannot be removed by other means, must be speedily delivered by art. But I wish to confine the term *speedy* to the determination to deliver; for under all circumstances, the operation instituted for extracting the child, of whatever kind that may be, ought to be performed deliberately, or we shall add to the danger which before existed. Whether therefore we be compelled by these dangerous appearances, or after waiting a specific time, four hours for instance, as was before stated, we have determined on the propriety of delivering the patient by art, we must bear in mind this rule, that we never ought to proceed with any degree of hurry or violence, if they can possibly be avoided. We must never forget, that it is not the mere delivery of a woman which is of value, but as this may be the means of freeing her from the immediate danger she is in, leaving her with the fairest chance of a perfect recovery, at the same time preserving, should it be possible, the life of the child.

SECTION IV.

ON THE MANAGEMENT OF THE PLACENTÆ.

When there are twins, more difficulty is expected, but not always found, in the management of the *placentæ*, than in the case of a single child.

The two *placentæ* are usually connected together so as to form

one mass; but in some cases they remain single, except where the membranes cohere, and must then of course be successively extracted.

The number of *placentæ*, separate or connected, is usually in proportion to the number of children. Some deviations from this observation have been recorded, a single *placenta* and a single cord having been found in a case of twins, the latter of which branched off into two, after it had departed to some distance from the *placenta*, (In the Memoirs of the Royal Academy there is an account of a case of this kind; and my worthy friend Dr. John Sims informed me of a case of twins, in which the two *funes* were so closely twined together, that they had the appearance of one.)

When the *placentæ* are separate, that of the first child should not be extracted before the birth of the second child, as a discharge of blood must necessarily follow, and perhaps a hæmorrhage; though sometimes one *placenta* has been discharged before the birth of the second child, without any material loss of blood. In some cases of hæmorrhage, when there was only one child, the *placenta* has been expelled before the child, without any detriment, though not without much apprehension of danger.

When the *placentæ* are connected, they usually remain perfectly attached till after the birth of the second child, otherwise there would be hæmorrhage.

If there have been a necessity of extracting the children by art, it is commonly, but not universally, necessary to extract the *placentæ* also by art, but if the *placentæ* are detained beyond a proper time, we will say two hours, after the birth of the second child, it is desirable, though there may be no very urgent symptom, that we should inform ourselves of the cause of this detention, and act accordingly.

But presuming that two or more children have been expelled by the natural efforts, and that there is no hæmorrhage or other cause of alarm, then there appears, and actually is, no more reason for giving assistance to bring away the *placentæ* than if there had been only one child, but we safely may and ought to wait for the expulsion of the *placentæ* by the natural efforts, as in a single birth.

When we do give assistance, we must recollect, that the two *placentæ* ought to be extracted together or in quick succession, as the patient would not be freed from the hazard of her situation, if any existed, should one of them be retained. When therefore we give assistance in pulling by the *funes*, we must be careful, that each shall bear an equal share of the force we think it expedient to use. Or if it should be necessary to extract the *placentæ*, by introducing the hand into the *uterus*, the hand is not to be withdrawn, till

both the *placentæ* are loosened and ready to come away. The case will then require precisely the same conduct as that of a single *placenta,* which there is no occasion to repeat.

The *uterine* discharges are more copious in a case of twins, than in that of a single child, and they are in general of longer continuance.

In all twin cases, after the birth of the first child it is prudent to apply a napkin round the body of the patient to support the *abdomen;* and that may be tightened after the birth of the second, and the exclusion of the *placenta.*

CHAPTER XVIII.

ANOMALOUS, OR COMPLEX LABOURS.

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

SECTION I.

The *funis umbilicalis* may in these cases be easily distinguished by its pulsation from any part of the child if it be living, and by its form and continuation, whether the child be living or dead. When a considerable fold of the *funis* drops through the external parts, the attendants are very apprehensive of danger from their ignorance of the part, but this alarm is soon removed by an explanation.

In these cases it may be reasonably thought that the *funis* is longer than usual, but some incident is generally assigned as the cause of its descent before the child. But the rupture of the membranes, with a rapid discharge of the waters of the *ovum,* especially if they be excessive in quantity, has been considered as the most common cause. This circumstance may sometimes indeed occasion the descent of the *funis,* but far less frequently than has been imagined. For, before the rupture of the membranes, the *funis* may very often be perceived through them; lying before the head, or presenting part of the child; so that, whenever the membranes break, whatever might be the quantity of water, or the manner of

its discharge, it would be impossible, but that the *funis* must be the part which first descends. For this, with many other reasons, so many cautions have been given to avoid breaking the membranes; because, though the *funis* were thus situate, the child would be in little danger, before the membranes were broken. It has also been observed, that the descent of the *funis* has happened to the same woman in several successive labours; so that, from the uncommon length of the *funis*, or other peculiar circumstance, some women seem to be particularly liable to this accident.

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

To gain all the assistance which art can afford for this purpose, we have been led to two points of practice: first, in endeavouring to return the descended *funis* beyond the head, or presenting part of the child, whatever that may be; in drawing it to the sides, where it might be out of the way of compression; or, if these were impracticable, to favour the continuance of the circulation, by preventing its exposure to the influence of the open air. Secondly, by passing the hand into the *uterus*, turning and delivering the child by the feet, by which it was expected that the labour would be accelerated, and the danger from the compression of the *funis* lessened or wholly avoided.

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

without inducing some danger to the mother, or with any prospect of advantage to the child; but we shall understand this subject better by considering it in the following manner.

SECTION II.

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

Should the membranes break in the beginning of labour, more especially if it be the first, when the *os uteri* is but little dilated, and the *funis* descend before the presenting part of the child, this would probably perish long before the *os uteri* became naturally dilated, or acquired such a state of dilatability, as to allow of the safe introduction of the hand, if we were disposed to turn the child; and before we had an opportunity of putting in practice any of the methods for replacing the *funis*. With this statement of the situation of the mother, it appears to be more eligible, and, I believe, it is generally consonant to the present practice, rather to submit quietly to the natural event of the case, than by violent and ill-timed attempts to deliver the patient by art, with very little or no hope of saving the child, and not without some danger to the mother.

SECTION III.

WHEN THE OS UTERI IS FULLY DILATED.

The *os uteri* is understood to be completely or sufficiently dilated, when it will allow of the introduction of the hand without much force. When the membranes break in the advanced state of a labour, should the *funis* be descended before the child, it will even then be necessary to consider the state of the child, before we determine on the measures we might find it safe, and think it reasonable to pursue. If the child should be dead, we then certainly ought to resign the labour to the natural efforts without any interposition. But, if the child be living, and the presenting part remain high up in the *pelvis*, especially if the pains have been slow and feeble, it will generally be better to pass the hand into the *uterus*, to turn and deliver the child by the feet; using, at the same time, the precaution of carrying up the descended *funis*, that it may be out of the way of compression. Should the head be so far advanced in the *pelvis*, as in any conspicuous degree to render the turning of the child unsafe to the mother; that is, if the child cannot be turned

without the use of much force, it may be proper to use our endeavours to preserve the child by other means, such as by replacing the *funis,* or by accelerating the labour in its present position; but the turning and delivery by the feet ought not to be attempted.

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

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

Many years ago Mr. Croft also informed me of a method, which he had successfully practised in several of these cases. When he had in vain attempted to replace the *funis* in the common way, he carried up the descended part beyond the head till he met with a limb of the child, suppose the leg or arm. On this he suspended the *funis,* and then withdrawing his hand, suffered the labour to proceed in a natural way. There may be much of accident in the success of these different methods, but I should believe, whenever it may have been thought necessary to introduce the hand into the *uterus,* that it would be found more expedient, to complete the business by turning the child, and delivering by the feet.

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

SECTION IV.

FURTHER OBSERVATIONS.

1. It is to be observed, that every child is not born dead, though the *funis* had first descended, and no means were used to free it from compression; but it must evidently have been in the greatest jeopardy. The danger of these cases depends upon two circumstances; the time which may pass when the *funis* is in a situation liable to be compressed before the expulsion of the child; and the degree of compression made upon it, in consequence either of the smallness of the *pelvis* in proportion to the head of the child, or of the resistance of the soft parts, or of the untoward situation of the *funis*. The first is beyond the power of art to remedy: the second will depend upon the state of the parts, whether it be a first child, or whether the patient may have before had one or many children, which is accidental. If the *funis* should have descended with a first child, in general the more slowly the labour proceeds, the less will be the hazard from the compression; but, unfortunately, the children thus circumstanced will commonly perish, though there is a bare possibility of their escaping; and I have been mortified, in some instances, with an assurance in my own mind, that a very few minutes delay in the expulsion of the child has been the cause of the misfortune. When the *funis* descends in those women, who have had many children, there is little comparative resistance made by the soft parts; and, by exciting the pains to act with more vigour, or by encouraging the patient to exert her efforts more strenuously towards the conclusion, the child will be sooner expelled, and its life, perhaps, be preserved. But no attempts to save the child are on any account to be made, but such as can be practised without injuring the mother.

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

3. When there is a descent of the *funis*, with a preternatural pre-

without the use of much force, it may be proper to use our endeavours to preserve the child by other means, such as by replacing the *funis*, or by accelerating the labour in its present position; but the turning and delivery by the feet ought not to be attempted.

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

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

Many years ago Mr. Croft also informed me of a method, which he had successfully practised in several of these cases. When he had in vain attempted to replace the *funis* in the common way, he carried up the descended part beyond the head till he met with a limb of the child, suppose the leg or arm. On this he suspended the *funis*, and then withdrawing his hand, suffered the labour to proceed in a natural way. There may be much of accident in the success of these different methods, but I should believe, whenever it may have been thought necessary to introduce the hand into the *uterus*, that it would be found more expedient, to complete the business by turning the child, and delivering by the feet.

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

SECTION IV.

FURTHER OBSERVATIONS.

1. It is to be observed, that every child is not born dead, though the *funis* had first descended, and no means were used to free it from compression; but it must evidently have been in the greatest jeopardy. The danger of these cases depends upon two circumstances; the time which may pass when the *funis* is in a situation liable to be compressed before the expulsion of the child; and the degree of compression made upon it, in consequence either of the smallness of the *pelvis* in proportion to the head of the child, or of the resistance of the soft parts, or of the untoward situation of the *funis*. The first is beyond the power of art to remedy: the second will depend upon the state of the parts, whether it be a first child, or whether the patient may have before had one or many children, which is accidental. If the *funis* should have descended with a first child, in general the more slowly the labour proceeds, the less will be the hazard from the compression; but, unfortunately, the children thus circumstanced will commonly perish, though there is a bare possibility of their escaping; and I have been mortified, in some instances, with an assurance in my own mind, that a very few minutes delay in the expulsion of the child has been the cause of the misfortune. When the *funis* descends in those women, who have had many children, there is little comparative resistance made by the soft parts; and, by exciting the pains to act with more vigour, or by encouraging the patient to exert her efforts more strenuously towards the conclusion, the child will be sooner expelled, and its life, perhaps, be preserved. But no attempts to save the child are on any account to be made, but such as can be practised without injuring the mother.

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

3. When there is a descent of the *funis*, with a preternatural pre-

vertebræ, as in the *spina bifida;* of the incomplete formation of the skin, most frequent at the navel, or some part of the *abdomen;* of the penis, especially of the prepuce; of the internal organs of generation in females; of one or both of the inferior extremities; of the heart; of the liver, spleen, or any of the abdominal *viscera;* of the lower part of the *rectum*, terminating before it reaches the *anus;* and many others.

3. Monsters from confusion of parts, as when the whole body is in one mass (usually called a mole), in which various parts of the child are found lying together in apparent confusion; of parts adhering together, as of the fingers and toes; of the *rectum*, as in the misplaced opening or closure of the *anus;* of the *vagina;* of the external or internal parts of generation, as in those called hermaphrodites; of the two inferior extremities connected together and terminating in a point; of the club foot; and many others.

As we are ignorant of the manner in which the primordial parts of a regular conception are formed and established, and, in many respects, of the order in which the various parts of a *fœtus* are unfolded or enlarged, it is not surprising that we should be ignorant also of the manner in which monsters or irregular births are generated or produced; though it is probable that the laws by which these are governed are as regular, both as to cause and effect, as in common or natural productions. Formerly, and indeed till within these few years, it was a generally received opinion that monsters were not primordial or aboriginal, but that they were caused subsequently, by the power of the imagination of the mother, transferring the imperfection of some external object, or the mark of something for which she *longed* with which she was not indulged, to the child of which she was pregnant; or by some accident which happened to her during her pregnancy. Such opinions, it is reasonable to think, were permitted to pass current, in order to protect pregnant women from all hazardous and disagreeable occupations, to skreen them from severe labour, and to procure for them a greater share of indulgence and tenderness, than could be granted to them in the common occurrences of life. The laws and customs of every civilized nation have in some degree established a persuasion, that there was something sacred in the person of a pregnant woman, and this may be right in several points of view; but these go a very little way towards justifying the opinion of monsters being caused by the imagination of the mother. That opinion has been disproved by common observation, and by philosophy, not perhaps by positive proofs, but by many strong negative facts; as the improbability of any child being born perfect, had such a power existed; the freedom of children from any blemish, their mothers being in situations most exposed to objects likely to pro-

duce them; the ignorance of the mother of any thing being wrong in the child, till, from information of the fact, she begins to recollect every accident which happened during her pregnancy, and assigns the worst or the most plausible as the cause; the organization and colour of these adventitious substances; the frequent occurrence of monsters in the brute creation, in which the power of the imagination cannot be great; and the analogous appearances in the vegetable system, where it does not exist in any degree. Judging, however, from appearances, accidents may perhaps be allowed to have considerable influence in the production of monsters of some kinds, either by actual injury upon parts, or by suppressing or deranging the principle of growth, because, when an arm, for instance, is wanting, the rudiments of the deficient parts may generally be discovered. (See *Blondell on the Power of the Imagination*, &c.)

As to the explanation or correction of axioms framed on common and familiar examples, there are some things of great importance too obvious to escape notice. When, for instance, there has been a defect of brain, or even no head, there has been found a system of nerves; when the heart has been wanting, there has been a vascular system, sufficient to carry on the circulation of the blood; when there was neither liver nor spleen, the blood was equally red as in perfect infants; and an endless number of circumstances as curious is to be found in the history of monsters. It appears, that physiology might be greatly improved by a close and accurate cultivation of this subject, and that an able and diligent anatomist would not only detect many modes and varieties of things, hitherto unobserved, but by carefully registering his observations, he would at length be able to form general conclusions highly important to science, and which would in an eminent degree increase his own reputation.

SECTION VI.

ON THE EXTRAUTERINE FŒTUS.

The kind of extrauterine *fœtus* of which it is intended to speak in this place, is not occasioned by a rupture of the *uterus*, but by a failure of that part of the process of conception, when the impregnated *ovum*, instead of returning through one of the fallopian tubes into the *uterus*, is either detained in one of those tubes, or, not being received into them, drops into the cavity of the *abdomen*, where it must abide. In these cases, wherever the misplaced *ovum* may be lodged, the external surface adheres, and a *placenta* being formed, it acquires sufficient nourishment to bring the child to perfection. But though it be well ascertained, that this must be the order of proceeding when an

extrauterine *fœtus* acquires any considerable size, it is not unreasonable to think, that an *ovum* may miscarry in its transition from the *ovarium*, and often remain without increase in the part which receives it, as a simple extraneous body.

When the period of uterogestation is in these cases completed, or sooner, there is a general disturbance, similar in many respects to that of natural labour; which continues till the child is dead, when the tumult is for the present appeased, and the constitution is at rest. But after some time, either on account of undue pressure made by the bulk of the child on some part not able to bear it, without being excited to some new and extraordinary action, or from other causes, fresh but unavailing efforts are made. Or, as in the case of any other extraneous and offending body, a common process is established, which, beginning with inflammation, and producing adhesion to the neighbouring parts, an opening is ultimately made into some part of the intestines or *vagina*, or through the integuments of the *abdomen*, by which the indissoluble parts of the child are at length expelled. In many cases, however, when the *fœtus* has been lodged in one of the fallopian tubes, this has burst at various periods, and the patient has been speedily, though not immediately, destroyed. But in some cases the extrauterine *fœtus*, enveloped in its own, or some adventitious membrane, or covered with a stony concretion, has remained harmless, except from its bulk, for the rest of the patient's life. (See Collection of Engravings.)

Various opinions have been entertained respecting the situation of the extrauterine *fœtus*. It was commonly believed, that it might be placed in any part of the cavity of the *abdomen*, though many asserted, that it was most generally detained in one of the fallopian tubes*. In support of this latter opinion many facts might be adduced, and I was inclined to give my assent; but from some cases which have since occurred, I rather believe, that the *fœtus* when extrauterine is not universally, though most frequently, lodged in one of the fallopian tubes. I had for many years a very old painting representing this circumstance with much accuracy.

Many circumstances in the animal economy are proved, or rendered probable by these cases.

1. That impregnation takes place in the *ovarium*, but is perfected in the *uterus*.

2. That though the *fœtus* be extrauterine, the *uterus* becomes considerably enlarged, and performs its proper office by providing the efflorescent or deciduous membrane for the reception of the *ovum*.

3. That the like symptoms are produced in the early part of preg-

* See *Opera omnia Anatomica*, Diemerbroeck, page 135.

nancy, whether the child be contained in the cavity of the *uterus*, or be extrauterine.

4. That though the child be placed in one of the fallopian tubes, or in the cavity of the *abdomen*, a *placenta* is formed, different indeed in structure, but capable of supplying the child with sufficient nourishment to bring it to perfection; which tends to prove, that the *uterus* does not perform its office by any specific action or quality.

5. That the disposition to labour comes on, before or at the completion of the period of uterogestation, which shows that it is not excited by distension or any faculty of the *uterus*, but by some state or quality of the child.

6. That so small a cavity or canal as is that of a fallopian tube is capable of being gradually distended to such a size as to contain a *fœtus* of the growth of five or six months, or sometimes even nine months, without bursting; though in several cases the fallopian tube, which contained the child, has been found rent open, the death of the patient being thereby speedily occasioned, though the cause had not been suspected.

7. That the *menses* cease during the time of gestation so long as the child is living.

8. That the *menses* return in due time and order after the death of the child, though this may not be expelled; unless the constitution be very much impaired.

In the records of medicine, there is a very great number of examples of the extrauterine *fœtus*, in all of which there may be observed some similarity of circumstances, though in several of them there are many and great varieties; depending perhaps upon some casual situation of the child, or some peculiarity in the constitution of the patient. Few practical remarks have been made upon the subject, which can be useful to those, who are in the way of meeting with cases of this kind. Nor has the order of the process, when the extrauterine *fœtus* comes to be voided, been described with much accuracy. I therefore wish to observe, that in every case of this kind, which I have seen, there has been sometimes great danger, and in all of them much pain and suffering, which it is our duty to avert, or to alleviate, according to the indications. When the process by which an extrauterine *fœtus* is to be evacuated commences, it may soon be discovered, whether the effort will be made by the intestines or *vagina*, or through the integuments of the *abdomen*. If by the former, the whole process is to be left without any, or as little molestation as possible on our part, to the natural action of the parts, or of the constitution; for though we might apparently in some cases accelerate the process, and procure perhaps a little temporary relief, we ought to be careful not to disturb or interrupt the proceedings of nature al-

ready established, which art can in these cases, as in many others, very imperfectly imitate. But if an abscess should be formed in the side or any part of the *abdomen*, and through the subsequent opening any part of the child should be evacuated, it will then be expedient to forward the exclusion of the remaining parts, either by enlarging the opening, or by giving such other assistance, as surgery is very competent to afford.

Should the extrauterine *fœtus* be evacuated by the intestines or *vagina*, after the patient has endured all the consequences of an abscess formed in very tender parts, there is first discharged a large quantity of offensive purulent matter; then the same kind of matter mingled with hair or membranous substance; then the small bones of the *fœtus;* and lastly the larger bones, the most difficult to be excluded of which are the bones of the *cranium*, and the larger bones of the limbs; and if any of these should happen to lie athwart the opening in the intestine or *vagina*, their discharge may sometimes be favoured by changing their position. When all the bones are evacuated, the affected parts gradually recover from the injury they have sustained, without any remaining mischief, and the patient after a certain time recovers and enjoys as perfect health as if no such accident had happened.

Cases of this kind have been observed in animals, especially in sheep, in which the extrauterine lamb has worked slowly through the *parietes* of the *abdomen*, without endangering the life of the sheep; and it is in common observation among game-keepers, that does, in whom there is a blighted or dead *fœtus*, become fat sooner than the rest of the herd.

SECTION VII.

ON SUPERFETATION.

By this term when applied to the human species, it was intended to convey an opinion, that a woman who had advanced to any period of one pregnancy, was capable of conceiving another child.

In all multiparturient animals, the structure of the *uterus* is evidently such as to admit of superfetation, for a certain time after the first conception; and the fact is obviously proved by the various qualities of the young brought forth, particularly in the canine species. In these it appears that the first conception most commonly takes place in a cell at the extremity of one of the horns of the *uterus*, and then in order till each horn is filled. Otherwise, that is if the first conception had taken place at the entrance of the horns, no subsequent conception could have happened, future impregnations being obstructed by the position of the first. But in uniparturient animals,

superfetation seems contrary to the structure of the *uterus*, and if in such more than one young is conceived, whatever their number may be, they must be coeval; as from the moment of conception, the *uterus* assumes a peculiar state by forming an efflorescent membrane which lines the whole cavity; and by secreting a viscid mucus for the closure of the *os uteri* in such a manner as to prevent all communication between the *vagina* and *uterus*, during pregnancy.

But if it be allowed that the cases of superfetation which have been recorded are neither reasonable nor true, there must be some apparent reason for the opinion: and this seems to have been founded on the observation of one child being prematurely expelled, while another remained to the full period of uterogestation; or of two of very different sizes being born at the same birth.

It is not unusual in practice to hear that patients who miscarried of one *fœtus* in early pregnancy, had in the case of a twin conception gone to the full period with the other. This does not seem impossible, but I am persuaded that it is a much rarer event than is imagined. The errors may have arisen from our taking the representation of the facts from those who were not competent judges, the discrimination of an early abortion requiring more knowledge and experience than we have a right to expect from those who are not educated to the profession.

With respect to the other circumstance which has been supposed to prove superfetation, the great disparity of size between two children born at the full period of uterogestation, both living or perhaps one of them dead; the patient may have ceased to enlarge some weeks before her delivery. In such cases, from the embarrassed situation of one child, deprived of its due share of nourishment, or controuled in some way important to its well being or even existence, the cause of its either not thriving properly, or being destroyed, may be readily seen. The dead child, having lost all power of resistance by the pressure of the surviving one, may be quite flattened or compressed into any other form; or partly or wholly putrefied. A child in this condition may be expelled with the living one, or it may perchance be detained for several days or weeks before it is expelled. Of this I have known several instances, but the following letter written to the much respected lady of Sir Walter Farquhar, containing a detail of the attending symptoms, in a case of this kind, judging it may be of some use, I have permission to transcribe. It certainly does explain the circumstances which have occurred in many of the cases of supposed superfetation which have come to my knowledge.

"I should have written to you some time ago; but for the last three months of my being with child, I was scarce able to do any

thing, and it was thought I should never recover. From the time of my being three months gone with child, every person that saw me, concluded I must have twins. Between five and six months, I met with a great fright that nearly deprived me of my senses, and from that time my size gradually decreased, so that at nine months I was not so big as when between five and six; and every two or three weeks was threatened with losing my little one. I believe nothing prevented me from miscarrying but *laudanum*, which I took frequently and in large doses. On the eleventh of February I was delivered of a most delightful girl, though her size by no means answered the expectations which might have been formed of her from my looks. Still I remained in great torture. On the 21st my life was despaired of, but the morning of the 25th brought me great ease; for on that day, there were born the head and parts of a child that had just the appearance of a miscarriage at four months. I continued long very weak and low, but am now thank God almost as well as usual."

"Jamaica, May 30, 1772."

CHAPTER XIX.

ON THE MANAGEMENT OF WOMEN IN CHILDBED.

SECTION I.

In the course of the observations which have been made on various parts of the practice of midwifery, occasion hath frequently been taken, to mark and to consider those resources of the constitution, by which present evils were remedied, and future danger prevented. These resources are so conspicuous in all the circumstances attending parturition, and so generally found adequate to the effect, that notwithstanding the long train of difficulties and disorders we have enumerated, it is a popular, and I believe a true remark, that often the most healthful part of the lives of women is that in which they are employed in bearing and nursing children. As it is however proved, that those operations of the constitution which are apparently of little comparative importance, do sometimes become the causes of disease, so it might be expected, that those, which are evidently of great importance, though generally exempt from danger, should occasionally become the causes of peculiar accidents and diseases. The laws of a religion founded on principles of the most active benevolence, the feelings of humanity, and the common interests of society,

will not suffer us to be indolent spectators of the distresses of our fellow creatures, from whatever cause they may arise. But in the situation which we are now considering, the passions of men are deeply interested, there is more than common tenderness mixed with our concern for those who suffer under the circumstance of child-bearing, and the mind is not at these times prepared for untoward events. Much industry hath therefore been used for the discovery and establishment of some method, by which women might be conducted through the state of childbed with the least hazard of exciting those diseases, to which their state was supposed to render them peculiarly liable; and more than equal pains have been taken to discover the safest and most efficacious method of curing those diseases, when they actually existed. The intentions of all may have been commendable, but the directions given for both these purposes have been various and contradictory. It is therefore proper to inquire into the principles on which such opposite practice has been advised, and we may then fix upon that which seems most reasonable, or has been found most successful.

From the Mosaic law we learn, that, in the state of childbed, women were obliged, for a certain time, to live separate from the world, and were exempted from the cares and solicitudes of life. Whatever was the principle of this law, whether it were established from motives relating to religion or manners, the time thus allotted gave to women the privilege and opportunity of repairing their own health and strength, and of dedicating themselves with uninterrupted attention to the care of their children.

By the earliest writers in medicine we are taught, that the treatment most proper for women in childbed was that which is now termed antiphlogistic. Without entering upon a minute detail, it is sufficient to observe, that in the pursuit of this method, we were generally directed to confine, for a certain number of days, every patient lately delivered, to the same strict regimen, as if she actually had or was in danger of having an inflammatory fever, or had received a wound of the most dangerous kind. (See *Celsus.*)

This absolute restraint from every customary indulgence, and consignment to a regimen appropriate to the bed of sickness, was a mode of showing tenderness, of the propriety of which it must have been difficult to persuade the majority of the people, who felt themselves at their ease and in perfect health; for this was not pretended to be necessary with a view to remove any present evil, but to prevent a danger which might never occur. As no general method of proceeding could possibly secure the well-doing of every patient, the failure of this strict regimen in any individual case was brought forward as an argument of its general impropriety. In fact, though

this plan might be always rigorously enjoined, it appears to have been seldom exactly followed.

The proposal of allowing a diet more plentiful in quantity, and more cordial in quality, was founded on the presumed necessity of guarding against the consequences of that weakness, which was thought to be occasioned by the circumstances attending childbirth. Then was recommended the custom of supplying to the constitution those deficiencies which might be occasioned by the uterine discharges, with plentiful living; and caudle was dispensed with an unsparing hand, to remedy every temporary inconvenience. Consent is seldom refused to that medical advice, which is agreeable to the will of patients, or the partiality of friends; and this regimen was of course readily adopted, and long maintained its influence.

When I was first elected to the care of the lying-in department of the Middlesex Hospital, it was a regular custom to give, night and day, to each patient a bason of caudle.

A consideration of these two different methods of proceeding will explain all that has been said by different writers, on the doctrine and practice of low and generous living in childbed. There have been also recommended in a few instances, other methods of treatment instituted according to the fancies or opinions of physicians who have applied themselves to this subject; but of these I shall only mention two.

1. It had been observed, that fevers of any kind were seldom terminated without an increased perspiration or a profuse sweating. A fallacious inference was then drawn, that the same process by which the constitution was freed from a disease, would, before the formation of such disease, be the most likely method of preventing it. On this ground, the custom of keeping women in a state of constant perspiration for a certain number of days after their delivery, by warm drinks, hot rooms, close beds, and diaphoretic medicines, was established; and the greater the degree to which it was carried, and the longer it was continued, the greater security was presumed to be given to the patients from the apprehended diseases. Many inconveniencies followed this method of proceeding, especially by checking the natural discharges, by interrupting the secretion of the milk, by reducing the strength, and increasing the irritability of the patient. But the practice was long pursued, neither common sense nor experience having power to extirpate deep-rooted prejudice.

2. It was by some believed, that a woman lately delivered ought to be treated as if she had been injured by a concussion or violent bruise of some internal part; and that the means to be advised for the relief of present inconveniencies, as well as the prevention of future mischief, were such as might be proper under similar circumstances from any other cause. There is no occasion to recapitulate all the means re-

commended upon this principle; but it may be observed, that spermaceti, the most popular medicine given to women in childbed at the present time, was originally advised, because it was esteemed of sovereign efficacy in the case of an internal bruise.

It is remarkable, that the different and opposite modes of treatment have been enjoined to women in childbed universally, without any discrimination of peculiarity of constitution, former habits of living, disposition to certain diseases, or the kind of labour which the patient might have endured; and without due regard to the heat or coldness of the climate, or the season of the year when the patient might be confined. General as the regulations were, all that was supposed necessary to be done was, to follow one or other of these injunctions, implicitly; and whenever a disease arose, it was attributed, often erroneously, and sometimes very unjustly, to some irregularity or deviation from these, or to the want of due care and intelligence in the attendants.

It has been often observed, that the state of pregnancy was an altered, but not a morbid state. The same observation may be made with equal propriety and truth of a woman in actual labour; and it may be extended to women in the state of childbed, which, though sometimes accompanied with diseases, cannot seriously be suspected to be of necessity the cause of them. One moment's consideration, and the slightest view of the perfectly safe termination of labours in general, and of the happy recovery of the mass of women from childbed, under infinitely various circumstances, must convince us of the contrary. Before we, therefore, fix upon this or that method of treatment, it is worth our trouble to inquire, whether it be necessary to establish any peculiar method.

When a woman is recently delivered, the attending circumstances, as the discharge of the waters, the exclusion of the child and of the *placenta*, together with the lochial discharge, commonly reduce her to the state of a person, who has had a profuse evacuation of any other kind. The great efforts she may probably have made, in the course of even a natural labour, must also for a time considerably increase this change in her constitution. From what causes does this change arise? From emptiness and the fatigue consequent to vehemently increased action. Is it possible to fix upon any better method of treatment, than what would be esteemed right and proper under the same circumstances from any other cause; that is, to give her suitable refreshment, and leave her to repose? Judging from events, we certainly cannot: and, after seeing and considering much practice and trying various methods, not only immediately after delivery, but through the course of childbed, I am fully persuaded, that, laying aside all refined speculation, those patients will fare the best and

recover most certainly and speedily, by whom the least change from their former habits is made. Some difference of treatment must necessarily be required for the delicate and the robust, for the nervous and the plethoric, when there has been a long and difficult, or a short and easy labour, in a hot or a cold climate, in summer or in winter, and in the same climate, under particular situations and circumstances. These must of course be left to the judgement of the medical attendant; but when no particular reason, which demands a contrary treatment, exists, I am convinced, that the general principle of making as little change as possible from their former habits and customs, either in diet, or in any other respect, will best answer his expectations. In the colder climates, some extraordinary care seems necessary to guard against the evils and inconveniencies to be dreaded from cold; but in Africa the woman immediately walks into the adjoining river for the purpose of purifying herself and her infant from the consequences of her delivery; and to these opposite methods regard is to be paid in different seasons in the same climate.

Some years ago it was a general custom to bind the *abdomen* very tight immediately after delivery, with the view of aiding the contraction of the integuments, and of preserving the shape of the patient. In some countries, India in particular, this was practised to a degree that one cannot think of without shuddering at the mischief which must of necessity have been very often occasioned. In this country, the practice has been very much discountenanced as useless and pernicious, and it is now wholly or nearly laid aside, except in particular cases, which have been already specified, till five or six days after delivery; when a broad band, daily but very gradually drawn a little tighter, may be applied not only without injury, but with some advantage.

One of the first, and not an uncommon consequence of delivery, is faintness. This may proceed from any of these causes—loss of blood, fatigue of the labour, sudden emptying of the *abdomen*, and its consequent changes, or from great agitation of mind. The method to be pursued when it arises from the first cause, has been fully considered when we spoke of uterine hæmorrhages; and when it proceeds from other causes, wine or some temperate cordial is to be given, and the patient is to be kept perfectly undisturbed till she recovers. From the dread of any accident happening through misconduct, and not choosing to put confidence in those who may not be well acquainted with what is necessary to be done on extraordinary occasions should they arise, I have long made it a general rule, to wait with every patient for an hour after her delivery.

Sometimes, but very rarely indeed, one of the *labia* becomes

suddenly and enormously enlarged, either towards the conclusion of labour, or immediately after delivery, from an effusion of blood in the cellular membrane of that part, and in a short space of time after the appearance of the accident, the skin bursts from the violence of the distension. This complaint was first described by Dr. Macbride * of Dublin, in the year 1766, and since that time, I have been called to three instances. It occasions very great pain, yet one most important part of it is, the surprise it occasions, and the alarm it gives, when it is not well understood. But 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, but 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 little sore with some soft liniment. It is remarkable, that the *labium* always bursts on the inside, as if it were merely 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. I have also seen one case of a similar kind produced by external injury, in a person who had never been pregnant, and this yielded to the like treatment.

Few women pass through the state of childbed without suffering more or less pain in the *abdomen*, denominated afterpain, and this may arise from various causes.

1. From *coagula* of blood formed and retained in the cavity of the *uterus* †; or, according to the opinion of some, by the shrinking of the *uterus* to its proper size. In the uterine discharges consequent to delivery, there is a general order, but with an endless variety, depending upon the constitution of the patient, the circumstances which attended the delivery, and the local state of the parts ‡. A proper and all necessary knowledge of these may be readily acquired; and when *coagula* are formed, as above stated, the pains thereby occasioned, which are called afterpains, are usually according to the size of the *coagula*, and the difficulty with which they are excluded. These pains come on soon after delivery, and they return, though with longer intérvals and less in degree, in the manner of those of labour, excluding in due time whatever *coagula* might

* *Medical Observations*, London, Vol. V. See also *Medical Commentaries*, Edinburgh, No. xxi.

† Cum uteri cervix post partum sese modicè contrahit, et propterea sanguinis grumi cum difficultate aliqua prodeunt, doloresque faciunt, quos obstetrices nostræ enixus posteros (afterthroes) vocant, &c.—See *Harvey*, page 567.

‡ Per lochia emanat primo sanguis purus, postea saniosus, recentis carnis loturæ similis, deinde ichorosus—ideoque per excreta de puerperæ sanitate aut discrimine statuimus.—*Harvey, Exercitatio de Partu.*

remain in the cavity of the *uterus*. Women have not often pains from this cause with first children, and they are supposed to have them in proportion to the number of children they have had, which is generally true. Very much of this pain may however depend on the manner in which the *placenta* and membranes were brought away, for if that were done with violence, or in a hurry, the *uterus* will be left in a very irritable state, and, being much distended, there will generally be formed a succession of large *coagula*; whereas if we had waited for their exclusion by the natural action of the *uterus*, or given only very gentle assistance, the cavity of this might have been gradually diminished as the *placenta* descended, and of course have prevented either the effusion of so much blood, or the formation of such large *coagula*; which might also, if formed, have come away, involved in the membranes.

The sufferings of women from these pains, are sometimes very great, though they prove eventually salutary; and, if we had it in our power, should not be suppressed, till the end for which they are excited is answered. They may, however, be safely moderated by warm applications to the *abdomen*, and when extremely violent by small doses of the *tinctura opii*, though much unjustifiable clamour hath been raised against the use of this medicine for women in childbed. It will also be of service, as soon as it can with propriety be done after delivery, to procure one or more stools, by an injection or some lenient medicine. The freedom from danger prevents all solicitude on this account, and we know, when the *uterus* is cleared, pains from this cause will usually cease within twenty-four hours after delivery.

2. When the *abdomen* has been greatly distended, the integuments, even before delivery, will be tender and often slightly inflamed, and the tenderness may be increased by the labour, and continue after delivery. A warm flannel well sprinkled with any kind of spirit applied over the whole *abdomen*, and occasionally renewed, is the only thing I have found it necessary to employ after delivery for this complaint, and this application is very useful on many other occasions.

3. From wind in the bowels.

On the exclusion of the contents of the *uterus*, a considerable change immediately takes place in the position of many parts contained in the *abdomen*, and from many others the accustomed pressure or support, which they received during pregnancy, is wholly taken away. A greater freedom being given to every part, the change for the present often gives the same uneasy sensation, as wind pent up or rolling in the bowels, though in a short time it is generally removed by the accommodation of the parts to their new

state. Should there afterward be reason to attribute the pain in the *abdomen*, with which a woman may be troubled, to this cause, instead of giving strong aromatic or heating medicines, it will be proper to procure one or more stools by an injection, or some lenient purgative, the most efficacious and excellent of which is that in common use, prepared in the following manner:—

℞ Kali tartarisat. vel natri tartarisat. vel magnesiæ vitriolate,
Syrup rosæ, āā unciam dimidiam,
Infus. senæ tartarisat. uncias quatuor,
Tinct. ejusd. drachmas sex. M.
Capiat cochlearia iij. vel. iv. ampla primùm, et post tres horas cochlearia duo secundis horis, donec alvus soluta erit.

After the operation of the medicine, an opiate in any proper vehicle may be given, and the patient will be freed from the complaint.

4. From spasm.

After delivery, the *uterus* itself, or its appendages, or any of the contents of the *abdomen*, may be affected from this cause, with pain varying in degree, but sometimes extremely severe. This may often be relieved by lightly rubbing the *abdomen* with a warm hand, or with some anodyne embrocation, or the application of warm flannels wrung out of some spirituous fomentation. If these fail, recourse must be had to *tinctura opii*, at least to *opium* in some way or form, given in suitable doses, according to the degree of pain, and repeated as may be necessary, and these may be joined with the *spir. ætheris vitriolic. comp.*, *castor*, *camphor*, or other medicines of that class. Spasmodic pains of the *abdomen* very often resemble those arising from inflammation, and in some cases I consider it as one of the most difficult things in the practice of medicine, to discriminate them. In very irritable habits the difficulty is much increased, as such are extremely liable to painful spasms, to have their pulse quickened, heat excited, and the whole frame disturbed in a manner very like to what happens in true fever or inflammation, yet all the disturbance may often be speedily quieted by a proper opiate.

5. From inflammation.

This leads us to the consideration of that disease now generally called the puerperal fever; not because it is peculiar to the state of childbed, but because it is the most common species of fever, to which puerperal women are subject, and certainly occasions the death of much the greater part of those women, who die in childbed, whether considered as original fever, or local inflammation producing fever. This has been described by the ancient as well as

modern writers, with perspicuity sufficient to distinguish it, but the methods proposed for the cure have been less satisfactory. Evident disadvantage hath arisen from its having been attributed to a variety of causes, and from the different opinions which have been admitted of the nature and qualities of the disease, from the suspicions entertained, that the peculiar state of the patient required peculiar management, and from its having been described under such various appellations. It has been represented by some writers, as entirely owing its existence to the undue secretion or subsequent deposition of the milk, and therefore denominated the milk fever; by others, to a suppression of the *lochia*, and called by that name; while others have described it as the miliary fever. Some again have considered this disease not as fever, but as an inflammation or ulceration of the *uterus**; while others have contended, that the inflammation was wholly confined to the *omentum*, the *peritonæum*, or the intestines, and that the *uterus* was not anywise concerned. A contrariety of opinion of more importance was produced by the interpretation of the word *erysipelas*, which was probably given by the ancients to this disease, without any intention to denote a specific kind of inflammation; yet the early use of this term was of sufficient consequence to bind those, who attended to the nicer distinctions in nosology, to a particular mode of practice, according to the nomenclature†. With such different notions regarding the causes and nature of this disease, we might expect, that the treatment would be different, and as it was contradictory, we may presume, that it must often have been hurtful. There is undoubtedly much difficulty in forming a just idea of a very complicated disease, and, in proportion to the difficulty, every attempt to make accurate distinctions is deserving of commendation. But, however symptoms may vary from affections of particular parts, or in particular constitutions, there is but one essential nature of the disease; and, if we have a true notion of this, we have less reason to be solicitous about the cause, or the determination of the part originally or principally affected. For a similar treatment may be enjoined with equal propriety for an inflammation of the *uterus, omentum, peritonæum*, or intestines, or perhaps any of the contents of the *abdomen;* whether the disease remain local, or a fever be produced by its influence being extended to the constitution in general. It is however observable, that inflammation of the *uterus* is far less dangerous than

* Uterus a placentæ separatione, præcipue violenta, excoriatur, tanquam ulcus ingens internum, lochiorum liberiore emanatione detergitur et mundificatur. Ideoque per excreta de puerperæ sanitate aut discrimine statuimus. *Harv.* page 556.

† Si mulieri pregnanti fiat in utero erysipelas, lethale est. *Hippocrates.*

an equal degree of inflammation of any of the *viscera* of the *abdomen*, especially in the state of childbed; because the *uterus* readily admits of a return of the lochial discharge, which always affords relief, and sometimes cures the disease. But in inflammations of any of the contents of the cavity which have no vent or outlet, the effects of the inflammation become an addition to the existing disease, or a cause of new disease.

The knowledge of the causes of this disease, whether occasional or immediate, will be of service rather in enabling us to prevent it, than in leading us to the cure when it is formed; for if a patient be brought into a certain state, the peculiar cause of that state will not demand any material difference in the treatment directed for her relief. There is but too much reason to lament, that inconsiderate proceeding, and the want of common care, frequently give rise to the puerperal fever. But, independently of the changes occasioned in the constitution by particular modes of living, women, with a view to parturition, will not bear a comparison with other creatures *. The erect position of the body, the different structure of the *uterus* and *placenta*, and the passions though necessary, and perfectly adapted to the rank in which Providence hath placed mankind, become permanent causes of much pain, and eventually produce inconveniencies, and sometimes danger; and for these reasons women are also subject to so great a number of complaints during pregnancy, from which all other creatures are exempt. Some of these complaints, the retroversion of the *uterus* for example, are dangerous in their own nature, while others indicate or produce a disposition to diseases, not formed in the constitution till after delivery; and the inflammatory appearance, so often observed in the blood of pregnant women, may perhaps be justly esteemed a mark of a state particularly disposed to fever. Some habits are naturally liable to diseases of the bowels, proceeding from an excess in the quantity, or an alteration in the quality of the bile, and such may derive a new and temporary cause of them from irritation, and from the disturbed secretions of the *viscera*, from the pressure of the enlarging *uterus*, or by the labour. Nor is it improbable, but that, by the sudden removal of this pressure at the time of delivery, a greater proportion of fluids, than circulates even in a natural state, may rush upon some particular part, and from a very slight obstruction cause a local *plethora*. Imprudent management at the time of labour, especially rude treatment of the *os uteri*, and a violent or

* Mulieribus præ cæteris animalibus hæc contingunt, et præsertim delicatis, vitamque umbratilem et mollem degere assuetis; ut et iis quæ teneræ valetudinis sunt, et facile in morbos labuntur.—*Harv. Exercitat. de Partu.*

hasty separation of the *placenta*, will often give rise to this disease. In short, every cause, capable of producing either local inflammation or fever under any circumstances, will at this time be followed by greater effects; and any disturbance raised in the constitution will, after delivery, be invited as it were to parts already in a very irritable state, from the violence which they have so lately undergone.

It is natural for women, especially with their first children, to have slow and painful labours, which they will generally bear with resolution, and, if not mismanaged, commonly without danger. Instead therefore of hurrying and deranging the order of a labour, which is always improper, and sometimes injurious, under the false and ill-judged notion of more speedily freeing the woman from her misery, we should consider, that the business was intended to proceed slowly, and should be left entirely to the action of the *uterus*, and the efforts of the constitution *. When there are deviations from the regular course of labours, the usefulness of midwifery as an art, and the judgement and skill of the practitioner will be shown, in deciding which of these require the assistance of art, and in choosing the safest and the best means of giving relief.

There is not throughout nature an operation more wonderful than the act of parturition; and there is little reason to be surprised at the bad consequences which sometimes follow an alteration so important, though this alteration be natural. Judging from speculative principles, they might be expected to occur more frequently; and, though they are often occasioned by bad management, they cannot always be avoided under the most promising circumstances, and with the greatest care.

When a woman is delivered, it seems necessary to make a moderate and uniform compression upon the *abdomen*, but binding it tight is certainly improper, and the general abuse of bandages, as was before observed, has induced me to forbid it altogether till the seventh or eighth day after delivery. Women are certainly not so often attacked with this fever, after difficult labours, because of the

* Increpandæ sunt obstetrices, præsertim juniores temerariæ; quæ, cum parturientes præ dolore ejulare opemque efflagitare audiunt, ne imperitæ vel parum satagentes videantur, manus oleis oblinendo, locaque muliebria distendendo, mire tumultuantur; porrectisque potionibus medicatis, facultatem expultricem irritant; atque moræ debitæ impatientes, dum accelerare ac facilitare partum cupiunt, eundem retardant potius et pervertunt, efficiuntque non naturalem et difficilem.—Melius profecto cum pauperculis res agitur, iisque quæ furtim gravidæ factæ clanculum pariunt, nullius obstetricis advocata opera: quanto enim diutius partum retinent et morantur, tanto facilius et felicius rem expediunt.—*Harv. Exercitatio de Partu.*

particular care with which they are then managed, whereas after easy ones they are more unguarded.

The time when women are chiefly subject to this fever, is uncertain. There are not wanting instances in which it has been evidently forming before delivery, or during labour, or at any intermediate time for several weeks afterward; and the sooner from the time of delivery the patient is attacked, if in an equal degree, far greater is the attendant danger. But the most frequent time of its appearing is on the third or fourth day after delivery, when the patient is seized with a shivering fit, from the violence and duration of which we may generally estimate the danger of the succeeding disease. In some cases however there has been no cold or shivering fit, or none which was observable; and in others, the shivering fit in the state of childbed has not been followed with those symptoms which were to be apprehended. Before the shivering fit, the patients have been much debilitated, and complained of wandering pains in the *abdomen*, which very soon became fixed in the hypogastric region, where a swelling or fulness with exquisite tenderness soon ensued. As the disease advances, the whole *abdomen* becomes affected and tumefied, sometimes nearly to its size before delivery, the woman herself being sensible of and describing its progress. She also feels great pain in the back, hips, and sometimes in one or both legs, and other parts affected in uterine complaints. She can scarcely lie in any other position than on her back, or on one side, with her body incurvated, and, if the disease be confined to the *uterus*, the seat of the pain seems to be changed when she alters her position. 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 the taste with the appearance is much altered. The urine is voided often, with pain, and in small quantities, and is remarkably turbid. A tenesmus or frequent stools come on, and from the general disturbance it is often manifest, that all the contents of the *pelvis* are at once affected by the disease. The tongue becomes dry, though sometimes it remains moist and is covered with a thick brown fur; but as the disease advances its appearance varies, and in some dangerous cases it has been little changed. The patient immediately entertains the strongest apprehensions of her danger, and usually labours under vast anxiety, her countenance bearing indubitable marks of great suffering both in body and mind.

The progress of this disease is sometimes extremely rapid, espe-

cially 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 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 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.

The pulse has almost invariably, in this disease, an unusual quickness from the beginning. It has often that strength and vibration observed in disorders of the most inflammatory kind, in robust constitutions; and yet is sometimes exceedingly feeble and quick, 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 signs of inflammation, joined with those of extreme irritability, continue for a few days, when those of putridity appear, sooner perhaps in this than in most other diseases which are originally of the truly inflammatory kind. The teeth very early collect a brown adhesive *sordes*, and all kinds of food and drink are nauseated, except such as are agreeable from their coldness or sharpness. A singultus attends, every return of which affects the *abdomen* in the most painful manner. *Petecchiæ* or *vibices* are often found in unwholesome situations, and in some constitutions of the air, at a very early period of the disease, and there are frequently miliary eruptions;

but the latter seem rather a consequence of the method of treatment than of the disease, for they do not afford that relief, which sometimes follows their appearance in true eruptive fevers.

The bowels are in general very much disturbed, and in some cases a looseness takes place immediately upon the accession, in others three or four days after, or not till 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 yest. It is also remarkable, that after the long continuance of the looseness, when the patient has taken little or no solid nourishment, large and hard lumps of excrement will be sometimes discharged, which one might suspect to have been confined in the bowels for a long time before delivery. With regard, however, to this symptom, it is very necessary to observe, that in delicate constitutions great disturbances of the bowels are frequently occasioned by mere irritation, which are soon removed by the well-timed exhibition and repetition of some cordial opiate.

There is a peculiarity in this fever, which I believe has not hitherto been observed or mentioned. It is an erysipelatose tumour of a dusky red colour, on the knuckles, wrists, elbows, knees, or ancles, about the size of a shilling, and sometimes larger. This is almost universally a mortal sign, and on the inspection of those who have died with this appearance, the disease has been found to have affected principally the *uterus* or its appendages.

When this fever commences soon after delivery, and continues its progress with violence for a few days, our hopes of a favourable event will often be disappointed, and the impending danger may usually be foretold by the uninterrupted progress of the symptoms or by returns of the *rigor*. An early derangement of the faculties of the mind is always a very threatening symptom. A looseness immediately succeeding the attack, though in one sense it may indicate the degree of disease, always contributes to its abatement, and sometimes proves critical; as does likewise a spontaneous vomiting, sometimes even towards the last stage, when all hopes of recovery were abandoned. The profuse sweat, which follows the shivering fit, has very often been completely critical. In some, there has been a translation of the disease to the extremities, where the part has inflamed; and a large abscess has been formed; a similar abscess has also in some cases been formed on one side of the *abdomen*, which has been healed by the most simple treatment. Fresh eruptions of

the *lochia* are always a favourable symptom, and are to be reckoned among the most certain signs of amendment. A subsidence of the *abdomen* after copious stools, and with a moist skin, is a fortunate alteration for the patient; but that circumstance without evacuations, and a dry skin, threaten the utmost danger. In the most severe degrees of this disease, which have resisted all the means of relief in the early stage, those who have escaped seem to have owed their safety to the vomiting before mentioned, to an increase of fresh lochial discharge, or to a constitution happily strong enough to bear the long continuance of the looseness, by which the effects of the disease were gradually drained away.

Of an uncommon case of an abscess of the kind above mentioned it will not be useless or superfluous to add the following account.

On June the 10th, 1798, a lady had been delivered of a dead child, between the seventh and eighth month of her pregnancy, when she suffered very acute pain in the extraction of the *placenta*, which was, I presume, thought to be necessary. For several days previous to her delivery she had a considerable degree of fever, and much general uneasiness over the *abdomen*, for which she was bled, and took some cooling and quieting medicines. On the 12th (the second day after her delivery), she had a strong and violent rigor, succeeded by very severe pain in her left side, near the spine of the *ilium*, and fever, which continued for several days, when her milk (before secreted) entirely disappeared.

Though the pain and fever were abated, they never entirely left her; and after another rigor on the 19th, with an increase of fever and pain in the part first affected, her friends were alarmed, and a physician of eminence was desired to see her. He prescribed what the situation and circumstances of the patient seemed to require, and she was much relieved. There were, however, frequent exacerbations of fever; the pain of which she originally complained never entirely left her, and was sometimes violent. It was now perceived she had no power of moving her left leg or thigh, and she herself was sensible of a deep-seated swelling on the left side of the *abdomen*, though it could not be discovered by her attendants. A blister was applied to the whole of the pained side, and after some days further attendance, the physician withdrew, recommending her to go into the country, and encouraging her to hope, that, as she recovered her strength, her complaints would leave her. She was also advised to use as much exercise as she could, and accordingly attempted every day to walk with a crutch, and the help of her nurse; but every attempt gave her excruciating pain, and she was daily sensible of losing, instead of gaining strength.

I first saw her on the 28th of July. As there was an evident ful-

ness on the left side of the *abdomen*, with much pain on pressure, loss of appetite, and other symptoms of fever, from some degree of which she was in fact never entirely free, I directed three or four leeches to be applied to the part affected, and to be repeated every other day, and such medicines as were likely to abate the fever, to keep the bowels gently open, and to moderate the pain. She was somewhat relieved by these means, and as she was very weak, I afterward tried the *bark*, and some other tonic medicines, from which she did not apparently receive any benefit. From the contraction and wasting of the limb, and from the other circumstances before recited, thinking it probable that an abscess had begun to be formed in some part of the cavity of the *abdomen*, I requested to have a consultation, and Dr. Baillie was called in. After a mature deliberation on all the preceding circumstances, and the present state of the patient, it seemed most reasonable to think, that an abscess was forming in the *psoas* muscle. Small doses of *cicuta* in the saline draughts were prescribed, and a soft plaster with *opium* was applied to the side; the case of the patient seeming to admit of little other relief than some alleviation of her suffering. In the middle of August, she returned to her house in town, not in any respect amended in her general health, and she suffered more from her local complaints.

In a few days after her arrival in town, the pain being much increased, she went into the warm bath, and on the following day she was suddenly relieved by discharging a very large quantity of purulent matter, mixed with her urine. This was considered as a proof that an abcess had been formed, and discharged into the bladder, probably by means of an adhesion which had taken place, and a subsequent communication between this and the part first affected.

She continued to go into the warm bath for a few days, but suspecting that she was weakened, and feeling herself very much fatigued by it, she relinquished it altogether. At this time her medicines were changed for some of the milder turpentines, in small doses; and, she still suffering considerable pain, opiates were given, and repeated as the case required.

When there was the greatest quantity of purulent matter discharged with the urine, and sometimes I think there could not have been less than four ounces at a single evacuation, she suffered the least pain; but when there was a suspension of the discharge, the pain was always most severe.

In the beginning of September, a swelling of a considerable size, with an evident fluctuation in it, was discovered on the inside of the thigh without any appearance of inflammation or redness of the skin, as if the fluctuating matter had been formed there; and, by a careful examination, the course by which the fluid had descended from

the groin to the thigh could be readily traced. The swelling gradually descended till it came very near the ham, varying in size according to the position of the limb and body, and the patient thought she could distinctly perceive both the descent and rise of the fluid.

The night sweats, and other hectic symptoms, were now extreme; but, after another trial of the bark, and other medicines of that class, which disagreed, she for many weeks took no medicine whatever, except small doses of *opium*, when the pain was violent, and some gentle laxatives, when she was costive. She was allowed to drink porter at her meals, and at any other time, without restraint, when she wished for it, and always considered herself not only supported, but very much refreshed by its use.

In October, she kept her bed altogether, unable to move, or help herself in any position, and frequently suffering much pain. I then proposed a consultation with Mr. Cline, the surgeon of the family, to consider of the propriety or expediency of making an opening in the tumour of the thigh, and by giving it an inferior vent, to prevent the matter from returning into the *abdomen*. Mr. Cline did not then think it justifiable to make an opening in the tumour, and I readily acquiesced in his opinion.

At the latter end of this month, she was reduced to a state of extreme weakness, and exceedingly emaciated, but her appetite, which had never entirely left her, now began to improve. The tumour in the thigh daily lessened, and soon disappeared altogether; as did the quantity of purulent matter discharged with the urine, till that also entirely ceased. In November, she frequently voided small quantities of blood with her stools, and at the latter end of that month her health and strength were considerably improved. There was also about this time a return of some power of moving her limb; she soon became able to walk with crutches, the infirm leg being supported in a stirrup; and she had a return of the *menses*, which had not before appeared since the time of her delivery.

On the 20th of December, she was lifted into the coach, for the benefit of taking the air, and her health might at this time be said to be restored, as she had no complaint, and though weak and emaciated, was every day sensible of amendment.

In the beginning of the year, she again proved with child, and went on to the full period of pregnancy, when she was safely delivered of a healthy boy; having recovered before the time of her delivery the perfect use of her limb. She now walks and performs all the offices of life with her accustomed ease, and has not the least remaining token of the complaint from which she had so severely suffered. Instances of inflammation with subsequent adhesion of a similar kind I have frequently seen; and in one case, from an adhesion of some part

of the intestines to the bladder, *fæces* were afterward voided with the urine.

The swelling and tenderness of some part of the *abdomen*, joined with a fever, were mentioned as the pathognomonic symptoms of this disease. But as these parts are often affected by the greatness of the distension during pregnancy, by after-pains, by flatulence, and by spasms, as well as inflammation, we may be alarmed without reason, and mistaken in giving the name of a disease, which does not exist, to complaints of infinitely less consequence. On this principle we may account for the slight manner in which some have mentioned the puerperal fever, while others have recommended methods of treatment foreign to its nature, and inadequate to its cure. But with attention, this fever may be readily distinguished from all other complaints, to which it bears any resemblance. Violent spasmodic affections of the *uterus* coming on soon after delivery, and extending their influence to various parts of the *abdomen*, if accompanied with great quickness of the pulse, may give apprehensions of this fever, though they will be almost immediately relieved by a fomentation to the *abdomen*, and the proper use of opiates. After-pains approach nearest to those pains of the *abdomen*, which attend it; but though these are sometimes accompanied by great tenderness of the *abdomen*, the intervals of perfect freedom from pain, which are never observed in this fever, notwithstanding there may be considerable exacerbations, and the regularity with which, in after-pains, the secretions in general, and those of the *uterus* in particular, are carried on, will be evident and sufficient distinctions.

About the time when this fever most frequently appears, especially in its worst form, a disturbance is raised in the constitution by the secretion of the milk. The consent between the *uterus* and breasts is of so intimate a nature, that it is scarcely possible for them to be affected separately, as the transition of the humours from one to the other abundantly demonstrates. But though this disease has been very often imputed to the milk, the supposition is probably groundless; for if this secretion be not interrupted in its natural course, the inconveniences arising from it, though they may be troublesome, will not be attended with any danger. Those who are unwilling or unable to give suck, or to whom suckling may on some other account be improper or impossible, are liable to various complaints, from which nurses are free. In such cases I have found no method of preventing so effectually the ill consequences likely to ensue, as by procuring stools before the secretion is completed, and for some days afterward with regularity, but not violence. Should inflammations come on, and abscesses be formed in the breasts, they are always much lamented, and considered as proofs of mismanagement; but there is

great reason to conclude, that they sometimes prevent more grievous and dangerous complaints, and that they could by no care have been obviated. It is remarkable, that not one instance has been observed of any woman who had an abscess in the breast being attacked with this fever; nor of any who, in consequence of their labour, had such an affection of the bladder, as to occasion a suppression of urine. At another period of life, when the disposition to cancerous diseases exists in the constitution, their fixing upon the *uterus* or breasts seems to be merely owing to some accidental cause, if both those parts be not affected.

A disease in which the symptoms come on with violence, proceed with rapidity, and of which the event has so often been fatal, cannot fail to alarm every man solicitous for the welfare of his patients, or who has a due regard for his own character; and under circumstances so peculiarly distressing as are those of women in childbed, humanity would urge us to exert our abilities for their relief, with zeal and tenderness.

We should in the first place endeavour to shorten the rigor, by hot applications to the extremities, and by giving warm diluents in small quantities often repeated. A conviction of the necessity of speedily removing the rigor, has induced some to give very active cordials for this purpose; but as the hot fit which succeeds will in some measure depend upon the means used, it does not seem proper to give spirituous liquors, unless they are well diluted.

Bleeding has been advised in the beginning of violent diseases, with the intention of suppressing the disease, of alleviating the symptoms, or of rendering the operation of the medicines, which were afterwards to be given, more safe and effectual. For the cure of the fever now under consideration, some have placed their whole confidence in the early and free use of this remedy, while others have expressed more than ordinary fears and apprehensions with respect to it*. Perhaps it may be impossible to form a rule of practice so general as to preclude the necessity of leaving much to discretion; for the treatment of patients differing in constitution, though labouring under the same disease, must vary, or the worst consequences will inevitably follow.

In the early part of my own practice, I had much doubt of the

* Equidem de sanguinis missione multum controvertitur; nonnulli enim venam pluries tundendam esse arbitrantur, dum cæteri vel minimam sanguinis detractionem aversantur.——And afterwards——Hæc (praxis) enim docet phlebotomiam, haud nisi casu urgentiori et summa cautela esse celebrandam, pro rerum conditione. Cæterum multa de hac re lepidè et dilucidè tradita prostant apud scriptores, quæ tamen inter praxim implicatissima deprehenduntur.—*Lieutaud. Synops. Univ. Pra. Med.*

propriety of bleeding indiscriminately for the cure of this disease, and I was long of opinion, that it was not the most natural, safe, or effectual remedy. I considered, that spontaneous hæmorrhages were seldom critical in this disease; I suspected, that women in childbed sustained bleeding worse than in almost any other situation; and, from some defect in the remedy, or some error in the application, I often found myself disappointed in my hopes and expectations, when I relied upon it. It seemed also an observation of importance, that those women, who had lost much blood at the time of delivery, were more liable to this disease, and that it was more commonly fatal to them. The consequences also of erring by the too free use of the lancet seemed more to be dreaded, because they were harder to be repaired, than those which might arise from an opposite conduct.

But I am now convinced by manifold experience, that my reasoning was fallacious, and my fears groundless; and that what I had considered as proofs of the insufficiency or impropriety of bleeding in the true inflammatory puerperal fever, ought in reality to have been attributed to the neglect of performing it in an effectual manner at the very beginning of the disease. In short, if the first stage be suffered to pass unheeded, bleeding will certainly then be injurious, the opportunity having been lost; and the physician afterwards called in, however great his talents may be, will too often have the mortification of being a spectator of mischief which he cannot then remedy, and of an event which he can only deplore.

It is in general absolutely necessary to bleed in the beginning of the puerperal fever, and we may then avail ourselves of the advantage which this operation affords, with equal safety and propriety as in any other inflammatory disease, under other circumstances. With respect to the quantity of blood drawn, we are to be guided by the constitution of the patient, and the violence of the symptoms, being cautious not to err by bleeding unnecessarily, or in taking away too large a quantity. But if benefit should be derived from the first operation, and the violence of the disease should require it, we shall be justified in repeating it at short intervals; not with a view of moderating or retarding the progress of the inflammation, but, if possible, of wholly suppressing it. For when the fever has remained for a very few days, the putrid symptoms, which are usually according to the degree of the preceding inflammation, advance very rapidly, and its continuance depends upon causes, which bleeding cannot remove, and will certainly increase. When the attack is violent, and the constitution feeble, and under other circumstances, it is always more safe and expeditiously serviceable to draw blood by scarification and cupping, or by the application of eight or ten, or even a greater number of leeches to that part of the *abdomen*, which appears to be principally

affected. In some countries, the application of leeches to the hæmorrhoidal veins has been considered as more effectual in this disease, than any other mode of bleeding. I must acknowledge, that the advantages, which I have often seen derived from local bleeding, have given me the greatest satisfaction and pleasure.

But though women, who have had profuse uterine hæmorrhages at the time of delivery, are particularly liable to the puerperal fever from this or some contingent reason; and though it is seldom removed by spontaneous hæmorrhages, yet these are sometimes critical. The following case, which was communicated to me by Dr. Joseph Denman, of whom, as he is endeared to me by sentiments of esteem and regard more closely than by fraternal affection, I might be allowed to speak in terms of high approbation, is an example of this kind.

"I was called in the middle of the night to go ten miles to a woman, whose *placenta* had been retained many hours after the birth of the child. The want of courage to withstand solicitation, and the distance from me, were my reasons for undertaking to separate it. The *placenta* adhered strongly, but the separation was made very gently, and without any considerable hæmorrhage. On the third day, the patient was seized with a shivering and fever, which continued all night. From this she was relieved by so large a discharge of blood from the *uterus*, that I was again sent for on that account. There was no swelling of the *abdomen*, but great tenderness, much pain in the head, constant thirst, a little delirium, and she had no stools. An increase of fever every evening, and the same profuse discharge every forenoon, continued for ten days. She took occasionally testaceous powders with rhubarb, saline mixtures, tincture of roses, infusion of bark, and some doses of opium. She at length recovered."

The hæmorrhage seems in this case to have been absolutely critical, and my own practice hath supplied me with instances of a similar kind in different stages of this fever, and many more have proved the great advantage of returning or free sanguineous lochial discharges. Yet in these cases I had sufficient reason to presume, that the disease had not only originated in the *uterus*, but was confined there, without extending to the abdominal *viscera*.

Having finished these observations on the use and advantages of bleeding, general or local, I beg leave to repeat, that when the puerperal fever of a true inflammatory nature exists, I feel assured I am right in the opinion I have advanced respecting bleeding. But as it is sometimes extremely difficult to distinguish between this fever and complaints proceeding from mere irritability, which far more frequently occur, especially in very delicate habits, and among women of high rank; and as all the complaints arising from irritability would at this time be increased by bleeding, and rendered dangerous by

a repetition of it; I recommend in the strongest terms, that we should be accurate in our distinctions before we terminate on a plan, on our reliance and pursuit of which the good of our patient may so essentially depend.

When the attack of this fever is violent, a vomiting of bilious matter attends, there is often a multiplicity of stools, and the commencement is sometimes not unlike a moderate degree of the *cholera morbus*. It has been an almost universal rule in practice, in other diseases, to forward these evident intentions of nature, at least not hastily to obstruct or suppress them; but in this, different measures have been pursued. It has been objected, that a woman lately delivered has suffered too much from her labour, to bear with safety a method of proceeding, found useful in other fevers with the same indications; or that the parts affected would be too much agitated by the operation of an emetic. It has also been conjectured, that the vomiting and uneasiness of the stomach ought to be ascribed to uterine irritation alone, and are hysteric symptoms in the common acceptation of the word, and therefore not likely to be relieved by encouragement. But if in these cases we consider the appearance of the matter discharged, the great relief which the patient immediately receives from the evacuation, and the advantages which are found to result from it in the course of the disease, it seems impossible to fix upon circumstances, which more strongly indicate the necessity of giving an emetic. Assent has been given to an opinion that the vomiting of porraceous matter, when an hysteric symptom, does not require evacuations; yet even in such cases it may be suspected, that the porraceous matter, by its irritation upon the stomach, is the *materia morbi*, which occasions or increases the spasms, and that the discharge should not be stopped, while it is preternatural. It would be difficult to imagine a situation, in which medicines of any kind were likely to do much service, when the stomach is oppressed with vitiated humours.

But, however unsatisfactory these reasons may be, experience will support me in asserting, that, when such complaints accompany the beginning of this disease, or occur during its progress, we shall lose an opportunity of doing much service, if we be deterred from giving a vomit; and that the operation is not only perfectly free from danger, but certainly answers many other good purposes besides that of cleansing the stomach. It is nevertheless to be observed, that an emetic was in this case first advised, chiefly for the relief of a symptom, without any expectation of thereby curing the disease. Yet there are advocates so strenuous for the use of emetics in this disease, as to recommend the repetition of them every day, and who have asserted, that they are the most powerful medicines for the absolute

cure of the puerperal fever. To the merit of having first recommended this practice I am not entitled, because my first giving them was accidental, and perhaps I am not yet fully competent to judge of it; yet experience has in many cases proved to me, that emetics may not only be given, but frequently repeated in the course of this disease, with very great advantage.

I may in this place be permitted to make a digression, for the purpose of observing, that it appears, from the records of medicine, that two different opinions were very early entertained respecting the treatment of fevers in general. The first and most prevalent of these was, that every fever was a process established by the powers of the constitution, for the purpose of altering and assimilating, or of separating and rejecting some offending matter; or changing one state of the body into another, better fitted for the performance of its functions, and the process was defined by the term generally, though not properly, translated fermentation; by which the ancients understood the different states of bodies, whilst they were in the act of changing into some new form or state, or the process by which they were changed; and not vinous, acetous, or any other fermentation, according to the modern distinctions of this term. As the process in fevers was expected to be ultimately salutary, it could not, according to this opinion, be disturbed without mischief; unless, on account of violence, irregularity, or some extraordinary deviation from its usual course, it might be judged necessary, to moderate it when too violent, to encourage it when too remiss, or to obviate accidental symptoms. The second opinion was, that in a fever excited by any cause, the body was in a state adverse to its well-being, and perhaps inconsistent with life; and that the fever ought therefore to be subdued by the expeditious use of all such means as were likely to remove the cause, or to appease the action of the powers of the constitution, or, by weakening the powers themselves, to reduce the body into such a state, that it should be unable to continue or maintain what might be called the feverish process.

The marks of these opinions may be readily discovered to pervade every system of fevers, and every method of treatment, which have been offered to our consideration or recommended for our guide, even down to the present time. There is no doubt but that the knowledge of both these opinions will occasionally be found of much use in practice, if we be not led to extremes. But the knowledge of a disease, or of the method of treatment, is of infinitely less value than the faculty of applying it, and constitutes in fact a small share of the excellence of a physician. He, by discovering the part principally affected, and by weighing its importance to the constitution, the nature of the disease, its present state and probable consequences; and

by taking into consideration all the collateral circumstances, will clear his mind from perplexity and error, and form a rule for his own conduct far beyond the influence or power of any doctrine.

But in the treatment of the puerperal fever the difficulty has been much increased, on account of the very great caution, which, for reasons before assigned, was judged necessary. It was also said, that by regulating the puerperal discharges, all the diseases incident to women in childbed were to be prevented, or most naturally cured; and all evacuations, by which these were likely to be interrupted or suppressed, were forbidden. In short, in this state there was a suspicion of something sacred or mysterious, with which we were not authorized to interfere; and neither common sense nor observation had sufficient efficacy to control these impressions, which originated in speculation and prejudice, and which are now fully proved to have been without foundation.

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.

℞ Antimon. tartarisat. gr. ij.
Chel. cancror. pp. ℈ 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, be obtained.

If the first dose should occasion a vomiting, purging, or profuse sweat, 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 if 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.

If a sickness, loathing at the stomach, or offensive taste in the mouth, attend the commencement of the disease, this medicine seldom fails to occasion vomiting, and the patient, with a countenance strongly expressive of the benefit she has received, will attest the advantage of the method pursued. Nor does the medicine often fail to procure copious stools, which are uncommonly fetid, and, as was before observed, in the loose ones lumps of hardened *fæces* are intermixed. Their appearance should in some measure guide us with respect to the continuance of the evacuations, in proportion to which the *abdomen* becomes easy and subsides, and the other symptoms become more favourable. The urine is soon voided with more ease, and in larger quantities, a moisture of the skin or profuse sweat succeeds, and the *lochia*, which were before brown or pale, fetid, and in small quantities, increase and become sanguineous. But we are to remember, that the small quantity of the *lochia* is never to be esteemed indicatory of disease, independently of other appearances, because with respect to quantity they evidently vary in every constitution.

At the same time that we avail ourselves of the advantage to be obtained from the use of the antimonial powder, we must not neglect the use of those means which contribute to procure immediate ease or relief to the patient. Emollient clysters, in cases attended with violent pain, especially if preceded or accompanied with costiveness, are necessary and proper. Clysters have also been esteemed of more importance than merely as the readiest means of promoting stools, or as a temporary fomentation to the bowels; for some physicians of great experience have thought they were able to remove a great part of the cause, or to prevent the continuance of the disease, by directing them to be administered so frequently, that they were at length returned without any mixture of *fæces*. Fomentations, or vapour-bathing, or even the warm bath, may sometimes be used with advantage; but I think a folded warm flannel, well sprinkled with brandy and occasionally renewed, is one of the best and most comfortable applications. When the pain is confined to one part of the *abdomen*, or remains after the abatement of the fever, if not removed by leeches, a blistering plaster, applied directly to the part, may always be recommended with safety, and will sometimes do much service. Plentiful dilution being absolutely necessary, the patient should be carefully supplied with common drink, in small quantities often repeated. The most palatable, and generally the best, is chicken water, or very weak beef tea; or if objections be made to these, barley water, thin

gruel, milk and water, whey, and tea of almost any kind, may be drunk at pleasure.

In this manner I treated the wife of a soldier in the guards, whom I attended July 1, 1767, in a safe but tedious labour. She was of a very strong habit of body, and upwards of thirty years of age. About thirty-six hours after the birth of the child she was seized with a violent shivering, followed with severe pains in the *abdomen* and loins, and within a few hours from the attack of the disorder, became nearly as big as she had been before delivery. On the third, I gave her four grains of the antimonial powder before mentioned, and, finding no sensible effect, I repeated it in the same quantity after two hours. She puked twice, and had seventeen stools, like yest in appearance, within six hours after the repetition of the powder. When the operation of the medicine ceased, the *abdomen* had almost wholly subsided, and the tenderness and fever were much abated. As she was much fatigued, I gave her a cordial draught with a few drops of tincture of opium. She had some quiet sleep in the night, and sweated profusely. There did not appear any necessity of repeating the powder, and she recovered perfectly, without taking any other medicine except some saline draughts, and afterwards the decoction of *bark* twice every day.

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 however persuaded, 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. And it is above all things to be wished, that physicians had the *early* care of patients in this disease; for the dissections of those who have died, have proved, that very terrible mischief is produced in various parts with amazing celerity. In a very great number of patients, whom I have had an opportunity of examining, all or some of the following appearances were observed. The *uterus*, or its appendages, were in a state of inflammation; or sometimes one or both of the *ovaria* of a livid colour, and altered in their texture, as if mortified. The general substance of the *uterus* was loose and spongy, and it was less con-

tracted, than it ought to have been since the time of delivery. The *os uteri*, and that part of the *uterus* to which the *placenta* adhered, were discoloured, and had a sloughy appearance. Small abscesses were sometimes found in the substance of the *uterus*, or in the cellular membrane, which connects it to the neighbouring parts. The bladder was also sometimes inflamed. The *omentum* was very thin, irregularly spread, and in a state of inflammation. The intestines were inflamed chiefly in the peritoneal coat, adhering to each other, and much inflated. Inflammatory exsudation, and serum extravasated in the cavity of the *abdomen*, have been in various quantities; but these were in a less degree, when the patient had laboured under a long continued purging. In the cavity of the *abdomen*, were likewise found large flakes of coagulable lymph, which have been often mistaken for curdled milk, or for dissolved portions of the *omentum*. It must indeed be acknowledged, that the information acquired in this search has not afforded any practical advantage, equal to the care or assiduity with which it has been made. What we have been able to learn has chiefly proved, that various parts are affected in different subjects; that when the disease has continued with violence for a few days, its effects will generally be beyond the reach of medicine, and that if the patient should fortunately recover, her recovery will depend upon circumstances, which the physician cannot without great uncertainty and difficulty command. We have indeed been told, that, in the dissections of some who are said to have died of this disease, 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 in its treatment; unless the patients might be supposed to have died merely from excessive irritation.

In the less violent degrees of this disease, and more delicate constitutions, it will be necessary to pursue the same intentions, though with less activity. In such cases, after local bleeding with leeches or otherwise, as may be most convenient, and giving a proper dose of ipecacuanha, or washing the stomach with an infusion of camomile flowers, more lenient medicines must be prescribed. But they must be such as will produce a certain and speedy effect, and after the operation of an emetic, if stools are not procured, we shall neglect the means, and lose the opportunity, of doing most effectual service; for without them the relief obtained will not be permanent. An emollient clyster may be first injected, to remove any hardened *fæces* from the lower part of the *rectum;* and then the antimonial powder in small doses, or the saline draughts with a due proportion of the *natron* or the *kali tartarisatum*, or with rhubarb, or the following draught may be given every third or fourth hour:—

℞ Natri tartarisat.
Mannæ opt, āā ℥ ii.
Infus. sennæ, Aq. ment. sat. āā ℥s.
Tinct. cardamom. fut. xxx. M.

Or two ounces of *magnesia vitriolata* may be dissolved in a pint of thin gruel, and one or two large spoonfuls given every hour, till due evacuations are obtained; and this medicine has been found to answer the intention, when apparently more pleasant ones could not be retained in the stomach.

In every case of disease, which requires speedy and repeated evacuations for its relief, particularly if attended with violent pain, it is necessary to give a respite to the constitution, by which it may be enabled to exert its own powers, or recover from the fatigue of the operations themselves. For this purpose, opiates are wisely prescribed, when the operations are concluded. But opiates being given for the purpose of easing pain, or of quieting some agitation, if they be not given in a sufficient quantity to produce the intended effects, are useless; for it is by their effects we are to judge of the propriety or advantage of their use. In some cases also, which were accompanied with violent pain at the commencement, it has been found necessary to give a large dose of *tinctura opii*, immediately after the first bleeding, without waiting for any other evacuations, by which the progress of the disease will be retarded, and sometimes subdued. Nor is there ever occasion to hesitate upon the use or repetition of an opiate at any period of this disease, when the violence of the pain requires it; for though the pain may originally be a consequence of the disease, it becomes, after a certain time, a powerful cause of its continuance and increase.

In the inferior degrees of this disease, after bleeding once, either with the lancet, or, which is generally preferable, by the application of leeches to the part, if thought necessary, and the exhibition of an emetic, which can seldom be dispensed with, we shall find the simple method of exhibiting an opening draught for the purpose of procuring four or five stools every day, and an opiate every evening, produce the most happy effects. But it is not possible for me to express my sentiments of the advantage which may be sometimes procured by daily purging, and by the subsequent exhibition of opiates, so clearly as by the relation of the following case, which was lately under my care.

The wife of an eminent tradesman was brought to bed of a living child, after a very tedious and difficult labour. She was of a corpulent but relaxed habit, and this was her first child. About four hours after her delivery she was seized with a purging, and the stools, which were of a dark colour and exceedingly offensive, soon after-

wards came away involuntarily. I saw her early the following morning, November 22d. She had constant but not exquisite pain in the *abdomen*, which was tumefied; her skin was hot, her pulse quick, and she was thirsty. Having voided no urine, I introduced the catheter, applied a flannel well sprinkled with brandy to the lower part of the *abdomen*, and ordered an opening draught of the kind before mentioned. She had proper evacuations by stools all day, and in the evening took an opiate. On the 23d, I found, that the purging continued, and there was little alteration in the other symptoms. The opening draught was repeated in the morning, and the opiate at bed-time. On the 24th, I was informed she had got some refreshing sleep in the night. The pain in the bowels and feverish symptoms were abated, but the stools, which were yet very fetid, came away involuntarily. Both the draughts were repeated as on the preceding day. On the 25th, though the stools continued to come away without her consent, the *abdomen* had subsided, and the tenderness was almost gone. On the 27th, the purging ceased, and she recovered without the repetition of the medicines. I was under the necessity of drawing off her urine twice every day, till the eleventh after her delivery, when she was able to void it without any assistance. But it is not to a single case that I should have occasion to appeal in a matter of so much consequence. A long and successful practice hath convinced me, that the purging, which often attends this disease, is not only salutary, but frequently critical, and instead of being suppressed, that it ought to a certain degree to be encouraged. Nor would it be difficult for me to recollect many cases, in which fatal consequences have speedily followed imprudent attempts to stop the evacuations.

These remarks on the necessity of procuring stools so freely, are to be considered as applicable only before the patient is reduced to a state of great debility, or perhaps in fevers occasioned by local inflammation of some of the contents of the *abdomen*. Experience has proved, that, in the advanced state of fevers of the *typhus* class, costiveness is the most favourable symptom. Sydenham takes particular notice of this in his most excellent treatise on the fever of 1661; and in a principal hospital of this city, it is an established rule, never to promote stools, or any weakening evacuation, in fevers of this class, after the fourth day. But in the advanced state of these fevers, costiveness, *for a great number of days*, not only prevents an increase of the debility, but is the most promising symptom of a happy termination of the disease. It deserves to be particularly noticed, whether patients in the advanced state of the *typhus* fever ever die while the bowels are constipated.

As the disease passes into its more advanced stages, it becomes

more complicated and dangerous, and there is a necessity of being very circumspect in our endeavours to give relief. Bleeding, unless by scarification, or the application of leeches to the *abdomen* or hæmorrhoidal vessels, will very seldom be proper at this time; and if directed, or repeated, from the encouragement which the inflammatory appearance of the blood may afford, will generally hasten the fate of the patient, by reducing the strength in a much greater degree than it can abate the disease; as I have seen in many instances of this and other kinds of fever. It must therefore be omitted, or prescribed with the greatest caution. But if the stomach or bowels be much disturbed, and an emetic were not given in the beginning, one may be given at almost any period of the disease with safety and advantage. Or if there be no looseness, and stools have been procured sparingly through the course of the disease, the general method of cure may be pursued, if the state of the parts first affected should require it, allowing for the reduced strength of the patient. The frequent injection of gently purgative or emollient clysters will be extremely proper, and laxative medicines of the kind before mentioned; not omitting to give and repeat the opiates at proper intervals, to procure temporary ease at least: or neglecting the use of such diet and general regimen, as will support the strength of the patient, without increasing the fever.

But when the stools are very frequent or involuntary, and all appearances threaten imminent danger, we must be cautious, that our attempts to cure the disease are consistent with the state of the patient, though something must be hazarded for her relief. Clysters of chicken water, or flour and water, boiled to a proper consistence, or of a decoction of linseed, often repeated, then constitute a very important part of the cure, by washing off some part of the offending matter, which stimulates the bowels to frequent evacuations, and by acting perhaps as a fomentation; and to these may be occasionally added a proper quantity of the *tinctura opii*. But if great care be not taken in their administration, the patient will suffer intolerable pain on account of the tenderness of the *uterus*, which I suppose to be the part principally affected, at least in which the disease most commonly originates, and of the influence of which this part never fails to partake.

At this time it will also be useful, to give very small doses of ipecacuanha mixed with the opiate as a diaphoretic, or the *pulv. ipecacuanhæ compositus*, either in some cooling vehicle, as the saline draughts, or with cordials, as the situation of the patient may require. But if the stomach or bowels should be much disturbed in the advanced stage, or if any new cause of disturbance should occur, the *ipecacuanha* may even then be given sometimes in such a quantity, that it may act as a gentle emetic. The white decoction with a large

proportion of gum arabic, or the common emulsion with *spiritus ætheris nitrosi*, makes at this time a proper and agreeable drink. If the strength of the patient should sink, and great faintness come on, a necessary quantity of some cordial and wine must be given in the interval between the draughts. I have also often in this stage given camphor in substance, in jalap, or in the form of emulsion, but have generally been obliged to discontinue its use, because it soon became disgusting to the palate, and offensive to the stomach; nor have I ever found that advantage from the more liberal use of camphor, which some have taught us to expect in this disease, though in many instances the camphor mixture has appeared to be an agreeable cordial, and to moderate pain.

Under the most deplorable circumstances, we ought never to desist from using our endeavours with assiduity, to relieve and extricate the sick from the imminent danger they are in, both from principles of humanity and prudence; for they will sometimes recover very unexpectedly, when every prognostic is against them. Something always remains to be done, which may be of use, or contribute to their comfort; either with the view of obviating troublesome or painful symptoms; or of supporting their strength by means adapted to their state; or of promoting some obstructed secretion, especially by regulating the state of the bowels. On such occasions, I have among other things been induced to try clysters of various kinds, emollient, anodyne, and antiputrescent, particularly of strong decoctions of *Peruvian bark;* but the event obliges me to acknowledge, that I have not observed much advantage from them, beyond what may be derived from the domestic ones, which are in common use, with the addition of a proper quantity of the *tinct. opii.*

Nor has the *bark*, though given in different stages of the disease, with remissions tolerably distinct, answered the intention as a febrifuge; though in a few cases, in which the intermissions were complete, it has succeeded. As a supporter of the general strength of the constitution, the *bark* has been likewise found of less service than might have been expected; because of the disturbed and very irritable state of the bowels, which it tends to increase. Instead of this medicine, the columba root, in powder or infusion, has been given every fourth or sixth hour; or the common bitter infusion prepared with cold water, and joined with some aromatic; or a strong infusion of chamomile flowers, with the addition of a few cloves: and sometimes the following medicine, especially when the hiccup has been troublesome;

℞ Spir. ætheris vitriolici ʒii.
Aqu. puræ, vel menth. sativ. ℥viij.
Sacchar. pur. q. s. fiat mistura, cujus sumat ægra uncias duas, tertia vel quarta quaque hora.

In other cases, æther or Hoffman's mineral anodyne liquor has been given; but they have often proved less agreeable to the stomach, and I believe not more efficacious than the *spiritus ætheris nitrosi*, which I have substituted for them, and given with great freedom and advantage. It was before observed, that the hiccup was frequently an indication of a collection of offensive humours in the stomach, and has generally preceded the spontaneous vomiting, which in the worst state has sometimes proved critical; though the same symptom is also not seldom a proof of the progress of the disease, and a sign of the utmost danger.

In the course of the disease, when the *abdomen* had been much distended, notwithstanding the evacuations, I have recommended the application of the *cataplasma cumini* moistened with brandy; and sometimes directed clysters composed of *electarium e baccis lauri*, or a solution of *asafœtida* in simple peppermint water; and wish I was justified in speaking more highly in their praise: but they are among the things which have occurred to me, when I have scarcely known what to propose. But in general the *abdomen* has been wholly covered with a blister in the early stages, or one may be applied with safety, and probably with advantage, at any period of the disease.

I have rarely attempted to inject medicines of any kind into the *vagina* or *uterus*, though from a consideration of the probable state of the parts, and of the fetid humours discharged, it is reasonable to think, that emollient or gently detergent injections might sometimes be useful. But the helpless state of the patient is such, as to render the operation itself very troublesome; and if they be advised, great caution will be necessary both in their composition and administration; but fomentations to the external parts have, I think, sometimes afforded comfort, and been of service.

These are all the observations I have made, and the opinions I have entertained on the puerperal fever in its simple state; that is, considering it as a disease, originally, of the truly inflammatory kind, affecting one or more of the parts contained in the *abdomen*, extending its influence over the whole constitution, and speedily assuming a putrid form with more or less virulence, according to its degree and treatment during the inflammatory state. But when putrid diseases are epidemic*, the puerperal fever may, at the commencement, par-

* The first account I have met with of a puerperal epidemic is in Peu. It appeared in the year 1664, in the Hotel-Dieu at Paris. In this account there are some very curious observations. In this country we have very reprehensibly neglected to preserve any register of the times when such fevers have prevailed. But in the year 1788, an account of a puerperal epidemic was published by my ingenious friend Dr. John Clarke, according to its appearance in one of the hospitals in this city, and in some instances, in private practice.

take of the reigning disease (varying only in the affection of the parts concerned in parturition), as the histories of the plague, in this and other countries, have sufficiently proved. This disease may also be combined with a phrensy or peripneumony, with symptoms multiplied and varying according to the combinations. Then our principal attention must of course be paid to the most urgent disease or symptom; but the event of such cases must be more dangerous, on account of the number and importance of the parts concerned.

There is another consequence of an epidemic, or even a sporadic puerperal fever, on which it would be criminal to be silent. This is the contagious nature of these fevers, it having been long suspected, and being now fully proved, that they may be, and often have been conveyed by midwives or nurses, from one patient to another. This fact explains the reason, why persons, practising for many years with the most enviable success, have at one or more periods of their lives, without any change in the principles or manner of their practice, met with a number of unfortunate cases; when perhaps an adjoining neighbourhood has been entirely free from such diseases. Of this I have known many instances which could be exactly traced, and have repeatedly seen it the cause of the most painful distress, and severest reflections, in my own practice. Nor should this subject remain a barren speculation, but according to the value set upon reputation, teach those who are engaged in the practice of midwifery, the impropriety of their attending patients in fevers and other dangerous diseases, if it can possibly be avoided; or if they should be compelled to this by necessity that they use every precaution not to carry contagion from one patient to another. The nature and the power of contagion in general seem not to be perfectly understood, and it may exist in many diseases, in which it has not yet been suspected. This subject is therefore deserving of the most serious investigation and enquiry.

SECTION II.

MANIA.

Amidst the great variety of complaints to which women in childbed are liable, there is none so distressing as that aberration of the mental faculties, which sometimes, though happily very rarely, we have an opportunity of observing. This disorder has sometimes shown itself immediately on women becoming pregnant, in others when the time of labour approached, in others during the state of childbed, apparently occasioned by some extraordinary disturbance or peculiar irritation of the *uterus*. In some cases it has, however,

been evidently caused by irritation of another part; as when the breasts have been inflamed, or an abscess had been formed; and at the time of first suckling or weaning the child, seven or eight months after delivery; but in every case, the disorder has been occasioned by an uncommon irritation of one of these parts, spreading its influence to the brain, though without any reference to former disposition or habits, acquired or hereditary. Speaking of convulsions, it was said, that pregnant women labouring under any distress of mind from the peculiar circumstances of their situation were liable to them: and the same observation may be made of this disorder; for if the nervous system be once disturbed to a certain degree, or in any particular manner, the kind of disorder thereby produced may be accidental; and the same cause, which shall in one person produce convulsions or paralytic affections, shall in another produce the disorder of which we are speaking, either of the melancholic, or violent kind. In the same manner patients, who have long suffered from intermitting fevers, have in some seasons been disposed to maniacal disorders *.

Almost all the diseases of women in childbed were formerly attributed to two causes, the interruption of the lochial discharges, and the milk; the latter of which when imperfectly secreted was supposed to have a pernicious influence upon the constitution in general, or on some part in particular. Hence the name of the milk fever, the *œdema lacteum;* or the edematose swelling of the leg, and in general of all swellings or abscesses formed in any part of the body soon after delivery, which the French have therefore classed under the general name of *dépôts du lait;* and this aberration of the mind is, for the same reason, called by some nosologists, the *mania lactea.* But with respect to treatment, I do not know, whether there be any real difference in this disorder when it happens to women in childbed, or under other circumstances, or in the symptoms attending it; saving as that state is constantly undergoing some change, as women depart from the time of delivery, there is always a chance of amendment from every degree of change. Perhaps for this reason, this disorder, in some instances, ceases in twenty-four hours, and in others, it continues only for a few days, in some a few weeks, and in others for several months. But the instances of its continuing more than six months are very rare; and there is scarcely one to be found, who did not ultimately recover, if there was no previous or constitutional disposition; yet the longer the disease is protracted, the more uncertain is the recovery. It has been asserted in very unqualified terms, that women,

* See Sydenham.

who become maniacal in childbed, always recover This opinion, I presume, extends only thus far, that if they live, they always recover their faculties, the distemper proceeding from disordered functions and not from an organic disease; but I have seen several women die during their maniacal state, and not long after the accession of the disorder. Their death has sometimes appeared to be owing merely to the vehemence and continuance of their exertions, which it seemed impossible to moderate.

The time when this disorder appears is different; in some cases a few days after delivery, in others about a fortnight or longer, or in the manner before mentioned. All women soon after delivery are either more irritated, or more subject to irritation, than they perhaps are at any other time; and hence chiefly arose the necessary custom of keeping them quiet, and secluding them for a certain time, from the chance of meeting with such occurrences as might disturb them. I have known more than one instance of a lying-in woman in a very irritable state, but with perfect composure of mind, becoming at once deranged by some fright or mischief apprehended to herself or child, or from some dismal story related to her; who might have escaped, had she been managed with circumspection. It is impossible to describe how much of the prevention and cure of these and other complaints depends on the judicious conduct, and proper manners of their attendants.

As to the delineation or history of maniacal disorders, under any circumstance, this does not seem necessary, if it were practicable; because the name does not depend on a symptom, or a single act, unless it were an outrageous one indeed; but often upon the construction put upon general, or frequently repeated unusual conduct, varying in degree and outward form in every individual patient. For these reasons, it is not surprising, that in some cases there should be a difference of opinion as to the actual existence of the disorder, even among men of experience; or that, on the first interview, it is often impossible to give an opinion which could be supported. The difficulty of deciding is also very much increased, by the difference in the conduct of the patient at particular times; for even in very bad cases there are generally lucid intervals, or a reasonableness except on certain subjects, when the disorder would not be suspected. Yet, if we once conclude a patient to be maniacal, which we were unwilling to suspect, and still less willing to announce, a review of the preceding circumstances commonly exhibits pretty clear proofs of the gradual progression of the disorder.

On the attack of every complaint of this kind, from the exertions of the patient, and the tumultuous derangement of her mind, the

pulse becomes extremely quick, the cheeks flushed, the eyes inflamed or glistering, the general heat of the body is increased, and there are in most cases the common symptoms of fever, though *mania* has been defined a delirium without fever. Nor when cases become chronic, is there ever a time, when they are to be seen without more or less of what might be called fever, especially in and after fits of outrage. In some instances, the pulse has been wonderfully quick, the tongue white, and every other symptom of extreme irritation, but without any marked aberration of the mind.

Though there is sufficient difference in the general appearance of the patient in these disorders, to make it evident on the attack, that it is not properly speaking fever, something like the same method of treatment has been judged necessary. It was formerly the custom, to enjoin the use of very powerful medicines, and very severe treatment, for maniacal patients, and among other things copious bleedings. But for women reduced in their strength by the circumstances of childbed, more gentle proceedings are requisite. Bleeding, if advised in any degree, must be performed with a sparing hand; and if there be a fact of which I am assured, it is, that copious bleedings are extremely prejudicial; but little abating the disorder even for the present, and if the patient survive, increasing and rendering it more deeply rooted and permanent afterwards. Generally speaking, bleeding, unless in very small quantities, by the application of leeches to the temples, or by cupping, should therefore be altogether omitted. It is also because they increase the present irritation, and have been found ultimately to do little service, that blisters are seldom recommended in these cases. The resistance, which is often unwisely made to the harmless wishes and inclinations of the patient, frequently becomes a cause of violent outrage, as has also been observed in fevers attended with delirium; it should therefore be carefully avoided.

The intentions in the use of medicines are, to remove all feverish disposition, whether original or symptomatic, and to lessen at the same time the excessive irritation. For these purposes it is usual to give the saline draughts, with a suitable quantity of syrup of white poppies, or a few drops of *tinct. opii* repeated as the case may require, and sometimes the antimonial powder. The secretions being generally much interrupted, especially those by the bowels, these must be promoted by the occasional use of clysters, if they can be administered, or of the common purging mixture, and sometimes by small doses of calomel, so as to procure two motions regularly every day; and in this state of the disorder no other medicines seem to be required.

Immediately on the attack, with many other alterations of the

countenance, especially of the eyes, which acquire a fierce look easily observed, but which cannot be described, the skin has often a yellow tinge, and sometimes there is a complete jaundice. It is then thought requisite to give an emetic, not with the view of curing the disorder, but of relieving the symptom, and of regulating the constitution, and this must be our guide in all medicinal treatment; for I believe the idea of any medicine having the power of influencing the mind, except by producing certain effects upon the body, is wholly abandoned.

In the more advanced and settled state of the disorder, the chief view has been to abate irritability, though very different means have been used for this purpose. In cases of great depression of the spirits, or what has gone under the general name of melancholy, gentle emetics have been much advised, and I think with much advantage, every other or every third day; and at the intermediate times, nervous medicines, such as the *spirit. æther. vitriol. comp. confect. Damocrat.*, or the fetid gums, especially the gum ammoniac and camphor, the last of which Dr. Kinneir recommended many years ago in full doses (though in less doses, and regularly given, it sometimes apparently relieves), in stronger terms than experience will justify. On occasional returns of great perturbation and violence, we must recur to the method used on the first attack.

Opiates have been given with two intentions. Some have merely proposed to soothe and moderate the violence of the disturbance by the frequent repetition of small or moderate doses, but these do not often answer our expectations. Others have aimed by the more liberal use of *opium* often repeated to suppress the irritability altogether. As far as I can judge, the former method is far preferable to the latter; and I think there can be no doubt, but that opiates in large doses, instead of diminishing, add in no small degree to the irritability which before existed. A physician of very great eminence observed to me, that *opium* almost universally excited disturbance, before it exerted its quieting powers, but that other *narcotics, cicuta* or *hyoscyamus* for instance, immediately acted by their peculiar quality, without raising any previous disturbance. The *tinct. digitalis* has of late been commonly given in these cases, perhaps in some, with advantage, but more frequently without procuring any evident benefit. Nor has any evident advantage been obtained by the occasional or continued use of the warm bath, further than as a present indulgence.

Among many other medicines, which have been recommended in the advanced stages of this disorder, it would have been extraordinary, if some of the preparations of quicksilver had not been tried; and of these calomel has had the preference. It was the fa-

vourite medicine in maniacal cases, as long as I remember any thing of the profession. By some, all preparations of quicksilver have been thought to increase, and by others to lessen irritability, but the explanation of the operations of medicines has very little forwarded the improvement of the art; and I am not clear, whether the practice of medicine may not, even at this time, be justly considered as empirical, the excellence of the art chiefly depending on the sagacity and judgement of each person who practises it, and not on any fixed or unquestionable principles.

Calomel has usually in these cases been given as an alterative, in doses too small to produce any immediately evident effect, but repeated so often as to make very material alterations in the constitution. Sometimes it has also been given as an active purge, the operation of it being supposed more efficacious than that of any other medicine of this class. The causes of *mania*, or the effects produced by it, speaking of the disorder at large, as has been proved by the dissection of dead bodies, may be widely different, and for these different medicines may be necessary and proper; but whatever may be the remote causes, the different functions of the body, especially those of the abdominal *viscera*, are usually disturbed or not regulated without much difficulty. In that species of which we are now speaking, it is not supposed, that any organic disease exists in any of the constituent parts of the body, but that it wholly proceeds from disturbed action of the nervous system; and that we shall probably succeed the best, not by aiming to cure a disease which does not exist, or which is beyond the power of physic, with very active medicines; but by obviating symptoms, which may, in this case at least, be said to constitute the disease.

Throughout the course of the complaint the strictest regularity of the nonnaturals is to be established; such as the times of going to, and rising from bed, the kinds and degrees of exercise, employments, and amusements, if possible; the times of taking food, kinds and quantities of food, and the like; and, above all, care is ever to be taken, that the patients, in their fits of despondency or rage, be prevented from doing mischief to themselves or others; and they are always extremely artful. From a strict regulation of these matters, by soothing them when violent, and comforting them when dejected, by changes of scene, by separating them altogether from the society of their relations and particular friends, and by the establishment of a mild, but firm and vigilant authority, it is probable that more advantage will be derived than from any medicine; for the prudent and intelligent conduct of the attendants, has undoubtedly, in many cases, contributed more to the recovery of the patient than the most powerful medicines.

The first signs of recovery are to be observed in the abatement of the fits of agitation in their violence, or the return of the right understanding though of short intervals. It seems that particular address is required to foster every tendency to their natural habits, and by a sensible and nice management of these tendencies, the recovery may be much promoted.

SECTION III.

ON THE SWELLED LEG.

Of every complaint, to which women in childbed are liable, and which may require medical assistance, it is not necessary or possible here to take notice. I have therefore confined myself to those, which seem of the greatest consideration either from their frequency or importance, and of this kind is the puerperal swelling of the inferior extremities, as it may not improperly be called. This disease has been long ago and often mentioned by the French writers, most commonly under the name of *l'enflure des jambes et des ouisses de la femme accouchée;* or that of *dépôt du lait,* from its supposed cause; but often with so little accuracy, as to make it difficult to distinguish, what kind of swelling they meant to describe. By the Germans it is usually called the *œdema lacteum.* Though the disease has frequently occurred in this country, and has been long understood in practice, I do not recollect that any treatise was written upon it before that published by Mr. Charles White of Manchester, which was followed by another by Mr. Trye of Gloucester. As might be expected from men of their abilities and eminence, in each of their works there are many things deserving attention; but as the subject yet requires further investigation, with regard to its cause, its history, and method of treatment, I shall offer the result of such observations and opinions, as have occurred to me on this disease.

The puerperal swelling of the inferior extremities does not seem to depend upon the kind of labour the patient may have had, as it indiscriminately happens after those which were easy, and those which were difficult; or on any evident peculiarity of the constitution, the corpulent and the thin, the feeble and the strong, being equally liable to it; or on rank in life, as the rich and poor are alike subject to it; or on any mode of treatment in the state of childbed. Nor does any appearance during pregnancy usually denote a disposition to it, the swelling of the inferior extremities at that time being a totally different complaint; yet the whole disease seems to arise

from some circumstance, subsequent to the delivery of the patient. It is also remarkable, which is a satisfactory reply to those who have attributed this swelling to the deposition of the milk, that it has happened to those who had an abundance, and those who had a scarcity of milk; to those who did, or those who did not give suck; and sometimes, though rarely, in abortions, when no milk was secreted.

Before the appearance of any swelling or any sense of pain in the limb about to be affected, women become very irritable, with a sense of great weakness, and grievously depressed in their spirits, without any apparently sufficient reason, complaining only of transient pains in the region of the *uterus*, and from these the approach of the disease has frequently been foretold. After a short time they are seized, often very suddenly, with an extremely acute pain in the calf of the leg, extending to the inside of the heel, and then, observing the course of the lymphatics, stretching up to the ham, along the internal part of the thigh to the groin, occasioning a slight soreness over the lower part of the *abdomen*. Then also the inguinal glands are affected, sometimes the external, which are perceptibly enlarged, indurated, and painful, and sometimes the internal, or both; and probably also, judging from the symptoms, those which lie at the bifurcation of the vessels at the loins; except that I have not observed the limb to be discoloured, or the lymphatics inflamed, and marking their course by a redness of the skin (which we provincially call the *anguish vein)*, the first effects of this disease very much resemble those, which would attend the absorption of some poisonous matter from the lower part of the limb. The whole surface of the swelled limb becomes insufferably tender to the slightest touch or pressure, especially in those parts where the glands are seated; yet without any other apparent change, except that the skin is glossy and of a deadly paleness; and a certain degree of paleness, not unlike that of a chlorotic or dropsical person, is spread over the countenance and whole body, every vein seeming to be scantily supplied with blood. When the pain has continued about twenty-four hours, the limb begins to swell, and the pain is usually abated in proportion to the increase of the swelling; but from the moment of the attack, all power of acting with the limb is lost, every attempt to move it giving great torture, and a disposition to faint. There are, however, many varieties in the manner, in which the disease commenceth, as well as in its degree and progress; but the glands and lymphatics of the limb are evidently the parts first, and principally affected. In some cases the access of the disease is slower, and the symptoms less violent, hesitating, as it were, whether it should be

formed or not. In these the pain is not only less severe, but diffused over the limb, instead of being fixed on particular parts, and the swelling scarce sufficient to draw attention.

This disease happens at no precise time after delivery, as 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* being 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 however to be observed, 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.

Either or both the legs may be affected together or successively. When the latter is the case, the disease having remained for a certain time in one leg, and the symptoms being abated, the other has been suddenly and unexpectedly seized. Then the symptoms have recurred with equal violence, and gone through a similar course. But the patient having escaped the danger before apprehended, though disconcerted, bears the second attack, even if it be more severe, better than she did the first. Should the second leg become affected, it is not by a translation of the disease from one limb to the other, the leg first affected remaining in the same state, and observing the same progress as before the affection of the second. When only one leg is affected there are, in some cases, occasional exacerbations of the disease, after apparently considerable amendment; and these may render it necessary to change the order of treatment, or even to return to that which was proper at the commencement.

After eight or ten days continuance, according to its lenity or violence, the more urgent symptoms of this disease begin to abate, but in many cases very slowly; the debility and oppression sometimes remaining for several weeks, as the constitution is naturally more inert or vigorous. Though all the other symptoms be removed, the swelling may, and generally does remain for many weeks, or even months, and in some very bad cases, the limb has never been reduced to its primitive size, or recovered its wonted powers of agility and firmness, during the patient's life.

The constitution seems to be very much disturbed and enfeebled at the beginning of the disease, and unequal to the due performance of its common functions, yet after a certain time it seems to become local; for the patients recover their health, and often menstruate regularly; but even this change has seldom afforded the expected relief to the affected limb.

Though this disease often creates much and great alarm to the patient and her friends, and always occasions much pain and suffering, yet on the whole it may be said, that it is not dangerous. I do not mean, nor should I be justified in saying, that it was never attended with danger; having been informed of several cases, and seen one, which proved fatal, where no other cause of the patient's death could be assigned or suspected. But on the retrospect it appeared, that this might possibly have been avoided, if more regard had been paid to the representations of the feelings of the patients; for they were urged, at least encouraged, to exert themselves beyond their abilities and inclinations, and sunk immediately after, or while they were making some great effort.

From this description of the disease, the inguinal and neighbouring glands seem to be the parts first affected, and the subsequent swelling of the limb to be evidently occasioned by the blocking up of all passage for the lymph through those glands. The pain and extreme soreness of the limb, which are always somewhat abated when the swelling comes on, appear to be incidental, and to be produced by the distention of the lymphatic vessels; so that the swelling seems to prove that those, which were before over distended, are relieved, either by the bursting of some, allowing the effusion of lymph into the cellular membrane; or a series of vessels of small dimensions are enlarged, by which those lymphatics, which before suffered from extreme distention, together with the parts on which they made compression, are eased.

But it remains to be proved how it comes to pass, that these glands are originally affected; and this I should endeavour to explain by presuming, that, as the lymphatic vessels of the *uterus* and *vagina* are very much increased in size during pregnancy, they are more capable of absorbing any fluid, which may come into contact with their orifices; and if any fluid not consonant in its qualities with that, which they were by nature intended to convey, were to be admitted and conducted to the gland, to which any particular lymphatic may lead, a morbid affection of the gland might be produced, which would occasion all the succeeding mischief. Whether the internal or external inguinal glands, or those at the head of the *triceps*, or any other, were chiefly affected, will depend on the course of the lymphatic which had taken up the offending matter.

It was before observed, that the uterine discharges have an offensive smell, and unusual appearance. Now it has been proved, that the most healthy fluids of the body, perfectly innocent and unoffending to the part where they were secreted, may act as means of great and morbid irritation, if transferred to a part not originally destined to receive them; that is, they may act in some degree as poisons. But in the present case, the secretion being of a morbid kind, as far as can be judged by smell and appearance, the malignity of its effects may be aggravated. I therefore feel satisfied, that the absorption of vitiated matter from the *uterus* is the cause of the swelling of the inguinal glands. Further, if this absorbed matter had not been interrupted by the gland, and thus prevented from spreading over the whole body, a disease infinitely more dangerous would have been caused; and this opinion is strengthened, not only by the common consequences of acknowledged poisons when absorbed, but by many similar complaints frequently met with in practice: as in the swelling of the inferior extremities in men, when the prostate gland is affected; in one or both legs, when the *uterus* is diseased, as has sometimes happened after the extirpation of a *polypus*, which can then bear only the most lenient applications and medicines; in the arm, when the axillary glands are enlarged; and in many other cases. But the changes in the uterine discharges, which precede this disease, are not, it is apprehended, like the changes produced by the retention of coagula, or of small portions of the *placenta* or membranes becoming putrid, but they are consequent to an unhealthy state or morbid action of the *uterus*.

Having formed this opinion of the cause of this disease, and reasoning by analogy of its effects, in the method of treatment, without aiming to cure the disease in the first instance, I take the symptoms for my guide, and endeavour to relieve these by all the means in my power. As the sense of extreme weakness, and excessive irritability, are the most prominent and distressing, the patient is to be well supported by cordial medicines, and by a liberal use of wine; not restraining her to any precise quantity, but leaving her at liberty to judge what that shall be, by the degree of depression which she feels. Opiates are also to be given, to abate and soothe the general irritability of the habit, and together with these, such medicines as promote the secretion by the skin and kidneys. For these purposes, I usually give the following draught:

℞ Aq. ammon. acetat. ℥ss.
Syrup. papaver. alb.
Spir. nuc. mos. *a* ℥ii.
Aq. ment. sat.

Aq. puræ. *a* ℥ss M. f. haustus quarta vel sexta quaque hora sumendus.

Should this fail to moderate the sufferings of the patient, a few drops of *tinct. opii* may be occasionally added to the draughts, especially to that taken at bed-time, and the quantity of *ammonia acetata* may be increased, or pure *ammonia* may be given in some cases of great depression.

Perhaps the best application to the swelled limb is a liniment composed of one drachm of camphor dissolved in an ounce of oil of olives; or some of the expressed oil of mace softened down to a proper consistence with a sufficient quantity of oil of almonds; and to either of these may be added from five to ten grains of powdered *opium*. The most painful parts, or the whole limb, may be gently anointed with a small quantity of these every night and morning, and afterwards covered with a loose flannel. By such means some relief is usually obtained, though not much permanent benefit; and they are preferable, I think, either to spirituous or to hot fomentations, which, without producing more advantage, are apt to bring on profuse sweating, and great faintness.

In this stage of the disease, local bleedings with leeches, and blisters applied to the enlarged glands, have been recommended, as effectual means of speedily curing the disease by removing the glandular obstruction. But if my opinion of the cause of the disease be just, the hasty dispersion of the swelling of the glands, if it could be effected, though it might lessen or wholly remove the swelling of the limb, would ultimately prove a very great disadvantage, by allowing the absorbed *virus* to escape; and this pervading the whole body, a disease primarily local would become a general one of the most dangerous kind. In the case of poisonous matter of any kind absorbed by a slight wound or abrasion of the skin of the hand or fingers (an accident to which surgeons are particularly liable in their dissections and operations), the swelling of the nearest or some gland, which cuts off the communication between the limb and the body, leads to the security of the patient. But if active and effectual means be used to remove the swelling of the gland, the absorbed *virus* passes into the constitution, and the patient will probably be destroyed. It was by an error of this kind we lost Mr. Hewson the celebrated anatomist, when he was rising into eminence, and many other deserving men, whom I recollect, and with whose cases I was well acquainted.

With regard to the state of the bowels, though we are to be circumspect in preventing the inconveniences of constipation, it is never adviseable to purge, in this state of the disease. Their regular course may be obtained by the occasional use of *magnesia vitriolata*, or any

other medicine of the kind, which will answer the purpose, and is least likely to disturb the stomach. Clysters are not eligible, because the change of position, which they require, is often extremely difficult and painful.

The great tumult raised on the first attack of the disease being appeased, the quantity of wine and opiates may be lessened, or they may be less frequently given; but in this we are to be guided by the degree of debility and irritation that remain. As a preventive also, when the disease is threatened, a generous diet and wine are to be allowed, if the appetite of the patient will permit her to take nourishment.

When the constitution is, according to the old mode of expression, fortified, and the health somewhat restored, the swelling of the leg is to be considered rather as of a chronic, than of an acute kind, and all reasonable endeavours may be used to disperse it. I have then given the *decoctum cinchonæ* or *cascarillæ*, with a saline draught, or the *kali vitriolatum*, or *magnesia vitriolata*, or a strong infusion of burnt sponge two or three times a day, and every night at bed time, half a grain, or a grain of calomel, with or without an opiate. In some cases, I have thought it more eligible to give from three or five grains of calomel twice a week, with a purging draught on the following morning, and some of the draughts before mentioned on the intermediate days. In other cases, the crystals of *tartar* have been liberally given in any convenient form; or the *cicuta* with the decoction of *sarsa*, and various other things usually advised on similar occasions: and whenever there was much remaining weakness, some preparation of iron, as the *ferrum vitriolatum* or *ammoniacale* in suitable doses, has been of much service.

Then also, but not sooner, it is necessary and proper to support the swelled limb by a slight flannel bandage drawn gradually tighter, and to use different applications, such as the volatile liniment, or one composed of three parts of *linimentum saponis*, and one part of *tinctur. cantharidum*, and sometimes small quantities of the *unguentum hydrargyri*. The frequent application of small blisters to different parts of the limb has been also then strongly advised, and in many cases with evident advantage. Electricity has been tried, but of its real benefits I am not competent to judge. Certainly many patients have been much relieved by persevering in the use of warm sea-bathing; and they are to be encouraged, but with some caution, to use exercise, otherwise the desuetude will endanger their being crippled. It may lastly be observed, though some women have been afflicted with this swelling of one or other of the inferior extremities in several successive labours, in general they who have had it in one labour, are not more liable to it in subsequent ones, and are sometimes re-

lieved during their confinement from some of the consequences of a former attack.

Before I conclude I must express my satisfaction at the favorable reception of the former editions of this work, and my thankfulness that my life has been sufficiently prolonged to allow me to revise the present*, which I have used my utmost endeavours to correct and improve.

* Fifth Edition.

INDEX.

A.

Page

Abdomen, distension of..... 148
——— subsidence of..... 159
——— coldness of..... 274
——— binding the..... 426, 432
——— pain in, after delivery..... 427
——— integuments of, tender and inflamed..... 428
——— abscess in..... 435
Abortion..... 338
——— treatment of..... 342
——— circumstances attending..... 344
——— not often dangerous..... 348
Abscess, case of..... 436
Adhesions of the vagina..... 237
After-pains, causes and treatment of..... 429
Age, advanced, cause of rigidity..... 218
Amulets..... 247
Anasarca and Ascites..... 147
Anomalous labours..... 336
Antimonial powder..... 445
Anxiety previous to labour..... 166
Areola..... 128
Arm presenting..... 316
Attachment to the placenta over the os uteri..... 351

B.

Baillie, Dr..... 71
Bladder..... 33
——— stone in the..... 233

Page
Bleeding, women in labour..... 215
——— in convulsions..... 392. 397
Boom..... 262
Bowels, disturbance of..... 141
——— wind in..... 428
Breasts, alteration of..... 128
——— flaccidity of..... 274

C.

Cancer..... 98
Carunculæ myrtiformes..... 37
Catheters..... 233
Cawl, what..... 209
Cesarean operation..... 248. 298. 306
——— method of performing..... 307
Chamberlens..... 262
Child, first..... 217
——- head of, uncommonly large, or too much ossified..... 225
——- want of motion of the..... 275
——- dead, signs of..... 274
——- equivocal signs of..... 279
——- causes of death of..... *ib.*
——- method of turning..... 318
——- evolution of..... 327
Childbed, management of women in..... 422
Child's head, structure of..... 19
Cicatrices in the vagina..... 237
Clitoris..... 26
Clysters, utility of..... 206
Coldness of the abdomen..... 274
Comparison of human and brute structure..... 193
Complex labours..... 336
Complexion..... 201
Conception, signs of..... 101. 126
Constitution, weakness of..... 213
——— wanting sufficient irritability..... 215
Consumptive women..... 213
Convulsions, puerperal..... 386
——— description of..... *ib.*
——— causes of..... 387
——— signs of..... 388
——— method of preventing..... 395

Page
Convulsions, puerperal, treatment of..... 392
———————— manner of delivering in..... 396
Corpora lutea..... 41
Costiveness..... 138
Customs ancient respecting placenta and funis..... 186

D.

De Bruyn..... 262
Deformity, general, effects of..... 217
Delivery by means of instruments..... 246
——— management of women after..... *ib.*
Diarrhœa..... 167
Difficult labours..... 202
Discharge, mucous..... 159. 168
——— fœtor and ill appearance of..... 277
——— of meconium..... *ib.*
Disease, head enlarged by..... 227
——— venereal..... 149
Disposition, effects of..... 201
Distortion of the pelvis..... 225. 331
Douglas, Dr., his account of a ruptured uterus..... 242

E.

Edematose swelling of the head..... 278
Egg..... 108
Ellenborough, Chief Justice..... 115
Emetics in convulsions..... 393
Emphysema of the head..... 278
Enlargement of the ovaria..... 239
Erysipelatose tumour on the knuckles, wrists, &c..... 435
Evacuation of the meconium..... 277
——— of the brain..... 284
Evolution of the child..... 326
Examination *per vaginam*..... 161
Excrescences..... 45
——— of the os uteri..... 235
Experience, method of improving by..... 203
External parts, rigidity of..... 223
Extraction of the placenta..... 189
——— of the head..... 285
Extrauterine fœtus..... 417

F.

Page
Face inclined towards the pubes..... 229
—— presentation of..... 230
Faculties, strong and weak..... 202
Fainting after hæmorrhage..... 378
———— delivery..... 426
Fever, disposition to..... 132
—— preventing the proper action of the uterus in parturition 214
—— puerperal..... 429
Fillet, account and description of..... 249
Fluor albus..... 142
Fœtor in the apartment of the patient..... 276
Fœtus, human..... 112
———— circulation in..... 113
—— live, signs of..... 191
—— of the discharges..... 277
—— extrauterine..... 417
—— situation of..... 153
Forceps, various kinds of..... 250
—— general observations on..... 253
—— rules for applying..... 256
———— for using when applied..... 257
—— application of, under various circumstances..... 260
—— compared with the vectis..... 265
Funis, ancient customs respecting..... 186
—— umbilicalis..... 115
———— shortness of..... 210
———— division of..... 212
———— compression of..... 313
———— torn from the placenta..... 374
———— descent of, before the child..... 409

G.

General deformity, effects of..... 217
Generation, parts of..... 25
Glisson..... 127
Grinding pains..... 170

H.

Hæmorrhage depending on pregnancy and parturition..... 337

Page
Hæmorrhage in abortion..... 345
———— treatment of..... *ib.*
———— in advanced pregnancy..... 351
———— danger of..... *ib.*
———— from attachment of the placenta over the os uteri. 353
———— danger of delay in..... 354
———— manner of delivering in..... 355
———— from separation of the placenta..... 361
———— when the placenta is retained..... *ib.*
———— expelled or extracted..... 374
———— as connected with puerperal fever..... 442
Harvey.....102. 108. 155
Head, presentation of..... 165
—— of the child, compression of..... 225
———— uncommonly large, or too much ossified..... 226
———— diseased..... 227
———— presenting with the arms..... 230
———— on lessening the..... 270
———— edema and emphysema of..... 278
———— operation of lessening..... 281
———— extracting of the..... 285
———— separation of, from the body..... 334
———— left..... *ib.*
Head-ach after hæmorrhage..... 379
Hemiplegia..... 146
Hemorrhoids..... 140
Hermaphrodites..... 33
Hernia, particular kind of..... 81
Hydatids..... 60
Hydrocele..... 79
Hymen..... 35

I.

Ill appearance of the discharges..... 277
Impregnation..... 110
Incubation..... 108
Indigestion..... 136
Inflammation, local..... 214
———— of the uterus..... 429
Inquietude..... 144
Instruments, general reflections on. ..... 246—253
———— used in lessening the head..... 281

Page
Inversion of the uterus..... 379
Irritability, defect of..... 215
——— excess of..... 387
Itching..... 34

L.

Labia, diseases of..... 27
Labium, tumefaction of..... 427
Labour, distinctions of..... 164
——— natural..... 165
——— pains of..... 168
——— stages of..... 171
——— circumstances preceding..... 158
——— effect of climate on..... 202
Labours, difficult, definition of..... *ib.*
——— orders of..... 204
——— from inert or irregular action of the uterus... *ib.*
——— too great distension of the uterus..... 205
——— partial action of the uterus..... 207
——— rigidity of the membranes..... 208
——— imperfect discharge of the waters..... 209
——— shortness of the funis umbilicalis..... 210
——— weakness of the constitution..... 213
——— fever or inflammation..... 214
——— want of irritability..... 215
——— passions of the mind..... 216
——— general deformity..... 217
——— extreme rigidity..... *ib.*
——— first child..... *ib.*
——— age..... 218
——— too early rupture of the membranes.... 219
——— obliquity of the os uteri..... 220
——— rigidity of the os uteri..... 222
——— the external parts..... 223
——— disproportion..... 224
——— smallness of the pelvis..... *ib.*
——— distortion of the pelvis..... 225. 331
——— head large or ossified..... 226
——— enlarged by disease..... 227
——— face inclined to the pubes..... 229
——— presenting..... 230
——— head presenting with arm..... *ib.*

Page
Labours, difficult, from diseases of the soft parts..... 232
——————— suppression of urine..... *ib.*
——————— stone in the bladder..... 233
——————— excrescences of the os uteri..... 235
——————— cicatrices in the vagina..... 237
——————— adhesion of the vagina..... *ib.*
——————— steatomatose tumours..... 238
——————— enlargement of the ovaria..... 239
——————— rupture of the uterus..... 240
——————— general observations on..... 243
——— premature..... 290
——— preternatural..... 308
——————— distinctions of..... 316
——— with hæmorrhage..... 336
——— with convulsions..... 385
——————— two or more children..... 400
——————— a descent of the funis..... 409
Leg, swelling of..... 460
Lessening the head..... 270
Lives, comparison of..... 272

M.

Mania lactea..... 454
Mechanical weight of the uterus..... 275
Meconium, evacuation of..... 277
Membrana decidua..... 111
Membrane menstruous..... 89
Membranes..... 118
——————— protrusion of..... 176
——————— rigidity of..... 208
——————— too early rupture of..... 219
Menses, obstruction of..... 92
——— cessation of..... 97
Menstruation..... 85
——————— painful..... 96
Midwifery, necessity of..... 192
Milk, recession of..... 274
Mind, its influence on labours..... 216
Minerals..... 104
Mole..... 63
Mollities ossium..... 198

Page
Monsters..... 414
Motion, want of..... 275

N.

Natural labours..... 165
Navel-string, tying of..... 186
Necessity of Midwifery..... 192
Needham..... 103
Nut..... 107
Nymphæ, elongation of..... 27

O.

Œdopsophia..... 62
Operation, Cesarean..... 248. 298
———— method of performing..... 307
Orders of difficult labours..... 204
Os coccygis..... 2
— sacrum..... *ib.*
— uteri..... 174
——— oblique position of..... 220
——— extreme rigidity of..... 222
——— excrescences of..... 235
——— manner of dilating..... 321
Ossa innominata..... 3
—— pubes..... 4
Ovaria..... 41
——— enlargement of..... 239
——— abscess of..... 69
——— dropsy of..... 64
——— inflammation of..... 69
——— teeth, &c. found in..... 71
Ovum..... 110
——— waters of..... 120

P.

Pain in hæmorrhages, a favourable symptom..... 353
Pains, distinction of..... 172
Palfyn..... 262
Parts, dilatation of..... 170. 174
Passions..... 197

Page
Passions, influence of, on parturition 216
Pelvis..... 1
——— separation of bones of..... 8
——— distortion of..... 22. 225. 331
——— common size of..... 6
——— original smallness of..... 224
——— of women and brute creatures..... 193
Perforation of the head..... 283
Perinæum, dropsy of..... 79
——————— laceration of..... 29—35
Pessaries..... 59
Placenta..... 116
——— mode of extracting..... 188. 369
——— manner of its separation and exclusion..... 364
——— retention of..... 368
——— funis separated from..... 373
Polypus..... 45
Position, erect, of women..... 193
Pregnancy, diseases of..... 126
Presentation of the inferior extremities..... 311
——————— arm..... 316
Preternatural labours..... 308
——————— signs of..... 310
——————— first order of..... 311
——————— second order of..... 316
Procidentia uteri 57
Propositions..... 200
Pruritus..... 34
Pubes, face inclined towards the..... 229
Pudendum 25
Puerperal fever..... 429
——————— treatment of..... 440
——————— dissections of..... 448

Q.

Quickening..... 130

R.

Rachitis..... 198
Rhonhuysen..... 262
Rigidity, labours rendered difficult by..... 217

Page
Rigidity of the os uteri..... 222
——— of the external parts..... 223
Rigors..... 167
Rupture, too early, of the membranes..... 219
——— of the uterus..... 240

S.

Signs of a dead child..... 274
——— convulsions..... 388
——— twins..... 402
Sillyhow..... 209
Sleep, want of..... 144
Small Pox..... 151
Smallness, original, of the pelvis..... 224
Spasm after delivery..... 429
Steatomatose tumours..... 238
Sterility..... 101
Stone in the bladder..... 233
Strangury..... 142. 167
Superfetation..... 420
Support of the perinæum..... 185
Suppression of urine..... 232
Symphysis, section of..... 295

T.

Time of uterogestation..... 154
Titsing..... 262
Tumours, steatomatose..... 238
Turning, method of..... 318
Twins..... 400
——— signs of..... 402
——— manner of delivering..... 404
——— management of the placentæ..... 407

U.

Urine, suppression of..... 232
Uterogestation, term of..... 154
Uterus..... 38
——— dropsy of..... 61
——— retroversion of..... 72

Page
Uterus, retroflection of..... 78
——— diseases of..... 57
——— disposition of, to cancerous diseases..... 98
——— different forms of..... 194
——— gravid contents of..... 112
——— distention of..... 121
——— action of..... 122
——— insufficient action of..... 204
——— too great distension of..... 205
——— partial action of..... 207
——— rupture of..... 240
——— mechanical weight of..... 275
——— contraction of..... 321, 322
——— on medicines for moderating the action of..... 323
——— introduction of the hand into..... 366
——— irregular action of..... 370
——— inversion of..... 379
——— inflammation of..... 429

V.

Vagina..... 37
——— abbreviation of..... 42
——— cohesion of..... 44
——— cicatrices of..... *ib.*
——————— in..... 237
——— adhesions of..... *ib.*
Various forms of uteri..... 194
——————— placentæ..... 196
Vectis, history and description of..... 246
——— different kinds of..... 263
——— comparison of, with the forceps..... 265
——— manner of using..... 268
Vegetables..... 106
Voice, different tones of..... 169
Vomiting..... 134
——— in hæmorrhages often beneficial..... 352

W.

Walking, altered manner of..... 160
Waters, imperfect discharge of..... 209

Page
Waters of the ovum..... 120
Weakness of constitution..... 213
Wind in the bowels..... 428
Women, consumptive..... 214
——— management in childbed..... 422

THE END.

G. Woodfall, Printer,
Angel Court, Skinner Street, London.