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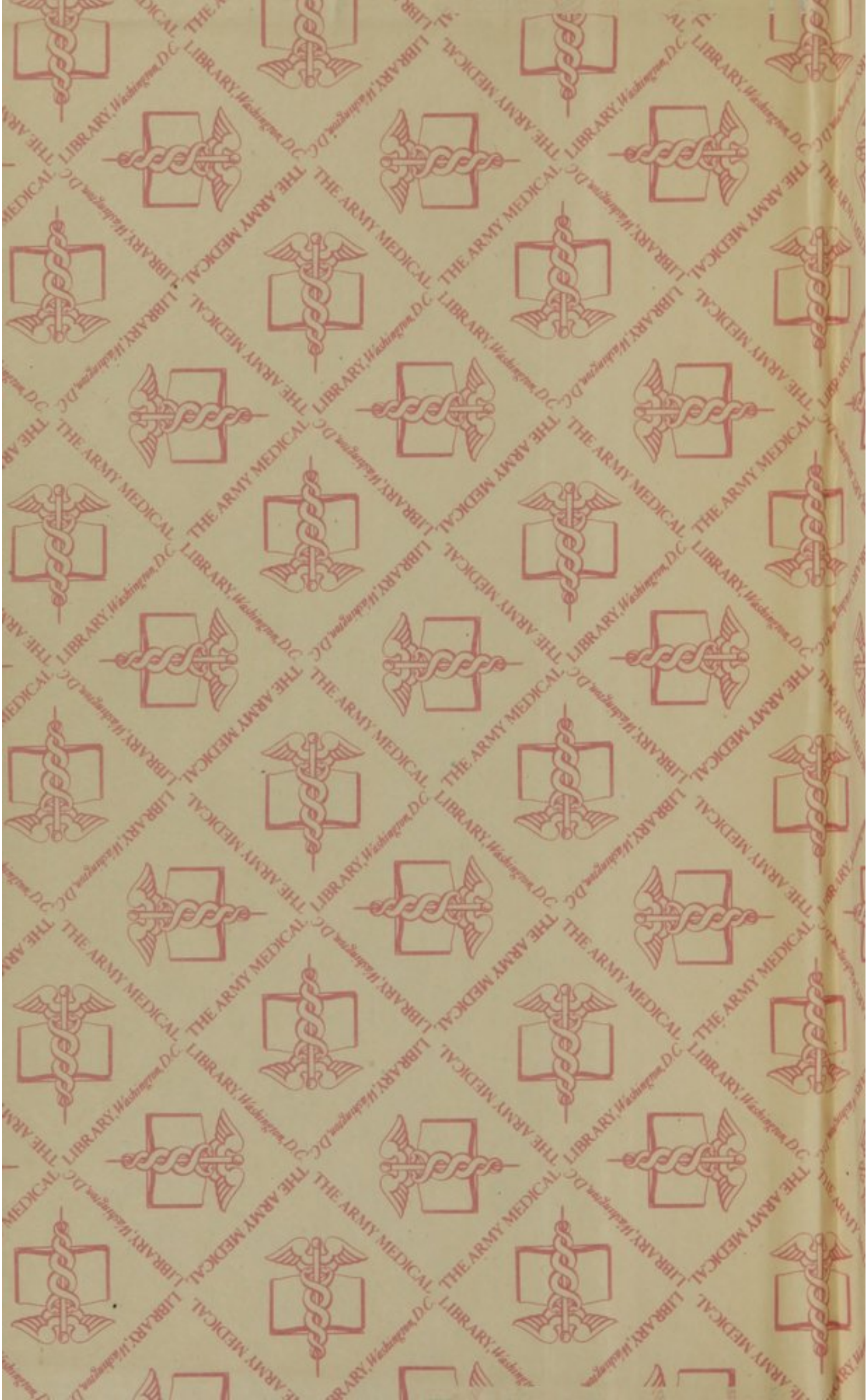
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Introduction

TO THE

PRACTICE OF MIDWIFERY.

Samuel L. Griswold

Printed by C. S. Van Winkle,
Printer to the University of New-York.

AN

INTRODUCTION

TO THE

PRACTICE OF MIDWIFERY.

BY THOMAS DENMAN, M. D.

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

FROM THE LAST LONDON EDITION,

Revised by the Author.

With Notes and Emendations,

BY JOHN W. FRANCIS, M. D.

Professor of Obstetrics and the Diseases of Women and Children in the University of the State of New-York; Member of the Medical and Chirurgical Society of London; Member of the Academy of Natural Sciences of Philadelphia; one of the Consulting Physicians of the New-York Dispensary; President of the Medico-Chirurgical Society of the University of New-York, &c.

NEW-YORK:

PUBLISHED BY E. BLISS AND E. WHITE,

No. 128 Broadway.

1821.

Southern District of New-York, ss:

BE IT REMEMBERED, that on the eighth day of October, in the forty-sixth year of the Independence of the United States of America, E. Bliss and E. White, of the said district, have deposited in this office the title of a book, the right whereof they claim as proprietors, in the words following, to wit:

"An Introduction to the Practice of Midwifery. By Thomas Denman, M. D. Licentiate in Midwifery of the College of Physicians, London; and Honorary Member of the Royal Medical Society at Edinburgh. From the last London edition, revised by the author. With Notes and Emendations, by John W. Francis, M. D. Professor of Obstetrics and the Diseases of Women and Children in the University of the State of New-York; Member of the Medical and Chirurgical Society of London; Member of the Academy of Natural Sciences of Philadelphia; one of the Consulting Physicians of the New-York Dispensary; President of the Medico-Chirurgical Society of the University of New-York, &c."

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JAMES DILL,
Clerk of the Southern District of New-York.

NOTICE

TO THIS AMERICAN EDITION.

I HAVE ventured, with due deference, to offer to the American public a new edition of DR. DENMAN'S *Introduction to the Practice of Midwifery*, with Notes and Emendations, the result of some attention to this branch of medical science. The high practical merit of the original work is universally acknowledged; but in it the careful reader will occasionally have observed errors which demand correction, and deficiencies which recent improvements may supply.

I was induced to assume the responsibility of this undertaking by a desire to render this INTRODUCTION still more generally useful as a manual of the present state of obstetrical knowledge. With all the care I have exercised, I cannot pretend to have noticed every deficiency; yet I have animadverted upon the different parts of the work with freedom and impartiality, aware that in all practical subjects errors, apparently minute, sometimes exercise an influence extensively pernicious. The Additions I have made are considerable in number, and I

trust will prove of some service. But independently of any thing I have done, this performance recommends itself to all studious of improvement in an important and responsible department of the profession, by merits which enlightened criticism has pronounced hitherto beyond successful competition.

I have advised, that the APHORISMS of Doctor Denman be added to this edition, and the enterprising publishers have consented to enrich the whole with the Series of valuable Engravings which the venerable author caused to be affixed to the last London impression of his work.

JOHN W. FRANCIS.

New-York, October 1, 1821.

ADVERTISEMENT.

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.

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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 deficiences 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 judgment.

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 preceding 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 con-

sider 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 this 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 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 judgment; 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

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

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. *Halhead* 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, indeed, are recorded, as *Richardus 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 peopleal ready 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 acquisition or 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 imitata;* 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 *Joliffe*, *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 conceiud in most 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 benefit 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'universall weale quiet and tranquillitie of this hole Realme gevyn under our Signet at my Lord's manour of Hampton cote the xij day of Octobre (1537.)"

Report of the Physicians respecting the State of the Queen.

" These shall be to aduertize yo^r. 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 bene 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 commandment

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 Fratris Bartholomei, Anglici, de Ordine Fra-

trum Minorum." This is in the nature of a *Cyclopædia;* 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 terciani 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 the 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 Helthe." 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*, *Tresuries of Helth*, *Mirrours of Helth*, *Anthidotaries*, *Breuiaries of Helth*, the *Tresures 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 *Elrich 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,"

* Dr. *Combe* has in his possession the identical manuscript copy of this work, which was presented to *Catharine*, Queen of *Henry* the

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 Geminum 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 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 Pare's* work is dated Feb. 8, 1579, and it was translated into *English* in 1634 by *Thomas Johnson;* so that it may be doubted whether *Gale* did not precede *Pare* 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 Treatise of Chirurgerie;"

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*.

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 faculties 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 Phisicke"—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 *Timothe 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 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 *Folkston*, 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

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

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 farther 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 small-pox, 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 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 b een 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 et 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 et intestinis*, but of this I have never seen a copy. *Glisson* lived to be upwards of one hundred years of age,* and died at *Streatham*, 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 design, his "Cerebri Anatome, cui accessit Nervorum Descriptio et 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 et ingenii aciem, lubens agnosco—emicuit viri solertia plane admiranda, nec non indefatigabilis industria, nulloque obice sistendus labor.*

In 1762 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

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

please philosophers ; and it does seem possible, by the study of arrangement and subtilities 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 fætus in utero et ovo.—4. De Motu Musculari et 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 physic, 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 promoted 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 solution 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 2d, 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 *Exercitationes 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 seventeeth 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 judgment 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, and 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 aud 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 pro-

fession. 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

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

three sons, who, with their 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 thoughts, nuctors, or man's fantasie, sitting and meditating in his studye, but which really haue been performed in the traualing 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 any waie promote it, and often 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 succederet, 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, secundam 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 Dutchess 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 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.

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

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 overstocked 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 farther 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.

To the above Preface of the author, the *American Editor* thinks proper to make a few additions.

In the preceding sketch the author cannot claim the merit of either having exhibited the most satisfactory exposition of the progress of Midwifery, or of lucid arrangement in the disposition of his facts. Indeed, he seems to have put together, with too little care, whatever occurred to him illustrative of the different eras in me-

dicine, rather than to have traced the history of a particular branch of it. The author was, perhaps, more successful in making improvements than in detailing those of others; but it must be allowed, in extenuation, that the materials for this purpose are scanty and dispersed, and it deserves to be remembered, that Midwifery has but lately received the honours of a science.

Rejecting as uncertain or fabulous whatever is recorded of the obstetric art, anterior to the time of Hippocrates, it may be observed, that there is to be found in the different treatises of that great man, no mean extent of information on the subject. Among his numerous writings, we find three distinct treatises, *de Natura Muliebri; de Superfœtatione;* and *de Mulierum Morbis.* In this last mentioned essay, he has described many diseases peculiar to the female sex, and his catalogue of remedies for their removal is unusually extensive. His view of menstruation, and of its suppression, is replete with valuable principles, and his pathological indications wonderfully felicitous for the time. His theory of conception and generation, though now rejected, was the prevailing doctrine for many ages. Conception, according to his idea, consists in a fermentation of the male and female semen: and he considers the sex of the embryo as determined by the predominant influence of either parent. Like Democritus, Hippocrates maintained a loco-motive power in the uterus, yet in his book, *de Natura Pueri*, he furnishes us with some interesting cases concerning the ovum, and the means by which it may be expelled. The singular circumstance that a child of seven months' gestation has greater chance of living than one of eight, was noticed by him, and he attempts an unsatisfactory explanation of it. He has treated, at much length, of difficult labours: he notices the various presentations of the child, and the different attachments of the placenta: his directions recommend themselves to our notice by their precision and minuteness. In those cases in which the head of the child presented, but was detained above the brim of the pelvis, on account of the straightness of the passage, he advises to anoint the parts, and to put the patient into a warm bath. Provided these means failed, the head

of the child was to be opened with a scalpel, and then to be extracted with strong iron pincers or hooks. " Caput gladiola dissectum : instrumento, quod constringat comminuto, et ossicula per ossium volsella extrahito, aut unco attractorio ad claviculam uti firmiter adhæreat immisso, non confestim, sed paulatius remittendo, et rursus adurgendo, extrahito." According to Le Clerc, he was the first, who in cases of great extremity, adopted the expedient of saving the mother at the expense of the child. Blood-letting, so highly useful in many cases of tedious labour, was strongly enforced by him. In a distinct treatise on superfœtation, which doctrine he endeavours to support by numerous arguments, he advances many important principles, which modern experience has confirmed. On the whole, it may be said of Hippocratic midwifery, that it was far beyond what might be reasonably expected from the then state of anatomical and physiological knowledge; that the remedies in difficult cases, though numerous, were comparatively feeble, and similar in character, to the expectant method of treatment in other diseases, pursued at that period.

The vast and powerful mind of Aristotle, intent on universal science, regarded the obstetric art but as subservient to his magnificent views. Yet his physiological speculations and theoretical reasonings, are not unworthy of his mighty intellect. In a portion of his writings on the generation of animals, he treats of the signs of puberty, of menstruation, and its peculiarity to the human species; of the evidences and symptoms of conception to the period of parturition. The situation of the fœtus in utero, the birth of the child and of the secundines, are also considered by him. The importance of the menstrual flux he so highly estimates, that he ventured to affirm, that with some few exceptions, those females are barren in whom this discharge has not appeared. He was aware how much more laborious was the parturition of the human subject than that of other animals, and he was an ardent supporter of the theory of Hippocrates, that the embryo is formed from the union of organical particles of both

parents. He seems to have been the first to propose the distinction between the natural and unnatural labours.

It was not until towards the decline of the republic, that physicians enjoyed their proper rank in the Roman state. That illustrious usurper, Julius Cæsar, by a wise decree, first conferred upon them the rights of citizens; and they subsequently enjoyed the highest dignities in the empire. It is uncertain whether the classical Celsus belonged to the medical profession. He wrote with distinguished ability on agriculture, on war, on eloquence, and on physic. In the first four of his eight books, *de Medicina*, he treats of such internal diseases as require for their cure diet and regimen alone; in the fifth and sixth he describes such as may be removed by medicines, and in the two last of whatever requires chirurgical assistance. It is in these two latter books, and especially in the seventh, that he discourses on the diseases of women, and on the means to be used for the purpose of extracting the dead fœtus, but which is little else than an abstract of the opinions of Hippocrates. Nevertheless, a very high judgment must be formed of the condition of medical science in the Augustine age from the admirable compend of Celsus.

In the Natural History of Pliny, are recorded some curious physiological speculations on superfœtation. Though not a physician himself, this celebrated writer considered footling cases as preternatural labours.

In Galen, who appeared nearly one hundred and fifty years after the Christian era, we find a most elaborate and able expounder of the works of Hippocrates, and to him is justly ascribed the singular merit of bringing back physicians to the father of medicine, from whose simple, but sound principles, they had been too much diverted by the methodists and other theorists. Authors ascribe to him five hundred distinct treatises on medical subjects, several of which relate to midwifery. I shall only, here, enumerate *de semine*, *de formatione fœtus*, *de uteri dissectione*. Although his writings be deemed chiefly paraphrastic, yet he certainly effected many important improvements; and in the anatomy of the viscera of the female pelvis, may lay claim to the title of a discoverer. The

uterine tubes, since termed Fallopian, are said to have been first described by Galen.

The name of Ætius is little known to popular reputation in general medicine, yet he ranks high in our particular department. He is said to have entered more minutely, and at greater length, than any of his predecessors, upon most of the different branches of the art. A part of his surgical practice has been revived by Pott; but the variety and value of his obstetrical studies, will be appreciated from a mere outline. His pretensions as an original writer are feeble, but he appears to have been a most diligent collector of the opinions of others, and his works are valuable, as being, perhaps, the best record of the time which intervened between Galen and himself. I shall briefly recount a few of them as illustrative of the state of midwifery in that age.

Ætius wrote a system of physic, the last book of which treats of the diseases of women and children. In his chapter *de utero*, he divides that organ into a fundus and neck, and describes the os tincæ. His views of conception are borrowed from the accurate Soranus. Under the head of *pica*, he notices the peculiar derangement of the digestive organs attendant upon pregnancy. In enumerating the causes of difficult labours, he chiefly follows Hippocrates; and the undue union of the ossa pubis, by which they are prevented from separating in parturition, he absurdly considers as among the foremost of these causes. The circumstances which give rise to difficult labours, as referable to the fœtus itself, are such as, with a few exceptions, we may find in the best systems of midwifery. He says much of the different presentations in labours; head presentations are most natural; little trouble is to be apprehended from footling cases; the worst position is when the child presents double, especially if the hip bones come foremost. Not a few of his directions in cases of difficult labour, are such as the soundest practitioner might approve; yet, one trembles at his application of instruments, and the temerity of his *obstetrico-chirurgical* operations. In his man-

agement of the sequelæ of labour, he is minute, and, at times, happy.

Paulus Ægineta, of whom it is uncertain whether he belongs to the fourth or seventh century, is frequently, but erroneously, represented to have been the first man-midwife. His skill in surgery may be inferred from the repeated reference made to his writings by *Fabricius ab Aquapendente*. His book, *de re medica*, embraces a description of the diseases of women; in his chapter on difficult births, he denominates all those labours natural in which the head or feet present; all other positions he called unnatural. He read lectures on the different branches of medicine at Ægina, and acquired so high renown for his instructions in midwifery, as to obtain the title *obstetricius*.

I do not find that our art received any considerable improvement from the Arabians. That singular race of people were for a long period the repositories of medical knowledge, and they contributed to its augmentation by the description and treatment of several new diseases which their own filthy habits engendered among them. Humanity may lament this addition to the catalogue of physical evils, though medical science must admit her obligations to this extension of her sphere. No notice can here be taken of their additions to the *materia medica*. Loathsome as were the diseases under which they laboured, they attempted to combat them but by comparatively feeble means, and their remedies were chiefly Galenical. Cullen, in his notice of the Arabians, has fallen into several errors, and his character of them is too contemptuous. Of the Arabians, I shall only mention Serapion, Rhazes, Avicenna, and Albucasis, all of whom wrote on the diseases of women and children. Rhazes has been quite particular in giving us directions how to rupture the membranes; and, in the management required, when the waters are prematurely discharged. He, also, treated of the *spina ventosa*, and is the author of a work expressly on the diseases of children.

Avicenna was a most voluminous author on midwifery and its kindred subjects. He was no less remarkable for the premature development of his genius, and at the early age of sixteen, pub-

licly lectured on various branches of medical knowledge. What is most observable of Albucasis is, that he has given us descriptions and figures of the instruments used at his time in the obstetric art. Among the instruments he notices, are two kinds of forceps, and two kinds of crochets.

Towards the latter part of the sixteenth century, a Dr. Raynalde published in England a book, the first of the kind that had appeared in that country, which he called the Garden of Lying-in Women and Midwives. It was subsequently translated into the Latin, and most of the modern languages, and became the manuel of instruction for females. The popular prejudice, at that time, was so great in favour of female practitioners, that an unfortunate physician of Hamburgh was publicly branded, whom curiosity had induced to be present at a delivery, in female attire.

So few and so unimportant were the contributions made to the obstetric art by the physicians and surgeons of *Great Britain*, from the revival of learning to the time of *Harvey*, that I shall pass over this interval without further notice. But in *France*, contemporaneously, surgery was illustrated by the genius of *Ambrose Parè*. This eminent man is also worthy of commemoration, for the improvements he introduced into obstetrical science; and on him has been bestowed the high appellation of the *restorer* of midwifery. His writings are remarkable for the variety and number of facts which they record, and he may be considered the first modern author in medicine, who has refused a superstitious deference to the opinions of the ancients. *Parè* adopted the general division of labours into natural and preternatural, classing under the former, those cases in which the child presented with the head, and was delivered immediately on the discharge of the waters. The preternatural, including all others. His practical advice in all preternatural cases, is to turn the child, and deliver by the feet. On this maxim, which he applies almost universally, he chiefly founds his obstetric reputation. His pupil *Guillimeau* afterwards amplified and extended the directions of *Parè* in a separate performance. In cases of profuse

floodings, *Guillimeau* directed the membranes to be forthwith broken, and the patient to be delivered. He records, from his own observation, instances of ruptured uteri.

The illustrious *Harvey*, in his work *de Generatione*, published detailed accounts of a variety of experiments which he had instituted, under royal patronage, with a view to the elucidation of the intricate subject of generation. It would be difficult to offer, at this time, any thing like an analysis of his book, which *Boerhaave* so highly extols. The principal object of *Harvey* is to detect the nature of conception, and the origin and progress of the new animal. He takes for his chief example, the hen and chick. He treats of the formation and growth of the egg, and the several parts of which it is composed. He then, from a daily inspection during the time of incubation, traces the first appearance of the chick, and its gradual progress. He was the first who discovered its origin from the cicatricula of the ovum, and who perceived the punctum saliens to be the heart. He accurately displays, as far as the eye could inform him, the successive formation of the several parts, and corrects many ancient errors. He maintains, throughout, the position *omne animal ex ovo*. Nevertheless, the system of generation which he deduces from these observations, is somewhat singular. He supposes that the blood is the primordium of all animals, and even prior to the vessels; that the female gives the original material, and that the male renders it vital and animated. He denies any mixture of male and female semen in coitu, and that the male semen ever penetrates to the ovarium, or even to the uterus; and imagines the ovum to become impregnated, not by seminal contact, but by a sort of subtle contagion, as he expresses it, affecting the female rather than the ovum. He thinks it impossible that a material cause can occasion impregnation; but as the mind, by its action, produces thought or conception in the brain, so he supposes something analogous to reside in the womb, which he terms phantasm, by the virtue and energy of which the ovum is generated: The experiments of *Spallanzani* are familiarly known to be directly opposite to the theory of *Harvey;* but the speculations of the

latter have very lately been countenanced to a certain extent, by an ingenious member of the Medico-Chirurgical Society of London, and the result of his experiments published in their transactions.

On the difficult subjects, abortion, extra-uterine conception, difficult labours, and on various diseases of the Uterus, *Harvey* has added many valuable facts.

An essay on the life of the *fœtus in utero*, by *Nymmanus*, and a treatise on the diseases of women and children, in the works of *Sennertus*, were published about the year 1640. Not long after this period, 1666, *Mauriceau* gave to the world his system of Midwifery, a work more ample in its details, and richer in practical information on the subject to which it relates, than any that had preceded it. The extensive experience of the author, as well in private practice as in the *Hotel Dieu* of *Paris*, then the greatest establishment in *Europe* for the accommodation of lying-in women, eminently qualified him for the undertaking. The system of *Mauriceau* was soon after translated into *English*, and published by the *Chamberlaynes*, subsequently noted for the discovery of certain instruments which they secretly employed in obstetrical practice, and which still bear their name. The construction of these instruments was for a considerable time kept a profound mystery. They soon, however, became a necessary part of the contents of every fashionable accoucheur's green bag, but have now fallen into disuse. Ample notice of them is to be found in various books. It is curious to observe, that the original instruments, as constructed by the inventors, were lately found in an old building formerly occupied by them in the county of *Essex* in *England*. They have since been deposited in the cabinet of the Medical and Chirurgical Society of *London*, and are fully described in a volume of the transactions of that active association, published in 1818. These instruments appear to be a combination of the *lever* and the *forceps*.

To *Daventer* and *Le Motte*, each of whom wrote a distinct treatise on Midwifery, we are indebted for some judicious observations on the relative diameters and proportions of the pelvis

and the head of the *fœtus*. To the oblique situation of the uterus, which circumstance had been previously observed by the celebrated *De Graaf*, *Daventer* erroneously attributes the most common cause of difficult labours. Many useful prognostics, nevertheless, are to be found in his work.

Pierre Amand practised Midwifery with much reputation at *Paris*, where, in the year 1715, he published a treatise on deliveries. He relates several cases of *extra-uterine* conception, and gives us a description, with engravings, of a kind of net invented by himself, for extracting the head of the fœtus when left in the uterus separated from the body. This fanciful invention has long been laid aside for the crotchet.

But this period is rendered memorable by the labours of the illustrious *Ruysch* of *Holland*, whose unwearied application to every department of anatomy, and especially his minute and extensive injections of the human subject, reflected a light on some of the more intricate and obscure parts of the physiology of our science, to which a large share of its subsequent improvement may be assigned. Beside the various pathological remarks recorded in his writings, the number and excellence of his injected preparations were almost incredible. But what particularly claims our notice, was his cabinet of preserved fœtuses, in regular gradation. This extensive collection attracted the attention of travellers from every country; and we are told, that generals, ambassadors, and even princes, were accustomed to examine it. *Peter* the Great, on his visit to *Holland*, purchased it for twenty thousand dollars; on which the indefatigable anatomist immemediately began his labour anew, in order to supply its place. By a singular coincidence, just a century afterwards, this *second* collection was sold by the authority of Holland, to the emperor *Alexander* of *Russia*, and permitted to be taken from the country. We are not to be surprised at the melancholy results to Dutch literature and science consequent upon such niggardly conduct; and to the parsimonious spirit which led to this disgraceful transfer, are we to look for the present low state of science and the arts in that country. The schools of Holland, once so celebra-

ted, are now insensible even to their former glory. The university of *Leyden*, which once boasted of more pupils than the city itself could accommodate, has at present scarcely more medical pupils than professors. And when some years ago I visited this once celebrated temple of learning, I found that thirty-three pupils attended instruction from that chair in which *Boerhaave* once lectured to admiring thousands.

But to resume our narrative. In 1723, *Maubray* published a work, entitled, " The Female Physician, or the whole Art of New Improved Midwifery." He was the first teacher of the science in *England*, and was conspicuous for his opposition to the use of instruments. *Dionis* also communicated to the public some singular cases which fell under his own observation, of ruptured uteri. Shortly after this time, *Chapman's* work on the improvements of Midwifery appeared. In it we find a description of *Chamberlayne's* forceps, which he had advantageously altered. He was long distinguished as an adroit and skilful accoucheur in difficult labour. We ought not here to omit to mention the *Elementa Artis Obstetricæ* of professor *Roederer*, of *Goettingen*. The cases in midwifery written by *Giffard*, and published at this time, were a valuable addition to the stock of obstetrical science. *Manningham*, who was an active practitioner of midwifery, published several books on the subjects : it would seem of more benefit to himself than to others. We are indebted to *Gregoire*, an accoucheur of reputation in *Paris*, for the first correct ideas of the nature of retroversion of the *uterus*, a subject of so much importance in the practice of obstetrics.

We now come to a name better known : In the year 1752, *Smellie* published his treatise on Midwifery, which work, until lately, was the manual of students. He is the undoubted author of many valuable principles in the modern practice of midwifery, and contributed materially to the mechanical improvement of the instruments used to facilitate labour in difficult cases. He was the first who accurately determined the shape and size of the pelvis and the head of the fœtus, and pointed out the whole progress of parturition. An opinion had very generally prevailed from

the time of Hippocrates, that the fœtus is placed in the uterus in a sitting posture, and that about the eighth month, or as some authors taught, at the commencement of labour, the head is forced down by the contraction of the uterus. But *Smellie* observing that at whatever period the fœtus was excluded, it generally came head first, he was induced to consider that as the natural position of it in utero. We need scarcely add, that this opinion has been fully confirmed by Dr. *Hunter*, who had several opportunities of dissecting women who died undelivered at different periods of pregnancy. The work of *Smellie* formed at the time a complete system of the obstetric art: it was the result of an experience of forty years.

But I hasten to the time of the celebrated Dr. *William Hunter*, whose work on the Gravid Uterus, appeared in 1775, illustrated by numerous splendid engravings, the publication of which constitutes an era in our science. In it are exhibited all the principal changes that occur during the whole period of gestation, in a style of execution which had never been equalled. In this performance he delineates the retroverted uterus, and the membrana decidua and reflexa which he himself discovered. This great work has been subsequently extended by Dr. *Baillie*.

The late Dr. *William Shippen* of Philadelphia, has the honour of having been the first public teacher of midwifery in the United States. While in Europe, he enjoyed the high advantage of the direct instruction of Dr. William Hunter, and on his return to his native country, was chosen professor of anatomy in the medical school of Pennsylvania. His lectures on obstetrics, like his course of instruction on anatomy and surgery, evinced profound knowledge of his subject, consummate ability, and unrivalled command over his auditory. Dr. Shippen's first course of midwifery was delivered in 1762.

In the year 1767, the medical school of New-York was founded under the direction of Kings, now Columbia college, and among the appointments was that of *John V. B. Tennent*, M. D. as professor of obstetrics. After a substantial preliminary educa-

tion in his native state, New-Jersey, he availed himself of the advantages in medicine which Europe then held out to American youth. I am informed that his course of instruction in obstetrics was able and satisfactory. While in London he was created a fellow of the Royal Society. Since the time of Shippen and Tennent, midwifery has been taught as a regular branch of education in every medical college in the United States.

Having thus brought down the history of the obstetric art to our own time, we have only to observe, that the present age boasts many elementary works on midwifery well entitled to attention. I need only here enumerate the writings of Osborne, Hamilton, Baudeloque, White, Burns, Clarke, Denman, Merriman, Capuron, and Bard, which works ought to be in the hands of every student.

I shall not now attempt to enter into a consideration of the merits of these several authors, but content myself with observing, that they are practical writers, and give us the results of their personal experience. They have added the sanction of authority to what had been before discovered, and have enriched the stock of existing knowledge with original facts and observations. Of Dr. Denman in particular, we may further remark, that that curious and important fact, the evolution of the child in certain circumstances, by the action of the uterus itself, was first observed by him. He first proposed the present approved treatment in cases of retroverted uterus. The excitement of premature labour, for the preservation of both mother and child, in cases of deformed pelves, was originally suggested by him. In convulsions, particularly where the pulse was slow, he advised copious bleedings instead of nervines. He introduced great improvements in the treatment of flooding cases. What he has related of the use of instruments in difficult labours, and his aphorisms on the use of the forceps and lever, may be considered as cardinal rules for the young accoucheur. These, and other suggestions, the fruits of tried experience, are justly considered important improvements, which will ever entitle Dr. Denman to the gratitude of posterity.

It will be at once perceived from our hasty sketch, that this science comes recommended to the consideration of the physician, with claims as numerous, and as powerful, as belong to any other department of the healing art. Like every other branch of our profession, it has occupied the intellectual energy of eminent men, and has arrived at its present lofty elevation by cautious observation and diligent experience. Since the treatment of lying-in women has been confided to male practitioners, the advantages of the change, though comparatively recent, both in the manner of conducting the labour, and in the subsequent management of the mother and child, have been so obvious, that the practice will, doubtless, in time, become universal. Another beneficial consequence is, that every part of the art has been investigated with the greatest care, and such has been the zeal of the accoucheurs engaged in the practice, that the works on the subject of midwifery which were published during the last century, are sufficient in number to form no inconsiderable library. I shall not here attempt to point out the propriety of that custom which authorizes the employment of male practitioners in the art, nor examine into the reasons why so salutary a practice is adopted less generally in this country than in Europe, but shall content myself with stating this simple fact, that the bills of mortality in London and Dublin, attest, that one in seventy of those women perish in child birth, who are in the hands of midwives, while, from the accounts of the lying-in-hospitals in those very cities which are under the care of male attendants, parturition is fatal to less than one half that number. Nor, indeed, is the process of parturition so free from difficulties as is by many imagined. We learn, from the last reports under the authority of Mr. Hay of the Leeds Infirmary, that of eight hundred and twenty-seven cases of midwifery, one hundred and fifty were such as required manual aid, either with regard to the expulsion of the placenta, or child. I hope it is not irreverent to females to assert, that the acts of resolution and firmness which such occurrences impose, are less fitted to their delicacy than to the hardihood of the other sex.

Another circumstance which fortifies the claims of this branch of study, arises from the absolute certainty, that every one engaged in the practice of medicine, is liable to be called upon in obstetrical cases. Although it is permitted, that the practice of physic and surgery be exercised by the same individual, it is not unusual for persons to select that particular branch to which their genius or feelings are most partial. But, it is proper for us to bear in mind, that whether emulous of medical or surgical reputation, in the course of our duties, calls in midwifery happen to all. To gentlemen who enter upon the practice of medicine in this country, a knowledge of the obstetric art is indispensable. Cases of labour occur in every well regulated family, and calls of this nature can neither be parried nor delayed. Our widespread population is little favourable to that division of the profession which elsewhere obtains, and what is regulated by common consent, is not to be controled by individual feeling.

To studious and ingenuous youth, our science presents attractions in no wise inferior to any other branch of knowledge. The whole range of physiology solicits his diligence, and will amply reward his toil. Talents of the highest order have lately entered into this field of investigation, and the most sanguine anticipations have been realized.

But, it is not the charms of philosophy, nor an honest ambition of fame, which, in this case, are alone to be consulted. Considerations of prudence, and the claims of humanity, alike urge us to the acquisition of this part of the profession. In no situation in which the physician can be placed, does he encounter greater responsibility than in the practice of midwifery. The lives, both of the mother and child, are dependent on his skill, and amid the most trying and perplexing difficulties, his character is committed to the tribunal of censorious and often incompetent judges. Nothing but conscious ability can arm his resolution, or protect his feelings from insult. Of that knowledge which lends its aid to art, it is not only requisite that it be possessed, but that it be ready and forthcoming; and on the practice of midwifery above all others, is it incumbent, that his knowledge be present, and at

command. No where is promptitude and decision more required; in no instance is the man of science more distinguishable from the mere pretender; in no situation is the conduct of the physician more the object of present attention, or of subsequent criticism. In the lying-in-chamber no opportunity is afforded for qualification or deliberation. The case demands immediate assistance, and it is vain to temporise. Vacillation and delay, always dangerous, may here prove fatal. The student's mind must be thoroughly prepared, else the imputation of ignorance will attend his hesitation and confusion. Firmness and decision, founded on accurate and precise knowledge, will alone secure to him present confidence and future approbation.

J. W. F.

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 celular 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.*

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* [No doubt can exist of the occasional occurrence of this impaired condition of the junction of the sacrum and ossa innominata; instan-

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 sacrosciatic 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

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ces of anchylosis there are more frequent: specimens of this morbid formation are exhibited in the museum of Dr. Post, the professor of anatomy in the University of New-York. F.]

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

Ruysch, Advers. Dec. 2.

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 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 sacrosciatic 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 anterior 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 anterior 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.*

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* [The distinguishing marks of the male and female skeleton occur chiefly in the pelvis; and, in addition to what is mentioned in the text, several others are deserving notice here. The pelvis of the female is less strong, less thick, and contains less osseous matter than that of the male. In the female, the long diameter of the brim of the pelvis is from side to side; in the male it is from before backwards; in the female, the brim is more of the oval shape, in the male more triangular: in the female the ilia are more distant: the tuberosities of the ischia are also more remote from each other, and from the os coccygis; and as these three points are further apart, the notches between them are consequently wider, and there is of necessity a considerably greater space between the os coccygis and pubes than in the male. The female sacrum is broader and less curved than in the other sex. The ligamentous cartilage at the symphysis pubis is broader and shorter. In conseqence of the cavity of the 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 connection 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.*

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being wider in women, the superior articulations of their thigh-bones are farther removed from each other, which circumstance occasions their peculiarity in walking: they seem to require a greater effort than men to preserve the centre of gravity when the leg is raised. The greater distance between the anterior and superior spinous processes of the ilia necessarily increases the length of Poupart's ligament forming the crural arch: on which account less resistance being made to the abdominal viscera, females are more subject to femoral hernia than males. Soemmerring has remarked that the angle of union of the ossa pubis is in the male from 60 to 80 degrees, whereas in the female it is 90 degrees.

According to the most accurate calculations the mean height of the male, at the period of maturity, appears to be about five feet eight and a half inches: that of the female seems to be about five feet five inches; and the length of the different regions proportionally less than in the male. A well-formed pelvis is generally allowed to have a circumference equal to one fourth of the height of the female. F.]

* See a short but very precise account of the connection of the bones of the pelvis by Dr. *William Hunter*.

Med. Obs. and Inq. Vol. II.

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 apophyses 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 sacrosciatic 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 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 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 ani-

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* 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 invicen 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. liv. 2. cap. 1.

mals, 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 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 constitu-

* 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.

tion, 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 delicate 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 per-

ceived 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 inquiry, 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 inquiry 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 bedridden, 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.*

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* The admission on the part of the author, that, as a general principle, there is a separation of the bones of the pelvis, or a dis-

SECTION IV.

An inquiry into the manner in which the bones of the pelvis may re-unite when they have been separated seems necessary,

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position in them to separate at the latter period of pregnancy, or at the time of labour; and that this change is often, if not generally, produced, is somewhat extraordinary. True, we have the authority of the most eminent names, for believing, that a separation of the ossa ilia from the os sacrum, and of the ossa pubis from each other, have repeatedly taken place during parturition. Hippocrates, Avicenna, Diemerbroeck, and even Hunter, have given us facts of this import. Yet, that such separation does but very rarely occur, and then only under very particular circumstances, cannot reasonably be doubted. I am not aware, that either rickets, or mollities ossium, at all predispose to it. On the other hand, there seems to be good reason to conclude, that the majority of instances of this calamity which have taken place, occurred in individuals of robust and healthy constitutions, rather than in those of the reverse. The cases recorded by our author, are in corroboration of this belief.

The most common cause to which this change may be attributed, seems to be some injury or external violence, which, in its consequences, predisposes to a separation of the bones. Such was the well known case of Dr. Greene, in which the symphysis pubis was separated, as stated in Philosophical Transactions of the Royal Society of London, and of the instance recorded by M. Louis, in the Memoirs de l'Acad. de Chirug. tom. 4. in which the sacro-iliac junction separated. In the Memoirs of the Academy of Dijon, for 1784, a case is given of the os innominatum being luxated in consequence of a fall. The patient ever after remained lame. A high authority, Baudelocque, asserts, that the separation of the bones of the pelvis is very rarely met with; that it is not more usual after a laborious, than after an easy labour; and that it does not occur more frequently in the distorted, than in the well formed pelvis.

A case occurred in the practice of Dr. Post, in this city, about seven years ago, in which the patient, a robust woman, æt. 25. during her pregnancy with her second child, experienced a considerable weakness at the junction of the pubes, which increased so much as to render it difficult for her to walk or turn in bed; according to her representation, the bones at the pubes felt as though they moved on each other. After an ordinary labour, her strength improved so far, that within about six weeks, she was able to take exercise on foot with comparatively very little difficulty or pain. She has, since that period, had three other children, and towards the termination of each pregnancy, suffers the same inconvenience in walking, or in endeavouring to turn herself when in an horizontal situation. Her own sensations, and her peculiar gait, are evidence sufficient of the nature of her complaint: at the present time she

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.

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is far advanced in her sixth pregnancy, and she seldom ventures to take any exercise.

An instance of the separation of the ossa ilia from the os sacrum, occurred under the observation of Dr. Hosack, about twenty-two years ago. The patient, a well formed female of the age of twenty-five, during her labour with her first pregnancy, manifested symptoms of much distress about her loins, and after some considerable suffering, was delivered of an ordinary sized child; several weeks elapsed before she was able to stand upright. She said she felt a sense of looseness on both sides, at the junction of the sacrum and innominata, especially on the left side. It was several months before she had any power of moving one foot before the other, and her friends were always apprehensive from her hobbling gait, that she would fall. From that time to the present, she has remained the same unfortunate cripple; and with each successive child, now amounting to eight, her inability to walk has increased. She, at present, has scarcely any loco-motive power. There can be no doubt of the nature of her case. Some short time before her first accouchment, she received a slight contusion on the left ileum.

The first of these two cases would strengthen the opinion of a morbid predisposition existing at the junction of the pubes during pregnancy, or at the time of childbirth: the second case shows us that a blow or fall may cause a separation of the sacro-iliac junction. Yet a fracture of some of the bones themselves, one would think more likely to occur from accidental circumstances of this sort. Fortunately for humanity, the separation of the bones of the pelvis, either by violence, by a scrophulous habit of body, or by any other cause, is seldom met with: nature has other resources than such dreadful means in order to effect the safe passage of the child.

The author's presumptive argument in favour of the separation of the bones, as drawn from quadrupeds, needs facts for its support. Nevertheless, on the authority of Le Gallois, there is a separation of the bones of the pelvis of the Guinea-pig, both during pregnancy and parturition, for the purpose of facilitating the latter process.

"When we compare the pelvis of the female of a guinea-pig," says Le Gallois, "with the head of a full grown fœtus, we are convinced on the first view, that it would be utterly impossible that its head should come through the pelvis, and consequently that the delivery should take place, if the pelvis constantly preserved the state and dimensions observable at any other time than that of gestation. The transverse diameter of the head of a fœtus of middling size, full grown, but dried, is nine twelfths of an inch (French measure) whilst that of the pelvis of a female of middling size measured between the acetabula on the bare and dried bones is not quite five twelfths of an inch. If we take in the account the soft parts lining

When the connexion of the bones of the pelvis has either been impaired or destroyed, it is probable, that a confirmation or reunion 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.

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the cavity of the pelvis, we shall find that when alive, its diameter is about one half of the head of a fœtus; and nevertheless guinea-pigs are delivered with much ease. It thence necessarily follows, that nature must have provided some means of removing the difficulty produced by this enormous disproportion. And this is what does in fact take place. The duration of gestation in these animals is sixty-five days. About three weeks before delivery, the symphysis pubis is seen to acquire more thickness and a slight mobility; these are continually increasing. Eight or ten days before delivery, the ossa pubis begin to separate from one another. This separation increases at first slowly, and only begins to go on rapidly for the three or four days which precede delivery. It is such at the moment of parturition that it readily admits the middle finger, and even sometimes both the middle and fore finger together. The delivery being at an end, the bones of the pubes soon close. Twelve hours after the distance of separation has lessened more than one half, and twenty-four hours after they are in contact at their anterior extremity; and in less than three days they are perfectly so throughout the whole extent of their symphysis, which then only presents a slight thickness and mobility. A few days after nothing is to be seen but a very slight mobility, which disappears sooner or later. I have measured the separation of the pubes in three females killed at the period of their delivery. In two, which were at the sixty-fourth day of gestation, this separation was about five twelfth parts of an inch; and in the third, which was in the sixty-fifth day, the separation was little less than six. In these three females the sacro-iliac symphysis possessed great mobility, but without any remarkable separation. This mobility of the sacro iliac symphysis, without which the separation of the ossa pubis could only be very limited, allows besides a posterior motion of the os sacrum." See further, Nancrede's Translation. F.]

* [When the connection between the bones of the pelvis is impaired or destroyed, it must be either by a relaxed or diseased state of the ligaments: the same change may also be produced in the cartilages: their re-union can be effected only by restoring the original formations, and not by callus. An anchylosis can only be by callus. F.]

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 lumber 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 innomi-

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* 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.

nata 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 pendentives 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 ligaments 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 aper-

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* [Instances of this kind are perhaps less seldom met with than those of the separation alone of the bones of the pelvis. Louis has given us the particulars of an interesting case. On examining the body of the patient after death, there was found a separation of the bones at the pubis, but the capsule was entire, and so distended as to contain one and an half ounce of matter. The disease arose from a slight accident. This disorder may take place in any constitution from accident; but those of a scrophulous habit are most predisposed to it.—The instances must be very rare indeed, in which this complaint arises from the too rapid passage of the head of the child through the pelvis

Dr. William Moore, of this city, whose extensive obstetrical practice must stamp his opinions on the subject with the greatest weight, has never witnessed a case of the formation of matter at the symphysis, in nearly three thousand cases of midwifery which he has attended. The experience of several other accoucheurs in this city goes to the same effect. Nor has Dr. Moore ever seen an instance in which he had reason to believe a separation of the bones of the pelvis occurred. F.]

ture, 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 judgment; 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.

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 presenting 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 ischiadic sinus, and by the disposition of the

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

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 natural 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.

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.

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

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 judgment.

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.*

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*[Although the last three sections of the text exhibit a sufficiently accurate view of the pelvis, yet I have thought that a more concise account of the same, in connection with some notice of the dimensions of the fœtal head, might here be inserted with advantage. Of the female pelvis three parts ought especially to be observed: the brim, the cavity, and the outlet. The *brim* is bounded by the promontory of the os sacrum on the posterior part, and by the linea innominata laterally and anteriorly. Its shortest diameter is from the symphysis pubis to the projection of the os sacrum, which, without the soft parts, measures from four to four and a half inches; with the soft parts, from rather more than three to three and five eighths inches. The lateral diameter, made by a line drawn from one side of the linea innominata to a point directly opposite, is from five to five inches and a quarter, without the soft parts; or from four to four and a quarter with the soft parts. The longest diameter is from either sacro-iliac symphysis to the opposite acetabulum, which, with the soft parts, measures from about four and a quarter inches to four and three quarters; without the soft parts, from five to five and three quarter inches. The *cavity* of the pelvis is posteriorly about six inches deep, laterally nearly four, and anteriorly nearly two. The *outlet* of the pelvis, when viewed with the sacro-ischiatic ligaments attached to it, appears of a quadrangular shape. Its shortest diameter is from one tuberosity of the ischium to the other, and is about four or four and a half inches, with the soft parts: its longest diameter is from the apex of the os coccygis to the arch of the pubes, and measures about five inches when the bone is pushed back in labour; but little more than half an inch when it is not.

When the body is erect, the pelvis is situated obliquely; the opening towards the abdomen looks upwards and forwards to so great a degree, that a line drawn through its axis would approach much nearer to a horizontial than to a perpendicular direction, and strike near to the apex of the os coccygis. That part of the pelvis which is in front when the body is seated, becomes the lowest part in the erect position: and thus the viscera rest on, and are supported by the ossa pubis rather than on the soft parts which bound the lower aperture: the advantages arising from which, in advanced pregnancy, are sufficiently evident.

The head of the fœtus is to be considered in connection with the admeasurements of the female pelvis. At birth the head is nearly one third of the whole body, and its passage through the pelvis of the mother may be deemed, with scarcely an exception, as securing the safe passage of the child. The bones of the head are very loosely connected together by membrane, or, as it is more commonly expressed, by suture: the sutures are, the sagital, which

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

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runs from the nose in a straight line to the os occipitis; the coronal, which runs transversely from ear to ear, and connects the parietal and frontal bones; and the lambdoidal suture, which unites the occipital to the parietal bones. The defective ossification of the angles of the bones forms, at the front part of the cranium, where the frontal and parietal bones meet, the anterior bregma or fontanel, an interstice of a quadrangular shape. The space at the back part of the head is of a triangular form, and is called the posterior fontanel. By attention to the fontanels, we are able to ascertain both the presentation and the position of the head.

The fœtal head necessarily undergoes great changes in its shape and bulk during parturition, yet its dimensions may be set down as follows: its longest diameter, that is from vertex to chin, is about five inches: its shortest diameter, or from the protuberance of one parietal bone to the other, is about three inches and a half. The shape of the fœtal head is eliptical, and as an average calculation it appears that the size of the cranium of males at birth exceed that of females by about a thirteenth part. Dr. Clarke, (*Philos. Trans. of the Royal Society*, 1786,) in his measurement of the heads of sixty male and sixty female children, at the natural period of birth, found that the circumference was on an average fourteen inches in the males, and only thirteen and five eights in the females, and the arch from ear to ear over the crown seven and a half inches in the males and only seven and one-fifth in the females. Out of one hundred and twenty children, there were only six in whom the circumference of the head exceeded fourteen and a half inches, and those six were males. F.]

* Molacosteon. Ossium mollities. Vogel. Dxxiij.

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.†

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, 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

† See Medical Observations and Inquiries, Vol. V. case 23. Memoirs of the Academy of Sciences, and various Authors.

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 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 a 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 gradualy in every succeeding labour.*

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* [Rickets has been considered as a species of mollities ossium, and similar causes have been assigned for both diseases. Of their agency in inducing such distortions of the pelvis as frequently to render parturition difficult, if not impracticable, we have too many proofs. There are grounds sufficient for a nosological distinction of these disorders, and animal chemistry has recently added to our means of making a just discrimination. Rickets is almost peculiar to young children; and the period of its occurrence is generally before the end of the second year. When it attacks at a later period, as about the time of puberty, its effects are more especially confined to the spine, and an incurvation of the vertebral column is the result. Rickets exists independent of scrofula, but is oftener connected with a scrofulous habit than with any other. These diseases, nevertheless, attack separately, and are not convertible into each other. Like scrofula, rickets prevails most frequently in cold, variable, and humid climates, as in Great Britain and in Holland. That rickets is often indebted for its origin to a deranged state of the digestive organs cannot be questioned. Among its predisposing causes are to be enumerated the impure air of crowded

apartments, impoverished food, bad nursing, and other sources of debility. Like scrofula, rickets may also be induced by the excessive indulgence which sometimes characterizes the upper ranks of society. Rickets and scrofula are rare diseases in the United States.

In rickets there appears to be a change both in the physical and chemical constitution of the bones. The morbid alteration which is found in rickety bones appears to depend almost wholly upon a deficiency in the quantity of the phosphate of lime: the bones, in their cancellated part more particularly, frequently become so soft that they may be divided by a knife: the medullary cavity of the long bones contains only a reddish serum. The teeth appear slowly, and soon decay. Instances have occurred in which the bony part of the teeth was soft. Bichat says the periosteum is thickened, and it is also generally stated that the extremities near the joints become enlarged: but both these assertions are still controverted points. The bones of the spine are considerably increased in thickness, and become spongy and reticular. Mr. Stanley, (in the *Medico-Chirurg. Trans. of London*, vol. vii.) has shown, that in the process by which ricketty bones acquire strength and solidity, there is always an undeviating regularity in the situation, extent, and direction, in which the earthy matter is deposited. Thus it is obvious, says he, that in the curved bone, the part where there is the greatest need of strength, to prevent its further yielding, is in the middle of its cavity, or, in other words, in the line of its interior curve; and it is just in this situation that strength and compactness will be first imparted to the bone by the deposition of phosphate of lime. It will be further found, that the greatest resistance being wanted at this part, the walls are accordingly rendered thicker here than elsewhere, and the degree to which this excess in thickness is carried, bears an exact ratio to the degree of curvature which the bone has undergone. From some late pathological investigations, it would seem that there is no deficiency of the phosphate of lime in the constitutions of ricketty persons so far as can be ascertained from the blood: the urine of such persons is often found to be freely saturated with the earthy material, and they often suffer from bony deposits in parts where nature never intended such deposits. Hence the opinion that the bones in rickets only change their shape gradually; that the arteries of the bones of individuals of a ricketty constitution are deficient in the power of separating the phosphate of lime from the blood so as to deposit it in proper quantity for their support, and that there is actually no deficiency of this material in the body itself.

Mollities ossium is a very rare disease, and its subjects are persons of middle age, or more commonly in advanced life. It does not appear to be so frequently connected with a scrofulous habit of body as rickets; and, perhaps, upon further inquiry, it may be found to occur under a greater variety of circumstances of living and occupation. The natural solidity of the bones is destroyed by an inordinate absorption of their earthy constituent; but more frequently

both the animal and earthy matter seem absorbed until mere shells are formed, which too are also softer than natural bones of the same thickness. Occasionally large cavities are met with in the substance of the bones; in which are often contained an oily substance somewhat similar to marrow, sometimes masses of coagulated blood, or a soft and partially organized animal matter. There is a considerable difference in the degrees of softness in the bones in different patients. In the Medico-Chirurgical Transactions (vol. 4.) Dr. Bostock has given us an analysis of the bones of the spine in a case of mollities ossium. His experiments were made on a dorsal vertebra of an adult female whose bones were found after death to be universally soft and flexible. He ascertained that in one part of the vertebra the quantity of earthy matter amounted to only one fifth of its weight, and in another only to an eighth part of its weight; whereas in healthy bone it amounts to more than one half the weight.

The causes of this disease are not known: the life of temperance as well as of inebriety may be shortened by it; though we have reason to believe a scrofulous habit irregularities in living, abuse of mercury, &c. increases the tendency to it. In the famous case of Madame Supiot, the immoderate use of salt, which the patient had been in the habit of eating, was assigned as the cause of the disease; yet we have never been told that sailors and others who have been confined to salted provisions for a long while have been afflicted with mollities ossium.

The mollities ossium is not only capricious as to the time of life at which it appears, but varies much as to the rapidity of its progress. Sometimes it takes years fully to develop itself, and, in other instances, its celerity is almost incredible.

I witnessed a case of this disease in the summer of 1812: the patient had previously enjoyed good health; his habits of living were temperate, his age fifty-nine years; the affection first manifested itself in the tibia of both legs, and after seven years gradual increase, the inferior extremities were so gibbous that his natural stature was diminished about eight inches: he finally lost his ability of walking, and died of constitutional irritation three years ago: no cause could be assigned for the production of the disorder: he was of a gouty diathesis.

An instance of mollities ossium occurred in the practice of Dr. Post, in May, 1807, remarkable for the rapidity with which the bone became softened. The patient was nearly fifty years of age: he had been in an impaired state of health for a considerable time, arising from the abuse of remedies in the treatment of syphilis. He had not recently taken mercury. Three weeks before the softening of the bone, his thigh became the seat of pain, yet he took much exercise on foot. On the evening in which he sent for medical attendance, he was walking about his room, when he was suddenly seized with excruciating pain in the right thigh, and went to bed. In the course of the night it was discovered that the thigh was considerably bent, and in the morning it was bent almost to a

right angle; the limb was so flexible that it could be moved in any direction with the greatest ease: owing to the contractile power of the muscles and the loss of bone, the thigh could not be kept in a strait position, though the most attentive application of splints and bandages was made. Besides the loss of stability in the thigh, the whole limb became œdematous, and its size greatly increased: he died in the following January. The other bones were exempt from the affection. On cutting into the thigh after death, says Dr. Post, it seemed little more than a dense gelatinous mass, and there was scarcely any vestige of the thigh bone to be found: though small spiculæ of bony matter were to be felt, indicating some disposition to the reproduction of bone. *See New-York Medical Magazine*, vol. 1.

In a subsequent note, other circumstances will be mentioned, the effects of which are sometimes equally serious, as diseases or distortions of the pelvis, in causing difficult or impracticable labours.

In a specimen of diseased bone now before me, there are peculiarities sufficiently novel and important to be taken notice of in this place as an occurrence which might render parturition fatal. This is a case of morbid change in the form and cavity of the pelvis. The patient, an adult subject, fell on the right hip; the injury done the external parts was comparatively slight; but an inflammatory action took place in the bottom of the acetabulum, which caused a total absorption of the bone, and the protrusion of the head of the thigh bone itself into the cavity of the pelvis. Nor was the diseased action limited to these changes; large deposits of osseous matter were made within the pelvis surrounding the absorbed acetabulum, and the head of the thigh bone was by the same material augmented to more than double its original size. The neck of the bone, and also both trochanters, are considerably increased in bulk. The capacity of the pelvis is diminished about two inches in its superior and lateral portion. This specimen of change from natural structure may also be adduced as an instance of displacement of bone without fracture or dislocation. It belongs to the Morbid Collection of Dr. Hosack. F.]

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 symphisis, 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 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

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

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

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.

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

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

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 judgment 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

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* [Notwithstanding the injunction in the text, it will frequently be necessary to have recourse to the knife in order to divide the cohesion of the labia, even in infants of the earliest age: with proper care, no evil can arise from this practice. The means recommended by the author to prevent a reunion, must in all cases be observed. F.]

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 afterwards 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, beside 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,

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* [Abscesses of the labia may be opened with the same propriety as collections of matter in other parts. The author's arguments against this practice, however plausible, have no better foundation than those of Mr. Ford and other writers, in cases where purulent formations occur in the mammæ or in the groin. Our great caution ought to be not to open them prematurely. F.]

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, occasioned 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 toward 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 labour 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 happens, 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 parts, but no fœces 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 trouble for a considerable time after delivery, but which at length terminated without any permanent inconvenience.†

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* [Baudelocque and Sedillot have given us cases of this kind. F.]

† [An instance of this sort of laceration of the perinæum happened in this city in the practice of a gentleman of much experience in midwifery. Means similar to those adopted by the author were pursued, and with the like result. The patient afterwards became pregnant, but suffered no inconvenience in labour. The

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

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difficulty of cure in laceration of the perinæum is proportioned to the extent of the wound. In cases where the rent passes through the sphincter ani into the rectum, the mischief is serious, and a cure is scarcely ever accomplished. F.]

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

† [To the existence of androgyni among the mammaliæ, (that is, of animals capable of performing the functions of both sexes,) there is every reason for withholding our assent. Such productions are at variance with the analogy of nature; and the cases on record of hermaphrodites warrant the scepticism of the cautious physiologist. What is the determining cause of sex in animals is beyond the reach of philosophy to ascertain; but that such cause operates to the evolution of one sex rather than that of the other, and that exclusively, best comports with our present state of knowledge. It is the opinion of Sir Everard Home, that the development of the sex takes place subsequently to impregnation, the ovum being originally formed equally fitted to become either male or female.

The most frequent instances which have been given us of hermaphrodites, or of those animals whose sexual organs were so entire, that they seemed to be capable of performing the generative functions, have been females, labouring under either an enlarged or a defective state of the genital organs. Preternatural enlargements of the clitoris have been the most common source of erroneous conclusions on this subject. The latest decisions in juridicial medicine reject the possibility of the existence of both sexes in the same individual of the human species. F.]

‡ *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.

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 distention 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 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.

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* 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.*

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. Sul-

* [I am inclined to think that furor uterinus, though frequently connected with pruritus, in most cases depends upon some other cause for its origin. In that very troublesome affection, pruritus, the propriety of blood letting cannot be too strongly enforced. F.]

phur, 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 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 incon-

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

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

veniences, 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 distention 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.

The carunculæ 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 nymphæ.†

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

† [The practical precepts of this section are altogether worthy of the author: his physiological speculations admit of emendation.—The very existence of the hymen has been denied by the highest names

in science, as Fallopius, Vesalius, Dionis, De Graaf, and Buffon: but the current of authority is evidently in favour of its reality, and the most distinguished medical jurists have very generally appealed to it as a natural production. It is not certain that the hymen is peculiar to the female of the human species. Cuvier, in his Comparative Anatomy, has ventured to declare its existence, with some reserve, in most of the mammalia.

As a test of virginity, the presence of the hymen is not decisive. Gavard gives us the case of a girl aged thirteen years, who was affected with the venereal disease, and yet retained this supposed mark of virginity. Mauriceau and Ruysch state many cases of pregnant women in whom this membrane was entire: the latter author thinks that immediately after menstruation, the hymen may, in some cases, yield to coition without rupturing. He was in attendance on a female in whom the operation of incision of the hymen was performed in order to accomplish the delivery of the child. Baudelocque was about to perform the same operation under similar circumstances, when the head of the child effected a passage through without assistance. Winslow was of opinion that the hymen existed in children, but disappeared of itself in after life. Parè and Laurens considered it, when present, as an unnatural production or monstrosity Dr. Hunter found teeth, bones, hair, and other unequivocal marks of a fœtus, in the ovary of a woman who had her hymen entire.

Nor does the want of the hymen fix the charge of criminality upon the unmarried female. Many causes may concur to destroy the "slight outward curtain to the nuptial bed." It may be compelled to yield by the first efforts of menstruation, by ulceration, by the irritation accompanying leucorrhœa, by vicious practices, or by accidental injury. Tolberg, who found leisure to write a volume on the varieties of the hymen, is quoted as having witnessed an instance of one resembling in its natural formation the carunculæ myrtiformes. The faculty of Leipsic have declared that the hymen entire can be deemed only a probable evidence of virginity: it may be safely asserted that this membrane is frequently wanting in the natural and healthy state of the parts. F.]

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 plicæ, 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 cellular membrane, which connects it to the neigbouring 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 toward 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 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, toward 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 the rugæ are small orifices, like those in the vagina, which discharge a mucus, serving, besides other

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

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

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

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 the 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.

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

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* [The muscularity of the uterus is still one of the vexed questions in anatomy. Admitting that the muscular fibres of this organ are not distinctly visible, yet the offices it is called upon to perform are so nearly allied to those which are peculiar to muscles, that this analogy alone would lead us to concur in opinion with the author in favour of its muscular structure. Blumenbach is the most eminent of the writers on physiology who denies the muscularity of the uterus: He asserts, that he never yet discovered a true muscular fibre in any uterus which he ever dissected, whether impregnated or unimpregnated, recent or prepared. He seems fully convinced that the uterus has no true irritability, but a vita propria correspondent with its peculiar motions and functions.

In the Transactions of the Medical and Chirurgical Society of London, vol. 4., Mr. Charles Bell has published a paper on the muscularity of the uterus, from which I shall venture to make a few extracts. Though far from agreeing to many of the conclusions which Mr. Bell has seen fit to draw from his anatomical observations, yet I cannot but consider his communication as well deserving particular attention. Dr. Dewees of Philadelphia, in his strictures on Mr. Bell's paper, has successfully refuted several of his positions.

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

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See Dr. Dewees' Observations in the eighth volume of the Philadelphia Eclectic Repertory.

"The muscularity of the uterus," says Mr. Bell, "is proved by direct occular demonstration of the fibres in dissection, by the thickness of the fibres corresponding with their degree of contraction, by the visible action of the human uterus during life, by the resemblance of the laws of its contraction (as felt and as perceived in its consequences) to those which govern the contraction of the other hollow viscera, and, lastly, by the vermicular and intestinal motions of the uterus, as seen in experiments upon brutes."

"The most curious and obviously useful part of the muscular substance of the uterus has been overlooked; I mean the outermost layer of fibres which covers the upper segment of the gravid uterus. The fibres arise from the round ligaments, and regularly diverging, spread over the fundus, until they unite and form the outermost stratum of the muscular substance of the uterus."

"On the outer surface and lateral part of the womb, the muscular fibres run with an appearance of irregularity among the larger blood vessels; but they are well calculated to constringe the vessels whenever they shall be excited to contraction.—The substance of the gravid uterus is powerfully and distinctly muscular, but the course of the fibres is here less easily described than might be imagined. This is owing to the intricate interweaving of the fibres with each other; an intertexture, however, which greatly increases the extent of their power, in diminishing the cavity of the uterus. After making sections of the substance of the womb in different directions, I have no hesitation in saying, that toward the fundus the circular fibres prevail; that toward the orifice the longitudinal fibres are most apparent; and that, on the whole, the most general course of the fibres is from the fundus toward the orifice. This prevalence of longitudinal fibres is undoubtedly a provision for diminishing the length of the uterus; or for drawing the fundus toward the orifice. At the same time these longitudinal fibres must dilate the orifice, and draw the lower part of the womb over the head of the child.

"In making sections of the uterus while it retained its natural muscular contraction, I have been much struck in observing how entirely the blood-vessels were closed and invisible; and how open and distinct the mouths of the cut blood vessels became, when the same portions of the substance of the uterus were distended and relaxed. This fact of the natural contraction of the substance of the uterus closing the smallest pore of the vessels, so that no vessels are to be seen, where we nevertheless know that they are large and numerous, demonstrates that a very principal effect of the muscular action of the womb is the constringing of the numerous

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

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vessels which supply the placenta, and which must be ruptured when the placenta is separated from the womb."

"Upon inverting the uterus, and brushing off the decidua, the muscular structure is very distinctly seen. The inner surface of the fundus consists of two sets of fibres, running in concentric circles round the orifices of the Fallopian tubes. These circles at their circumference unite and mingle, making an intricate tissue. Ruysch, I am inclined to believe, saw the circular fibres of one side only, and not adverting to the circumstance of the fallopian tube opening in the centre of these fibres, which would have proved their lateral position, he described the muscle as seated in the centre of the fundus uteri. This structure of the inner surface of the fundus of the uterus is still adapted to the explanation of Ruysch, which was, that they produced contraction and corrugation of the surface of the uterus, which the placenta not partaking of, the cohesion of the surface was necessarily broken.

"Further, I have observed a set of fibres on the inner surface of the uterus which are not described. They commence at the centre of the last described muscle, and having a course at first in some degree vortiginous, they descend in a broad irregular band toward the orifice of the uterus. These fibres co-operating with the external muscle of the uterus, and with the general mass of fibres in the substance of it, must tend to draw down the fundus in the expulsion of the fœtus, and to draw the orifice and lower segment of the uterus over the child's head.

"I have not succeeded in discovering circular fibres in the os tincæ corresponding in place and office with the sphincter of other hollow viscera, and I am therefore inclined to believe, that, in the relaxation and opening of the orifice of the uterus, the change does not result from a relaxation of muscular fibres surrounding the orifice. Indeed, it is not reasonable to conceive, that the contents of the uterus are to be retained during the nine months of gestation by the action of a sphincter muscle. The loosening of the orifice, and that softening and relaxation which precede labour, are quite unlike the yielding of a muscular ring."

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, 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 toward 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 con-

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

ceptions found in the uterus. They are largest and most conspicious 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 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 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 or 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

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* [The appearance of corpora lutea is not to be deemed decisive of previous pregnancy: nor does their number indicate the number of conceptions. They are irregular as to the time of their disappearance after delivery. The evidence is strong that these marks sometimes exist in virgins; and, I think, that future investigations will determine that disorders of the uterus frequently induce what have been taken for corpora lutea. Upon examining the ovaria of several women who had died virgins, and in whom the hymen was too perfect to admit of the possibility of impregnation, according to Sir Everard Home, he found that there were not only distinct corpora lutea, but also small cavities round the edge of the ovarium left by ova that had passed out at some former period. *Philosoph. Transact. of the Royal Society for* 1817.

In the trial which arose from the death of Miss Burns, and which took place at the Lancaster assizes, in England, in 1808, the medical witnesses for the crown declared the corpus luteum a conclusive evidence of previous conception. This celebrated case has since called the attention of medical men to a fuller investigation of this point, and the opinion that "nothing can account for the corpus luteum in the ovaria but impregnation," pronounced on that occasion by eminent physicians, and then the received doctrine, is now invalidated. F.]

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, 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,

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

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 soothe 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 and 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 is 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.*

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*[Cases of this kind are very rare, compared with those in which the tumour grows from some part of the internal surface of the uterus; yet I believe them to be of much more frequent occurrence than is generally supposed Two very remarkable instances of these tumours, growing from the external part of the uterus, came within my observation during the spring of 1821.

The first occurred in a patient aged thirty-two years, of a delicate form of body, and of temperate habits of living. She had been married six years, but never proved pregnant. She suffered from her complaint about five years, when she died suddenly, and rather unexpectedly. During the whole of her illness, which was seldom so painful or annoying to her as to prevent her from attending to the ordinary duties of her house, she regularly menstruated, though the discharge was small in quantity, and thinner than natural. The greatest inconvenience she laboured under was the weight of the tumour, and its pressure upon the abdominal and pelvic viscera. She frequently had a sense of bearing down pain which was but little relieved by the horizontal position. Her digestive organs were often disturbed; though her mind was rarely depressed by her situation. Upon examining her body after death, the whole muscular system was found to be greatly emaciated, particularly her inferior extremities; her abdomen was prodigiously distended: the uterus and its appendages were of the ordinary size: the parietes of the uterus were of their ordinary thickness, and the os tincæ as natural as in the most healthy state of the parts. From the fundus of the uterus, connected by a small pedicle not more than an inch in breadth, grew a tumour of a bulk so extraordinary that the whole of the abdominal cavity was occupied by it; it pressed the regions of the abdomen on each side, though rather more on the right than on the left. The anterior part of the abdomen was put on the stretch by this mass, which extended to the scrobiculus cordis. This tubercle was of the species usually denominated fleshy, of a pale reddish colour, and of a fibrous vascular structure. At different parts of the surface of this tumour grew out six other small excrescences of a similar structure and tattered appearance: the largest of these was almost two pounds weight, the smallest two ounces.

Such was the appearance of the abdomen, arising from the shape, texture, and pressure of the tumour, that the patient was supposed some time previous to her death to be suffering under ascites: and she twice underwent the operation of paracentysis in order to obtain relief: on these occasions one or two ounces of a fluid somewhat purulent was the only discharge obtained: Her friends being satisfied that no relief could be afforded her from surgical aid, she had recourse to a variety of means for her relief when her sufferings

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,

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were at all severe; and after an undue exertion of her strength, she suddenly expired.

Upon removing the tumour from the abdomen, it was found to be of the character of those which Dr. Hunter has noticed as fleshy tubercles of the uterus. Its fibrous structure was evident. Upon cutting into its substance in different directions, a sac was found in the right portion of it, out of which issued three quarts of a purulent and most offensive matter. This condition of the tumour may account for the fluctuation which seemed to be felt by striking the abdomen; a peculiarity which is not to be observed in mere fleshy tubercles of the uterus. According to evidence taken at the time of examination, the tumour and its excrescences weighed rather more than one hundred pounds. The circumference of the abdomen of the patient, before the removal of the tumour, measured four feet eight inches and a half.

The above case occurred in the practice of Professor Mott, of the University of New-York.

The other instance of fleshy tubercles of the uterus to which I have alluded, happened in this city in April last. The patient was aged about forty-four years. She had enjoyed good health until within the last two years of her life: at this time she was supposed to be pregnant, and had many of the symptoms which attend that state; as the cessation of the menses, and occasional irritation of the stomach and bowels. Toward the end of what was supposed to be her full time, she was accidentally exposed to cold, to which she attributed the sickness which took place shortly after. At this time she believed that the slight symptoms which she suffered were those of approaching labour: but these symptoms soon disappeared, and for more than twelve months subsequently her principal complaints were an acrid discharge from the uterus, which was irregular both as to its appearance and quantity, a sense of great fulness and oppression at and around the region of the symphysis pubis, and slight irritation of the bowels and urinary organs. She took little more than mild aperient medicines to mitigate her symptoms, and died apoplectic.

Upon opening the body, the uterus was found to be enlarged to the size it usually attains at the sixth month of pregnancy; its parietes were thickened to the extent of an inch and a quarter, and the substance itself was in many parts in an ossified state. At its fundus, internally, there was attached by a short pedicle a round bony tumour about the size of an orange. The right fallopian tube, at a short distance from the part which opens into the uterus, had, also, a round bony tumour of a firm and granulated osseous appearance: the ovarium on the same side was larger than ordinary. There were other appearances still more extraordinary. Near the cervix of the

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 distance 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 tu-

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uterus there grew out by small attachments six large tubercles of an oblong shape, which so branched out that the whole inferior portion of the abdomen, nearly as high up as the umbilicus, was occupied by them. They were of a vascular texture, of a pale reddish colour, of a very firm and resisting nature, and, in many places, had evident marks of ossification. Two other smaller excrescences were discovered, one growing from one of the tubercles, and the other from the fundus of the uterus, of the size of a walnut. The tumours and the diseased uterus were found to weigh thirty-two pounds four ounces. I am indebted to Mr. L. Proudfoot for an opportunity of examining this remarkable specimen of disease.

I have purposely forborne for the present a more minute account of these cases. F.]

mour 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 sometime 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 successful 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 is 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, beside 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 miscarriages 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 remain-

ing 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, in 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 ope-

ration 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 p. 133; 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 pessary, 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 3d volume of Medical and Chirurgical Transactions, page 308.)*

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*[Married and unmarried women are both liable to polypus of the uterus: and though they sometimes prove pregnant, while afflicted with the disease, parturition commonly happens prematurely. In some few instances, they conceive, go through the period of utero-gestation without inconvenience, and are delivered as under ordinary circumstances. To the valuable observations of the author little can be here added. The discharges from the uterus are of such different appearance, at different times, in different kinds and state of polypi, and are excited by such slight causes, that the propriety of examining, per vaginam, in cases of preternatural evacuations from the uterus, ought always to be insisted upon. Polypi of the uterus, on account of their shape and size, have sometimes been mistaken for cases of inverted uteri: difficult labour, however, has generally preceded this accident; though some uncommon instances have happened where polypi have first protruded immediately after delivery. See a valuable essay on the symptoms, causes, and treatment of inversio uteri, with a history of a successful extirpation of that organ, during the chronic stage of the disease, by W. Newnham. Lond. 1818. We must pay great attention to the history of the case, and remember the insensibility of polypus; besides, unless the uterus be only partially inverted, the tumour will not be encircled by the os tincæ.

The cauliflower excrescence of the os uteri might be mistaken for polypus: the prominent diagnostic marks of the former are its irregularity of surface, its originating from the substance of the os uteri, with a broad base and not coming through it, and the watery discharge which attends the disease. On this subject I am induced to give an abstract of what Mr. Clarke of London has furnished us, who seems entitled to the credit of having first described the cauliflower excrescence of the os uteri. Mr. Clarke's paper may be found entire in the Transactions of a Society for the improvement of Medical and Chirurgical knowledge, vol. 3.

The cauliflower excrescence, according to Mr. Clarke, arises always from some part of the os uteri. As several of the early symptoms are not very distressing to the patient, the tumour in the beginning is rarely the subject of medical attention; the first changes of structure have therefore not been observed. Mr. C. does not

SECTION VI.

A mucous, ichorous, or sanious discharge from the vagina or uterus, is called the fluor albus. (*Leucorrhœa.* Nimia muci aut ichoris ex vulva profusio.—*Vogel*, cxix. Cachexia uterina, sive fluor albus.—*Hoffman.*) These discharges are various in their degrees as in their kinds, from a simple increase of the

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recollect to have ever met with a case, in which the size of the tumour was less than that of a blackbird's egg. At this period it makes an irregular projection, and has a base as broad as any other part of it, attached to some part of the os uteri. The surface has a granulated feel; considerable pressure, or handling it, does not occasion any sense of pain. The remainder of the os uteri will, at this period, be found to have no sensible alteration of structure. By degrees, more and more of the circle of the os uteri, and the external part of the cervix uteri, become affected with the same morbid alteration of structure, till at length the whole is involved in the disease.

The growth is, in some cases, slow, but in others rapid, so that, in the course of nine months, it will sometimes entirely fill up the cavity of the pelvis, and block up the entrance of the vagina.

As the bulk of the tumour increases, the granulated structure becomes more evident, and is found to resemble very much the structure of a cauliflower, when it begins to run to seed. In most cases it is of a brittle consistence, so that small parts of it will come away, if it be touched too rudely, and such pieces generally appear very white. Sometimes, though no violence has been used, small portions of a white substance come away with the urine of the patient, and in the discharge from the vagina.

When the tumour has arrived at a size greater than that of the os uteri, it spreads very much, and as the base is the smallest part of the tumour, persons, not conversant with the disease, have often mistaken it for polypus. A little attention, however, to the feel of the tumour, and the breadth of its base, will be sufficient to distinguish them.

In the very early state of the cauliflower excrescence, a discharge from the vagina takes place like fluor albus. It very soon becomes thin and watery, and is sometimes tinged with blood. In most cases, upon coming away, it is apparently as thin and transparent as pure water; but the linen on which it is received, when dry, becomes stiff, as if it had been starched. The quantity of the discharge, when the excrescence is large, will sometimes be sufficient to wet thoroughly ten or twelve napkins in a day. Now and then a discharge of pure blood occurs. When this ceases, the discharge of a thin transparent fluid reappears. An offensive odour generally accompanies the discharge, which is greatest, when there has lately been an evacuation of pure blood, or of the catamenia.

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

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Through the whole course of the disease, Mr. Clarke never found, in any instance, any appearance of pus in the fluid discharged from the vagina. Sometimes, however, mucus will be seen in it.

The catamenia are not affected in an early state of this disease. This discharge is, however, generally more abundant than in health, and the period is apt to last longer. With the catamenial secretion blood is very often effused. When the constitution becomes much weakened, menstruation is less regular, and in the last stages of the disease, it observes no regular period.

Patients, labouring under this disorder, are variously affected with regard to pain. In the commencement none is felt, but during its progress pain is, in some cases, experienced. Generally, in the advanced stage, the patient feels pain in the back, and in the direction of the round ligaments of the uterus. The pain is not described to be lancinating, as in cancer, and is without any sensible aggravation by paroxysms; but, on the whole, it is most felt after the patient has been long in a perpendicular attitude.

The disease attacks indiscriminately women of all ages. The patient is destroyed by the debility occasioned by the profuse discharge; and, in the course of the disease, she always becomes extremely emaciated. Mr. C. never met with an instance, in which the disease did not terminate fatally.

Respecting the treatment of this disease, Mr. Clarke says, that he can offer, at present, little satisfactory information. The disease being described, and distinguished from others, is something gained. All stimulating substances, either in diet or medicine, seem to aggravate it, by increasing the discharge, and no astringents internally given appear to lessen it.

The only means, from which he has seen any benefit derived, is the injecting into the vagina, three times a day, a strong decoction of cortex granati, or of cortex quercus, in which alum is dissolved, in the proportion of eight or ten grains to every ounce of it. This has the double effect of lessening the quantity of the discharge, and rendering it less offensive.

It is scarcely necessary to add, that the use of anodynes must be resorted to for the mitigation of pain, and that the occasional symptoms of suppression of urine, and costiveness, are to be relieved by the use of a catheter, and mild laxatives.

Of the different sort of polypi of the uterus, it may be observed, that, with few exceptions, they admit of cure only by means of an operation, and this consists in the application of a ligature round the neck of the tumour. Instances have been adverted to of poly-

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.

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 oli-

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pus tumours being pushed, during the efforts of vomiting, out of the os externum, and, upon the returning of the uterus, after the abdominal muscles have ceased to act upon it, the neck of the tumour has been broken. But such favourable method of cure is rarely indeed to be expected, and he would be criminal who would depend upon it.

On polypus of the uterus, consult Baillie's Morbid Anatomy. Levret, Observations sur la cure radicale des polypes de la matrice et du nez. Ruysch is, also, one of the best, as well as one of the earliest writers on this subject. See Observationes Anatomic. Chirurgic. F.]

banum, 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.*

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*[Leucorrhœa or fluor albus may, most properly, be considered a constitutional disease: it arises from different, and even opposite states of the system; occasionally from general plethora, but in a great majority of instances, from constitutional weakness and debility. Sometimes it may be induced by local irritations, and, in other cases, may be deemed as symptomatic of particular affections of the uterus, as cancer, polypus, &c.: the depressing passions may also be the cause of it. The discharge of leucorrhœa may proceed from the uterus itself, or from the vagina, or from both; it may be mild or acrid; and when it continues for some considerable time, it not unfrequently acquires the virulence of gonorrhœa. On this account, in addition to other reasons, the judicious practitioner will act with prudence. The discharge of fluor albus generally alternates with

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

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the menstrual evacuation, even in women who are regular. Sometimes the discharge of leucorrhœa is much increased, just before the menstrual period. And, moreover, leucorrhœa is most common with those females who are subject to an immoderate flow of the menses. If by conception the discharge has ceased, the secretion from the vagina may be greater, and may cause abortion.

The serious results which often attend a long continued fluor albus, ought to teach the physician the necessity of early and persevering treatment. Blood-letting and active cathartics, when the disorder arises from general plethora, may be advantageously employed, particularly in subjects habituated to free living. In those cases, in which the discharge takes place during pregnancy, moderate venesection will prove beneficial. Obstinate cases of fluor albus, when the disorder depended on this general fulness of the system, have been cured by the patient giving suck; and on the other hand, the complaint occurring in a different state of the constitution, has been brought on by excessive suckling. When the complaint depends upon general debility, all the means calculated to invigorate the system ought to be prescribed. Among them, as the most efficient, are the chalybeate mineral waters; cold bathing, general and local; exercise in a clear and dry atmosphere, and nutritious diet. The bark has been sometimes given with advantage, as also the mineral acids, muriated tincture of iron, and other preparations of that metal. The decoction of the oak bark with sulphate of zinc, the cold infusion of green tea, a solution of alum with infusion of rose petals, are valuable local remedies. Attention to the state of the digestive organs ought to be enforced, and the mind cheered by flattering anticipations: By strengthening the tone of the stomach and bowels, we often accomplish this object, and restore the functions of the uterus. It need hardly be observed, that when leucorrhœa is symptomatic, the primary disorder must first be removed.—For a disease of so frequent occurrence, and so formidable to the constitution, and which is so apt to baffle the skill of the most experienced, it is not surprising that such various methods of cure have, at different times, been recommended. It is necessary to keep constantly in mind, that the disorder is almost always constitutional, and that, therefore, local remedies, though they may afford temporary relief, must prove inefficient in accomplishing a cure. The fluor albus which takes place in advanced life, after the menstrual evacuation has ceased, requires for its cure more frequently, than in any other condition of the system, occasional blood-letting, and the free use of cathartic medicines. Cold lavations and astringent injections, in these cases, may do great and sudden mischief, unless preceded by the antiphlogistic plan.

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

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The tincture of cantharides has been strongly recommended by Mr. Roberton, as a specific in leucorrhœa ; but the experience of American practitioners seems not to have confirmed its efficacy. He has recommended the tincture to be taken diluted with water ; beginning with two drachms, united with six ounces of water, a table-spoonful three times a day ; and gradually to increase the dose, until the patient has taken four drachms of the lytta within the twenty-four hours. It is in this way to be persevered in until the patient experiences some uneasiness in passing urine, and a puriform discharge from the vagina is induced. But to accomplish this end, a perseverance in the use of the remedy is sometimes required for months, and even years. Mr. Roberton was induced to adopt this potent article of the materia medica in fluor albus, from the resemblance of this disorder to gleet. I have prescribed the tincture of lytta with the best results in this last mentioned disease, but with very little apparent benefit in the former.—Dr. Latham has given some valuable observations on leucorrhœa in the Medical Transactions of the College of Physicians of London, vol. v. F.]

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

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 a horizontial position after the next. When women who have a 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 distention 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.

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* 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.*

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 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 or 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 judgment 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 derive from it will be increased; yet, there is no doubt but that we are often disappointed

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

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 tronblesome, 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 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

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

† 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.

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.‡

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* 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.

‡ [The more immediate causes of this disease are a relaxation of the broad and round ligaments which suspend the uterus, and a want of due tone in the vagina. Hence, whatever is capable of producing a lengthened state of the ligaments, or a relaxed state of the vagina, may be the cause of procidentia uteri. It is universally admitted, that the most frequent occasion of this complaint is too early exertion, and a too long continued erect posture of the body, early after delivery. The more immediate predisposing causes of the disease are then present, and the uterus weighs eight or ten times more than an impregnated uterus, and is carried down by its own weight. Mr. Clarke assures us, that when the uterus has fallen out of the body so as to become an external tumour covered by the vagina, the surface of the tumour, that is, the membrane of the vagina, ceases to secrete, although it did so before, in very considerable quantity, whilst the tumour was contained within the os externum. This circumstance will account, he remarks, for a fact observable in the disease, viz. that those cases of descent of the uterus, in which the tumour is not external, are attended with a much greater degree of bodily weakness, than when the tumour is external; in which latter case, all that strength is saved to the woman, which would have been expended, if the tumour had continued in the body. But, if the parts are returned to their natural situation; if that which is the covering of an external tumour, is converted into the lining of an internal cavity, the mucous membrane of the vagina begins again immediately to resume its functions. Mr. Clarke had a striking case under his care, which illustrated this pathological fact.

Chopart gives us the singular case of a girl, of fourteen years of age, who, in consequence of violent exertions, became afflicted with prolapsus uteri. The displacement, however, was slowly produced.

It is needless to enforce the importance of cold applications, the cold bath, and cold astringent injections, in this disease; at the same time that the powers of the system are invigorated by the vegetable or mineral tonics.

Various pessaries have been had recourse to, for supporting the

SECTION VIII.

Hydatids,* or small vesicles, hung together in clusters, from 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 proceeding, we should incur the danger of greater mischief than we mean to avoid, so that without some particular rea-

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uterus, and it would be difficult to find one, against which some objection could not be made: those of wax soon have their shape altered by the heat of the body; those of cork, from their porosity, imbibe the moisture of the parts, and become offensive and irritating. Similar objections may be made to those formed of sponge. Those of wood possess many advantages. Professor James prefers the oval pessary of gum elastic. On the causes and treatment of procidentia uteri, see Clarke on the Diseases of Females. F.]

* Hydatis. Vesicula cuticularis humore aqueo plena.—Cullen.

† 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.

son 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 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.

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* [It is the opinion of Dr. Baillie, that hydatids of the placenta are different from those of the liver, kidneys, and some other parts of the body. They consist of vesicles of a round or oval shape, with a narrow stalk, by which they adhere to the outside of one another. Some of them are as large as a walnut, and others as small as a pin's head. Dr. Baillie considers that the hydatids found in the uterus, have not, uncommonly, been only hydatids of the placenta, which had been retained there. Sir Everard Home ingeniously concludes, that the hydatid arises, not from a change in the structure of the placenta, but from a general affection of the amnion. When the disease takes place, as he observes, the natural healthy actions for the support of the fœtus are so much impaired, that its growth is arrested; when the patient does not early miscarry, the fœtus disappears; and in all instances where a miscarriage has taken place in a more advanced stage of the disease, no fœtus, as far as is known, has been formed. Naturalists consider hydatids as a kind of imperfect animals. Mercury has been deemed a remedy calculated to promote the expulsion of hydatids of the uterus, and there are some reasons for this confidence. From the circumstance that sheep, when placed in salt marshes, have been relieved, common salt has been suggested; and Mougeot has recommended an injection of a solution of common salt into the uterus. In a case published in the American Medical and Philosophical Register, vol. 4. by Dr. Eightes, of Albany, the muriated tincture of iron was found successful. Would not the oleum terebinthinæ be a safe and efficacious remedy? The medical jurist will find some excellent observations concerning hydatids of the uterus, in the masterly pamphlet, drawn up by Dr. Bostock, entitled, A vindication of the opinions delivered in evidence, by the medical witnesses for the crown, on a late trial at Lancaster for murder. Liverpool, 1808. F.]

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

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 irruption 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 re-

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* [We have had many marvellous cases recorded of dropsy of the uterus, in which prodigious quantities of water are said to have been accumulated in the cavity of that organ. It must, notwithstanding, be considered as a disease which perhaps never occurs independent of pregnancy, unless under the form noticed by our author, as one or more large hydatids. If we reject this view of the disorder, we must suppose a stricture of the cervix uteri. I am disposed, says Dr. Baillie, (Morbid Anatomy,) to believe, that where water has been said to be accumulated in the cavity of the uterus, it has been really in one or more large hydatids formed in that cavity. This opinion has also the high authority of Sprengel in its favour. "Uterus, qui non gravidus est, colligere aquam nequit, nisi peculiari sacco inclusam aut cum os uteri præter naturam clausum fuerit." See his late work, Institutiones Medicæ, vol. vii. § 599. de hydrope uteri. Sprengel cites a case, ubi salivæ fluxus totum hunc morbum solverit. F.]

† Physometra. Tympanites uteri.—Cullen, lxx.

Oedopsophia. Flatuum per urethram, vaginam, vel uterum, emissio.—Sauvag.

straining. 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 expect 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 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 remaining, which continues long enough in the uterus to assume its form, and to retain only the fibrous part, as it is properly called, 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.

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

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 coagula 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 contained 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 judgment 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

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

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 perform it; 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 toward 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.
Aqu. Ment. sativ. unc. ij. m. f. haustus.
Sumat ter quótidie.

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 quantityof 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

"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.†

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* 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.

† [So numerous are the diseases to which the ovaria are liable, so slight their diagnostic signs, and their assigned causes so dubious and disputed, that our prescribed limits will not allow us, in this place, to enter into a formal discussion.

Among the diseased appearances which have been observed in the ovaria, Dr. Baillie has noticed their enlargement and hardness, their change of natural structure into a pulpy substance, and their change into a fatty substance, with hair and teeth: he has also observed that they are sometimes changed into a true scrophulous mat-

ter, intermixed with cells. But the most common disease to which the ovaria are liable is dropsy. Numerous instances of this affection are recorded : one of the most remarkable is that published by Mr. Chevalier, in the Transactions of the Medical and Chirurgical Society of London, vol. 3. The abdomen measured sixty-three inches and a half in circumference, and thirty-eight inches from the point of the ensiform cartilage to the top of the pubis. The legs were œdematous ; the left, considerably more so than the right ; and a great part of the skin of the left leg was in a state of complete ichthyosis. The lower part of the belly was also œdematous, and the navel, when she sat, was on a line with the knee. The fluid evacuated at different times by an operation, amounted to seventeen gallons. The patient died. Upon examining the body, the whole cavity of the abdomen appeared to be occupied by two large cysts, formed in the left ovarium, closely connected together. They both adhered, anteriorly and laterally, to the parietes of the abdomen. The upper cyst contained about two quarts of a brown, glairy fluid, like that which had been evacuated in the first operation. The inferior cyst contained three gallons of purulent fluid. There were also two very small cysts, formed in this ovarium, one containing about four ounces of a soft, gelatinous substance, and the other about half an ounce. The right ovarium and the uterus, were in a perfectly healthy state. The author has mentioned other morbid appearances.—Another remarkable case of diseased ovary, which was considered as encysted dropsy, may be seen in the London Medical Repository, vol. 9. Upon examination, after death, the tumour was taken out : it weighed eighty five pounds, avoirdupois, exclusive of more than a gallon of a discoloured fluid that escaped.

Dropsy of the ovarium, according to Dr. Hunter, is an incurable disease, and that patient, in his opinion, will have the best chance of living longest under it, who does the least to get rid of it.

Yet, in this desperate complaint, tapping is often resorted to for present relief, and has occasionally been the means of ultimate cure. Dr. Richard S. Kissam informs me, that in the year 1806, a case of this disease came under his care. Tapping was had recourse to with success. Nearly six quarts of water were drawn off. The patient, afterwards, proved pregnant, and became the mother of five children.

Dr. M'Dowell, in the Eclectic Repertory, vol. 7. relates three cases of diseased ovaria, in which, by extirpation, the patients recovered. See also vol. 9. F.]

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 distention, 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 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 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.

Beside 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 distention of the bladder, the tumour formed by it in the abdomen often equals in size, and resembles 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 distention 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 distention 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 distention 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 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 distention 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

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* 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.

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 distention 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 catheter, 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 farther 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 distention 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 farther 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 prejudical. 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 distention 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 distention 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 without danger, and with very little trouble, if no essential injury has been done to the bladder by the greatness or long continuance of the distention. 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.)*

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*[In this section our author is little satisfactory either in his pathological or practical views: To Gregoire and Levret is due the honour of first describing retroversion of the uterus; but the attention of the profession was more particularly aroused to its importance by the publication of Dr. Hunter.

A retroversion of the impregnated uterus is most apt to take place between the second and fourth months of pregnancy. Smellie, however, has given us an instance of it at the fifth month, and Dr. Dewees saw a case, in consultation with Dr. Gallagher, at between the sixth and seventh months. But cases of this sort are very rare, and we must look for the concurring circumstance of an unusual size of the pelvis, or the small size of the ovum. In the patient of Dr. Dewees there was retarded development from her labouring under a confirmed phthisis pulmonalis; her cough was severe, and, in a fit of more than ordinary severity and length, the uterus was retroverted. Dr. R. S. Kissam, of this city, had a case of retroversion of the uterus at the fifteenth week of gestation. Our author's opinion, that if a woman, 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, manifests a singular want of precision in diagnosis, and is wholly untenable. Instances of retention of urine frequently occur that are not followed by retroversion: though that state of the bladder is very properly considered as the most common occasion of the disease. Other causes may induce a retroversion, as a womb enlarged by disease, a severe blow across the back while stooping, over exertion in attempting to lift a heavy weight, a fright, &c. "We have many times," says Dr. Dewees, "known a suppression of urine without a retroversion; but we have never known the converse of this." See also, Baudelocque.

Retroversion of the uterus may occur at other periods; as after delivery, and when the catamenia cease. The cases which have fallen under the observation of Dr. Merriman have principally occurred on the second day after the birth of the child, the degree of contraction which the womb has by that time undergone, having, in his opinion, reduced it to a size the most fit to suffer such displacement. In one instance it took place on the ninth day after delivery. Hence the great need of attending to the quantity of the urinary discharge after parturition has been accomplished. Retroversion, though sometimes gradual in its progress, in general comes on suddenly.

When the disease exists, it becomes our immediate duty to draw off the urine, and Dr. Denman has very happily pointed out the method. For the purpose of relieving the bowels, enemata are to

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 replaced by raising it above the projection of the sacrum, in the manner advised in the retroversion, and it occasioned no farther trouble.

SECTION III.

That affection of the vagina and perinæum, which I have termed the hydrocele, or dropsy of the perinæum, is not an

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be administered; and when, by ordinary means, this is found to be impracticable, we may successfully employ a large male gum elastic catheter for the canula, as Dr. Dewees proposes. Copious bloodletting may prove a powerful assistance in our attempt at a reposition. "We shall find," says Dr. Denman, "that the longer the attempt to replace the uterus is delayed, the more easy the operation will ultimately be, and its success more certain." This declaration is at variance with what he himself has previously asserted, that an immediate reposition is, at all times, to be wished, as the safety of the patient is thereby secured. Indeed, the womb continues to increase daily, and its return to its natural position becomes more and more difficult, and delay is calculated to lead to the most fatal results: the death of the patient, when it has taken place in this disease, has almost always been from neglecting the proper period of reposition. Writers, in general, have not ascribed a due importance to retroversion of the uterus: even Dr. Merriman, so judicious in many respects, is faulty in this particular.—For an ample and satisfactory exposition of this subject, I must refer the reader to the Observations of Dr. Dewees, published in Dr. Chapman's Philadelphia Journal of the Medical and Physical Sciences, vols. 1. and 2. It would be injustice to the author to attempt an analysis of his paper. F.]

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 unusually 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, lest danger should be incurred by an attempt to procure more perfect or permanent benefit. But now I think my fears were groundless, and that this patient would have had a better chance of recovering perfectly, if a puncture with a small trochar 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 inconveniences 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 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 preceding 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.

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

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 appear ance, 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 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

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* Nec minus notum est, quanta virgina 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.

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 apprehensions 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

* 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

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 forth 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 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 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 geneally from the hemorrhoidal vessels. We may suppose that such constitutions resemble those

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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.

of women, though the essential peculiarity, independent of structure, may not be discovered without difficulty.*

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* [Menstruation in the females of this country commences about the same time, as in the temperate parts of Europe, or somewhat earlier, that is, about the thirteenth or fourteenth year, and ceases about the forty-third, or forty-fifth. It has been inculcated by certain European writers, that the Indian females of America are not subject to this discharge; but such opinion scarcely needs refutation. Careless observers may have fallen into this error from the circumstances that our female Indians seldom begin to menstruate until their eighteenth or twentieth year; that the discharge then is less in quantity than in the civilized inhabitants, and ceases earlier. The severity of their habits, scarceness of food, and precarious modes of living, less dispose them to venereal indulgences, and may be considered as sufficient reasons why they are less prolific than the civilized race.

Some few cases of undoubted authority are recorded, in which menstruation continued during the period of pregnancy: and Davanter and Baudelocque inform us, of women who had this evacuation only during pregnancy. In instances of this sort, I think we may conclude, that the secretion of the menses takes place at or about the cervix of the uterus; otherwise, the ovum would most likely be detached and discharged. We have, also, instances of women who, during lactation, have become pregnant. Nor is the previous appearance of the menses always indispensable to conception. Mr. Cruikshanks, in his lectures, was in the habit of enforcing this fact by detailing the particulars of a case which came within his knowledge, of a female who was the mother of several children, and in whom there never had been the least appearance of the menstrual flux. In proof that menstruation is not always essential to impregnation, Sir Everard Home has recorded the following striking case, in the Philosophical Transactions of 1817. A young woman was married before she was seventeen, and, although she had never menstruated, became pregnant. Four months after her delivery, she became pregnant a second time, and four months after the second delivery, she was a third time pregnant, but miscarried. After this, she menstruated for the first time, and continued to do so for several periods, and again became pregnant.

We have some remarkable cases, wherein the menstrual discharge has occurred much beyond the ordinary period, at sixty, and upwards, as in the example of the celebrated Madame de Stael. A relative of Haller's had two sons, after her fiftieth year: and, where puberty is late, as in cold countries, children have been born of mothers above sixty years old. Dr. Rush records an example of regular menstruation occurring at the seventieth year.

The influence of the ovaria in the production of the menstrual evacuation, has been long ago observed. Their accidental removal by a surgical operation, in a case of inguinal herniæ, in a healthy young

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

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woman, aged twenty-three years, induced manifest changes in the appearance and character of the patient; though many years had elapsed from the time of the operation, to the date when the account of the particulars was drawn up by Mr. Pott, she had enjoyed good health, but became thinner, yet apparently more muscular. Her breasts, which had been large, were gone, and she never menstruated. A curious case, in which the ovaria were deficient, was published in the Philosophical Transactions of 1805. This deficiency seemed to occasion a considerable approach in the female, to the male formation. She died at the age of twenty-nine. "Having ceased to grow at ten years of age (says the narrative) she was in stature not more than four feet six inches high. Her breadth across the shoulders was as much as fourteen inches, but her pelvis measured only nine inches, from the ossa ilia to the sacrum. Her breasts and nipples never enlarged more than in the male subject: *she never menstruated*: there was no appearance of hair on the pubes, nor were there any indications of puberty, either in mind or body, even at twenty-nine years of age."

Dr. Townsend has noticed a singular case of periodical discharge of blood in a male, which, for thirty-nine years, supervened at every lunar month, and unaccompanied with pain.—American Medical Recorder, vol. 3.

Notwithstanding Pliny has denominated woman animale menstruale, there are grounds sufficient for belief that the function of menstruation is not solely confined to the female of the human species. Certain of the simiæ possess the power of menstruation, nor is the time of their discharge wanting in periodical regularity. F.]

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

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

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 true, 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.

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.†

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

† [That menstruation arises from a plethora of the system, is one of the oldest and least satisfactory causes to which the discharge has been attributed. I think we are fully authorized to consider the uterus as performing, in one respect at least, the office of a gland, and the catamenia consequently as a secretion. Haller, in his notes on the Prælectiones of Boerhaave, favours this opinion; as does John Hunter.

The menstrual evacuation may be considered as a secretion from the extreme arteries of the membrane immediately lining the uterus.

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 contributes to the formation or nutriment of the fœtus, there is much reason to doubt or to deny. The former seems to have been founded on the observation, that women who did not menstruate, could not conceive; and this, if carried to its full extent, might have led to another conclusion, that the time of menstruation was most favourable to conception; 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

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In cases of polypus uteri it has been seen flowing out from the os tincæ at the same time that the vagina was free from moisture. "Arterias equidem," says Sprengel, "certo capillares e villis fundere sanguinem pursuadeor, cum a Kaauw Boerhaavii inde temporibus sæpius manifesta visa fuerit ea origo. Quæ arteriæ licet et in hoc viscere continuo in venulas transeant, patuli tamen sunt earum fines in villis massa laxissima cellulosa clausis, e quibus sine laceratione, ob impetum majorem, sanguis expeditius effluere potest." Institut. vol. 3. The menstrual discharge has been collected in cases of prolapsus of the uterus, wholly free from other matters, and been subjected to chemical analysis: no globules could be discovered in it; and it presented chemical results different from those which characterized blood. F.]

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 stage 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 investigating 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 retained 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 devested 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 submuriatus, 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 farther to observe, that this membrane has sometimes been excluded at two or three periods after parturition, and then entirely ceased. But this subject ought to be more accurately investigated.*

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* [I fully concur in the opinion of our author, that this subject deserves a fuller investigation, and when it is considered that this affection is among the most operate of the causes of female barrenness, it cannot but excite regret as well as surprsie, that so little notice has been taken of it. The only information of any value that has recently been published on this disease, of which I am apprized, are the papers of Dr. Dewees and Prof. Chapman of Philadelphia: the former in the Medical Museum, vol. 3., the latter in the Eclectic Repertory, vol. 2. Experience, I think, justifies the assertion, that this membrane is not always thrown off in every case of painful menstruation; the converse of the opinion is doubtless correct. Dr. Dewees confirms the remark of Dr. Denman, that whenever the casting off of this coat has occurred to married women, sterility has invariably attended such habit. My own limited experience accords with this observation.

In the treatment of this distressing complaint, Dr. Dewees recommended, with great confidence, the volatile tincture of guaiacum, on the supposition that the disorder is of a rheumatic character, and the remedy in his hands seems to have been almost a specific; but in the cases which have come to my knowledge, it has not been followed with the same happy results.

Upon the ingenious theoretical view of the disease, that the formation of this deciduous membrane is analogous to the membrane of croup, Dr. Chapman has prescribed the polygala seneka, in decoction, one ounce of the bruised root to one pint of boiling water. Where the medicine excites nausea, some aromatic, such as orange peel or cinnamon, may be added. Dr. Chapman has given four ounces of the decoction during the day, and, in some cases, as much as two ounces every hour: as an emmenagogue he found it one of

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 happen 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

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the most active and certain. "In the intervals of the menstrual periods, I always," says Dr C., "lay aside the medicine for a week or two, as without these intermissions, if it does not lose its efficacy, it becomes nauseous and disgusting to the patient. While under a course of seneka, the general system is to be kept properly regulated, equally obviating excessive excitement or debility. Of all the emmenagogues which I have tried, this is the most efficacious, and will be found useful in all forms of amenorrhœa, if administered with a due regard to the state of the system, and in all other respects, with correct discrimination. But I think it to be more particularly so in those where the decidua exists."

As in other cases of dysmenorrhœa, I believe we may often find much advantage, if not perfect relief for our patient, by the use of the lancet, a pervious state of the primæ viæ, and the administration of that valuable compound, Dover's powder, or judicious doses of opium and camphor. Where particular symptoms do not forbid it, cold lavations or the cold bath proves serviceable. F.]

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 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

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

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 drachm 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.*

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* [The different and opposite states of the constitution to which the author adverts, as the causes of obstruction or suppression of the menses, lead to important practical consequences. Our chalybeate mineral waters will be found highly serviceable in those cases in which the invigorating method of cure is indicated. I would insist, with more earnestness than our author, upon the propriety of venesection in the other class of cases, where the suppression is connected with a plethoric habit, or has arisen from exposure to cold.

Another point of primary consideration, is the effect so frequently manifest by a suppression or obstruction of the menses, of irritation of the chest, and other symptoms of a pulmonary sort. We may safely attribute a large proportion of our pulmonary disorders to this source, and the practitioner, in almost every case, will find it to the advantage of his patient, to advert to such condition of the system. It is unnecessary to recommend, with increased regard, the depleting practice of our author in cases of this nature. From overlooking this

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 assigned 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 dependant 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

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source of pulmonary consumption, many have fallen victims to that very mode of treatment which, in an opposite state, would have ended in success. F.]

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

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 copiava 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 it 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 con-

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

stitutions 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 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

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* [I believe we will often find opium, in the form of Dover's powders, the most eligible prescription. F.]

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.*

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* [There is a train of disorders following the cessation of the menstrual discharge, which deserves particular attention; and scientific as well as popular opinion, has very justly considered the time at which the menses cease, as a critical period of life. The various and important functions which the uterus itself performs, and its intimate and extensive connexions with the whole system, justify us in considering a suspension of its offices, adequate cause of diseased action.

That the uterus is a prolific source of disease, and in an especial manner exerts particular influence on the digestive organs, has been forcibly asserted by the accurate Heberden: Uteri affectus fere omnes ventriculo nocent. Its effects upon the glandular system are not less remarkable: its sympathetic influence upon the mind is manifest in the various and frequent forms of mental derangement which ensue.

The practice of provoking the menstrual discharge by aloetic and other active medicines, upon its natural cessation, deserves to be deprecated. Attention to the alvine evacuations, by mild purgatives and occasional blood-letting, will be found the most efficient means of accommodating the system to the exigencies of its new condition: while the patient should avoid every unnecessary cause of irritation, as high-seasoned meats, spices, &c. and the improper exercise of the passions. F.]

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 expense 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.*

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* [Our author speaks with too much confidence of the success attending the treatment of cancer, by compression. Every friend of humanity must lament the failure of the benevolent attempt of the late Mr. Whitbread, and the active zeal of the excellent Mr. Samuel Young, to take from this disease its fatal character. In my casual visits to the Middlesex Hospital, in the winter of 1816, I had opportunities of learning the insufficiency of the practice by compression; and the candid acknowledgment of Mr. Charles Bell deserves to be recorded. I find, by a Report on Cancer, of the Medical Committee of the Middlesex Hospital, published since that time, that the Committee have to lament "that compression cannot be regarded as a remedy for cancer." How is it possible that specific action can be subdued by compression? As well might we attempt to cure syphilis by blood-letting. Pressure, I believe, accelerates the coming on of the fatal symptoms of cancer. F.]

CHAPTER VI.

SECTION I.

ON CONCEPTION.

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.*

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* Videtur sane fæmina, post tactum in coitu spermaticum, eodem modo affici, nulloque sensibili corporeo agente prolifica fieri, quo

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 under-

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ferrum a magnete tactum, hujus statim vi dotatur, aliaque ferrament ad se allicit.—Harv. Exercit. de Concept.

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

took 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 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 toward 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.†

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* 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.

† [If the reader is at all desirous of entering at any length into an examination of the numerous theories of generation, he will find enough to gratify his curiosity in the writings of Wolf, Buffon, Darwin, and Spallanzani; and much more that will enlighten him in that great exposition of the Epicurean philosophy, the translation of Lucretius' poem, De Rerum Natura, with Mr. Good's elaborate notes; the Elementa Physiologiæ of Haller, and the works of Blumenbach and Sprengel. An abstract of some experiments on this subject, will be given in a subsequent note. F.]

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 assimilation 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 elective 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

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

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

† 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.*

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 refined 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.

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

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 steril, 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 rudiments 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 advances 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 devested 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 multiplication 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.†

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* 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 functum animalium. Harv. Exercitat. de Partu, and the plate prefixed to the English edition.

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 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,

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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.

* 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.

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 preserved, 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.)*

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* [Frustrate are the attempts which hitherto have been made to draw aside the veil with which modest nature has concealed the mysteries of generation. There is no generally received theory on the subject, and recent experiments have rather tended to subvert preceding hypotheses, than to establish one in their stead. Some of the leading facts, which seem to rest on solid experiment may here be added.

Animals are of two sexes, and the concurrence of both is essential to the propagation of the species. Some animals, indeed, as the

To this membrane various names have been given, and various opinions entertained of its formation. (Villosam, flocculentam, pseudochorion, spongy chorion.) A justly celebrated anatomist

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snail, unite in one individual the organs of both sexes; yet copulation is as necessary in them as in other animals. They mutually impregnate each other, and each is capable of producing. But we have other much more remarkable facts for which we are principally indebted to Bonnet: In a genus of small insects, *aphides*, (the *hemiptera* of Linn.) one impregnation seems sufficient for ten successive generations of these beings; all these generations, except the first from fecundated eggs, are produced viviparous, and all the individuals are females, except those of the last generation, among whom some males appear to lay the foundation of a fresh series.

The theory of equivocal generation, that is, that animals are produced from fermentation and putrefaction, without the necessity of any parent, was maintained with much zeal by Aristotle, and was long a prevailing belief. In our own time, we have had writers of much respectability who have given it their countenance. (Mr. N. Webster, in the New-York Medical Repository; G. Featherstonhaugh, in Memoirs of the Board of Agriculture of the State of New-York, &c.) Harvey, however, who asserted that all animals spring *ex ovo*, was also the first who formally refuted the Aristotelian doctrine, in which he was ably supported by the Italian philosopher, Redi.

It was an opinion long ago received, that there was a female semen as well as a male semen; and that, by the union of these in the uterus, the fœtus was produced. Leuwenhoeck, having observed a great number of animalculæ in the male semen of different animals, attempted to support a different opinion, which obtained great currency. One of these animalcula, according to him, constitutes the rudiments of the future fœtus; it is lodged in the uterus merely as a nidus, and all that the female does is to supply it with suitable nourishment. Subsequent physiologists, not finding these animalculæ, the hypothesis of Leuwenhoeck was speedily rejected. The illustrious De Graaf, whose services threw so much light on the generative system of animals, ascertained by numerous experiments on rabbits, that the ovaries are the seat of conception; that one or more of their vesicles become changed; that they are enlarged, lose their transparency, and become opaque and reddish coloured; that the number of vesicles thus altered corresponds with the number of fœtuses; that these changed vesicles, at a certain period after they have received the stimulus of the male, discharge a substance, which, being laid hold of by the fimbriated extremity of the fallopian tube, and conveyed into the uterus, soon assumes a visible vesicular form, and is called an ovum; that this ovum gradually evolves different organs, and becomes a fœtus. To these conclusions, he also added, that the calyx or capsula, which formed the parietes of the vesicles, thickens, by which the cavity is diminished: this cavity, together with the opening though which the fœtal rudiments escaped, becomes obliterated, and from the pa-

of the present time, in whose accuracy and judgment 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

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rietes of these vesicles having acquired a yellowish hue, they are called corpora lutea.

Many inquiries have been made to ascertain how far the semen masculinum penetrates. Galen always found it in the uterus of brutes, after copulation: Leuwenhoeck, in the case of rabbits: Ruysch tells us he found it not only in the uterus, but in the fallopian tubes of two women killed in the act of adultery. Haller once found it in the uterus of a sheep forty-five minutes after venereal congress; and John Hunter is said to have seen it in the uterus of a bitch, which he killed, while united with the male, by dividing the spinal marrow. On the other hand, Harvey could never detect semen in the uterus after venereal intercourse: nor De Graaf in the vagina. Haller also remarks, that some of those who assert that they saw semen in the uterus, probably saw mucus only.

In this state of uncertainty, Dr. Haighton instituted a series of very ingenious experiments, the account of which he published in the Philosophical Transactions of London, vol. 87. Dr. Haighton more particularly restricted his inquiries to three subjects: 1. What are the evidences of impregnation; 2. What is the proximate cause of impregnation; and, 3. Under what form do the rudiments of the fœtus pass from the ovary to the uterus. Under the first head, Dr. Haighton came to the conclusion that no corpora lutea exist in virgin rabbits, and that whenever they are found, they furnish incontestible proof that impregnation does exist, or has preceded. As to the second point, he concludes, that the semen, by its presence, stimulates either the vagina, os uteri, cavity of the uterus, or all of them; that the impression made on these is propagated to the ovaries by consent of parts; that one or more of the ovarian vesicles enlarges, projects, bursts, and discharges its contents: that during this process in the ovary, the tube is undergoing a state of preparation for the purpose of embracing the ovary, and receiving the rudiments of the fœtus; that this preparation consists in part of an increased turgescence of its vessels, and a consequent enlargement of its fimbriated extremity, and when thus prepared, it approaches the ovary. After the tube has performed its office by a peristaltic motion, commencing at the fimbriæ, and terminating in the uterus, it gradually returns to its former situation and condition: while these different actions are going on in the appendages of the uterus, others not less important to the design of nature are instituted in the uterus itself: for the tunica decidua, where it is obvious, is formed ready to secure firmness of connection between the tender ovum, and internal surface of the uterus, till a proper attachment by means of a placenta can be effected: that by way of guarding with additional security against a premature escape of the ovum, an apparatus seated in the neck and mouth of the womb, now begins to develop its real structure, 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

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perform its proper action, consisting in the secretion of a mucous-like substance, sufficient in quantity to fill, completely, the whole length of the neck, and, by that means, to seal up the communication between the cavity of the uterus and vagina : nor does the care of nature for the new animal terminate here ; for, while she is by various means forming and perfecting her work, at least as far as comes within the province of the uterine system, she is, at the same time, making preparations for its nourishment after birth, by instituting the proper secretion of the breasts. These successive operations, I think, says Dr. Haighton, are the product of that law in the constitution, which is called sympathy, or consent of parts. Dr. H. thinks his experiments overturn, as far as experiment can, every argument which has hitherto been adduced to support the hypothesis that the affusion of the semen on the ovaries, either in a sensible form, or in that of aura seminalis, is essential to impregnation. In order to prevent the semen from passing along the tubes, the Doctor divided one of them in virgin rabbits, and, after the wound was healed, admitted the animal to the male. The ovarium on this side contained corpora lutea equally with the other ; proving that the Graaffian vesicle had burst, although the semen could not possibly have reached the ovarium. No fœtus, however, was discoverable in any instance. On the other side, fœtuses were found equal in number to the corpora lutea. As to the form of that substance which passes from the ovaries, in consequence of impregnation, Dr. Haighton did not find reason to determine it to be vesicular, but more of the gelatinous character ; he never found any thing of a regular form in the uterus, before the sixth day.

Mr. Cruickshank, by a series of well-conducted experiments on rabbits, instituted about the same time as those of Dr. Haighton, demonstrated, among other things, that the ovum is formed in the ovarium, and comes out of it, after conception : that it passes along the fallopian tube, and that it takes some days in making its way to the uterus.

John Hunter saw the seminal fluid thrown into the cavity of the uterus of the cornea uteri of a bitch ; and proved, by experiment, that the effluvia from the seminal fluid of a frog, would not impregnate the ova of the female. Mr. Hunter extirpated one of the ovaria of a sow, and compared her breeding powers with another sow, of the same age, and treated in every respect the same as the first sow ; but retaining both her ovaries. The spayed sow continued to breed till she was six years of age ; the perfect sow till she was eight : the spayed sow had seventy-six pigs ; the perfect sow one hundred and sixty-two.

We might here enlarge, and notice the experiments on artificial impregnation, by Spallanzani.

In a paper on the passage of the ovum from the ovarium to the

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

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uterus in women, published in the Royal Transactions of 1817, Sir Everard Home seems to have determined more satisfactorily the length of time after coition, at which the ovum may be found in the uterus of the human female. The patient died on the eighth day after impregnation; and the ovum, small as it was, bore a very fair proportion to that represented by Dr. Hunter at the end of three weeks. It may here be observed, that Haller denies the accuracy of all observations concering the ovum, until the 20th day of its existence.

But the most valuable addition which has recently been made to our stock of knowledge concerning the intricate subject of the generation of animals, is that of Dr. Blundell, whose communication is published in the Medico-Chirurgical Transactions of London, vol. 10. In this paper of Dr. B. we have the result of a series of experiments on rabbits, in which the communication was intercepted between the vaginal and fallopian portions of the uterine system: the consequences of sexual intercourse were, in these instances, merely enlargement and development of parts, without actual impregnation. Dr. Blundell has, I think, most satisfactorily shown, that the corpus luteum is no certain sign of impregnation: for the luteum, in his experiments, was generated under circumstances in which, as the event proved, impregnation was impossible. Indeed, he adds, there seems to be little reason for doubting that the corpus luteum may be produced, even independently of the sexual intercourse, by mere excitement of desire in a very high degree.

The experiments of Dr. Blundell have, I think, conclusively set aside the sympathetic theory of generation, so ingeniously maintained by Dr. Haighton and others. The semen must have access to the rudiments for the completion of the generative process. We are, also, by the very experiments of Dr. Haighton himself, strengthened in this opinion, by adverting to the peculiar structure of the genitals of the wombat, the existence of a bifid glans, with two orifices in the penis of those male animals, the females of which have two ora uteri: (see Sir Everard Home, Phil. Trans. vol. 98; also, Cuvier.) and by the formation of extra-uterine conceptions.

It has been contended by some naturalists, that the semen, in generation, is transferred to the blood-vessels, and as the purgative, or emetic, when injected into the veins, exert their peculiar influences, so also the seminal fluid, transmitted by the absorbents, makes its first impression on the vascular surface, and its second by a similar sympathy on the genitals themselves. It seems evident, however, from the fact related by Dr. Blundell, that the semen retains no such generative influence.

For my own part, when I consider the exact state of experimental research on animal generation, I find the sympathetic doctrine of Haighton of not less difficult credence, than the story of Pope Joan's extraordinary impregnation. F.]

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.*

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 uterogestation. The utility of this inquiry, if the truth could 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

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

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 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 hypochondria, 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.

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

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 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 farther 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

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* [Professor Soemmerring has observed, with great minuteness, the gradual changes which take place in the external form of the fœtus during the earlier periods of its development. An embryo of three or four weeks appears to the naked eye, according to Soemmerring, somewhat like a grain of mustard seed just beginning to grow: the head being like the body of the seed, and the trunk and remaining parts like the radicle. But, with a magnifying glass, a little dark circle can be distinctly seen in the region of the eyes, and a small slit corresponding to the orifice of the mouth. Four promi-

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

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nences are observable on the trunk in the situation of the four extremities; and, between the two lower, there is a curious prolongation like a tail. He also observed, that the younger the fœtus, the larger its head, compared to other parts of the body: the smaller its face in proportion to the other parts of the head, and the smaller its limbs relatively to the trunk. During the first, second, and third months, he has remarked that the upper extremities are larger than the lower; but that about the fourth they are equal, and that, toward the fifth, the lower have become larger than the upper. In his comparative view of the male and female fœtus, he has pointed out the following distinctions in the external form: The head of the male differs from that of the female in being larger in proportion to the whole body, less rounded, flatter in the crown, and more prominent behind. In the male, the breast is considerably more prominent than the umbilical region, while in the female it is the reverse, and this is a distinction perceptible in the youngest fœtuses. The trunk of the body between the upper parts of the loins is arched in the male, but hollow in the female, and this, too, is a distinction very early observable. The upper extremities in the male are a little longer in proportion to the trunk than in the female, the arms are less cylindrical, the fore arms fuller, the wrists broader, and the ends of the fingers less pointed. The circumference of the body at the haunches, is less in the male than in the female, the thighs are more slender, the feet longer, the malleoli and heels more prominent, and the great toe exceeds the others more in length. See further the Icones Embryonum Humanorum. F.]

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 shown 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 parrallel 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.†

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* [See a subsequent note on *Infanticide*. F.]

† [There have not been wanting anatomists of the highest character who have affirmed the existence of absorbents in the umbilical cord, as Ruysch, Meckel, Mascagni, Ludwig, and others. F.]

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 toward 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

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

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 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

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

† 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.

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.

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 snpplied 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 way, the child, being

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

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

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* [Our author's ideas of the structure and functions of the placenta, are those which were first particularly set forth by the Hunters, and are the most generally received doctrines. Sprengel has lent them the aid of his authority. Latterly, however, these opinions have been much contested; and Dr. Hosack, Professor of the Practice of Medicine in the University of New-York, rejects them entirely: he denies to the placenta the office of lungs, and believes that the blood, already oxygenated, passes by direct communication from the mother to the fœtus in utero. These views he first promulgated in 1807. The late Dr. Gordon, of Edinburgh, considers Hunter's views as in part hypothetical and unsatisfactory.

Hydatids occasionally form in the placenta; sometimes its structure is unusually hard, and in part ossified. Dr. Borrowe had a case in which, upon examination, a considerable part of the placenta exhibited an osseous formation; its maternal vessels seemed distinctly ossified tubes. The placenta is also sometimes found to appear as if composed of mere fatty matter. Dr. Handy, of this city, has furnished me with the particulars of several cases of this sort which have come within his knowledge. In one instance, upon examining the placenta of a patient after a natural labour, it was ascertained that nearly all the fœtal part of it consisted of an adipose substance, varying in different parts from a fourth to three fourths of an inch in thickness. In another case, about half the placenta consisted of an adipose substance, divided into lobes. F.]

† 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.

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 constitnent 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-vesseis 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 become of a firm and apparently fatty texture. This is called the vesicula umbilicalis, but its use is not known.

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.

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* Amnion et chorion sibi invicem leviter cohærent.—*Ruysch.*

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 regularly 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

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* [See a paper on the Nourishment of the Fœtus, by Professor Chapman, in the Philadelphia Journal of the Medical and Physical Sciences, vol. 1. F.]

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 distention 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 distention 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 distention 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 farther 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 disposition 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 distention 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 distention.

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 between the pubes and navel; in the sixth, as high as the navel; in the seventh, half way between the navel and scrobiculus cordis; in the eighth, as high as the scorbiculus 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 distention 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 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 ex-

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* Expultrix uteri facultas insurgit et excitatur. Fœtus ab utero compressus, propulsatus atque expressus.—Fabr. ab. Aquapend.

pelling the child at the time of birth, would be periodical; and attended with pain, from the distention 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 opposite 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 uterogestation. 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; or, 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 distention. 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 genuine 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.

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* See Chapman's Treatise on Midwifery, chap. V. Case 1.

CHAPTER VII.

SECTION I.

ON THE SIGNS AND DISEASES OF PREGNANCY.

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 of 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

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* Distinguitur irritabilitas in primarium seu directam, et secundariam seu per consensum.—Glisson, Tractat. de Ventric. et Intestin.

† Quinque adminicula, quibus una pars alterius affectum fua 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.

consent, and 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 judgment 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 toward 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.

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* [It must always be borne in mind, that there is no one decisive sign of pregnancy; and that our best evidence, in cases of a doubtful nature, is gathered from an association of symptoms. Our author justly rejects the discolouration of the areola, as alone an indubitable mark of pregnancy; a circumstance upon which medical jurists have placed too much reliance. The same error exists in regard to lactation, which often arises from other causes. The maxim of Aristotle, Lac habit ergo peperit, is now rejected by the best physiologists.

Professor Post has lately communicated to me the following singular fact: A lady of this city was, about fourteen years ago, delivered of a healthy child, after a natural labour. Since that period, her breasts have regularly secreted milk in great abundance; so that to use her own language, she could at all times easily do the office of a nurse, and she has uniformly enjoyed good health. She is now about thirty-five years of age; has never proved pregnant a second time, nor had any return of her monthly discharge. F.]

† [This calculation of our author is conformable to the best authorities; and, according to the minute observation of Rœderer, as quoted by Professor James, from that time the patient may expect gestation to continue five additional months. F.]

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 symptoms, 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 or 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 misrepresentations 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 wo-

men 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, and 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 judgment 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 follow, 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

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* [Our author is too positive in asserting that the suppression of the menses is always a consequence of conception. Many authentic cases might be cited, wherein the menstrual evacuation regularly returned during the whole period of utero-gestation. I knew one, says Heberden, in his commentaries, who never ceased to have regular returns of the menstrua during four pregnancies, quite to the time of her delivery. A lady of this city, under the care of Dr. Hosack, has, during the last three pregnancies, menstruated until within a few weeks of her delivery, and has, at each labour, brought forth a healthy child. A healthy female in my own practice, the mother of five children, has had regular returns of the menses during her last two pregnancies until the seventh month. F.]

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 an 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.*

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* [Indulgence in animal food, and in strong or fermented drinks, particularly porter, is among the most powerful causes of increasing the continual irritability attendant on pregnancy. Moderate exercise in the open air, and an abstemious mode of living, should be enjoined on pregnant women; and, unless in some few instances, fermented drinks should be strictly prohibited. As in pregnancy the habit inclines toward plethora, moderate venesection is among the best means of relief, where symptoms of fullness and irritation prevail. F.]

SECTION V.

Pregnant women are not only encouraged to live more luxuriously, but more indolently also, exercise being thought improper, unless toward 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 toward 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 toward 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 corrallata 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

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* [Immoderate fatigue or exertion may bring on premature labour at any period of pregnancy. Exercise on foot should never be indulged so as to induce pain in the back: on this, as well as on other accounts, riding in a carriage in the open air is greatly to be preferred. F.]

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 recommended, 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 higest 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 answers the purpose.*

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* [This irritable state of the stomach generally decreases, as pregnancy advances; and females who suffer the most from it, have, not unfrequently, the healthiest children, and are the least

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 to 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

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likely to miscarry. Beside the means of relief stated by the author, others may be noticed: a drink, composed of equal parts of lime water and milk; soda water; a few grains of capsicum; a table spoonful or two of fresh cream in a small quantity of spirits and water. When all these means have failed, the loss of a few ounces of blood from the arm has sometimes removed this gastric irritation. Anodyne injections by the bowels, have occasionally proved highly serviceable; and, when the sufferings of the patient have been very great, at the advanced period of pregnancy, the bringing on a premature labour has, in all probability, saved mother and child. A case of this sort is recorded in the London Medical and Physical Journal, vol. 2. F.]

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. Ammon. pur. *aa* ʒj.
—— Cinnamom. 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 XI.

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 head-ach, 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 con-

venient 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.*

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* [In this very troublesome affection, costiveness is particularly to be guarded against; and the saline cathartics, and repeated bloodletting in moderate quantities, will be found especially serviceable. After the inflammation and pain are subdued, and the bulk of the hemorrhoidal vessels diminished, cold washes and astringent applications may be used. Of these, the gall ointment is among the best. All stimulating drinks and food should be carefully avoided, where there is a disposition to this disease. F.]

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 accomodating 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 utero-gestation.

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 asorbent 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, toward 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

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* [Our author seems, on some occasions, too partial to the use of emetics, during pregnancy. It deserves to be recollected, that a relaxed state of the bowels is often among the most serious of the inconveniences of the pregnant state; and that, except in cases of accident, miscarriage rarely occurs, but with a loose and irritable condition of the intestinal canal. F.]

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 exceedingly 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,

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* [Moderate venesection will often prove serviceable when this discharge arises from these circumstances. F.]

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 doses 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 later 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 toward 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. Hoffman'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 pain-

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* [Our author's reasoning in this paragraph is sufficiently hypothetical. F.]

ful 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 tinc. 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 insured. 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 headachs, 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 began 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 distention at different periods of pregnancy, has al-

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* [The fluctuation which characterizes ascites, will enable the practitioner to distinguish that form of dropsy from pregnancy, except only, perhaps, when the water is encisted. We must also have in recollection the stage of uterogestation. Yet many lamentable cases are recorded of ascites combined with pregnancy, and in which paracentesis was unsuccessfully performed. The few instances in which a happy result has attended the operation when both states co-existed, ought not to justify such practice.

In the American Medical and Philosophical Register, vol. 2. Dr. William Moore has given an interesting case of dropsy, suddenly cured after parturition. F.]

ready been described. This generally appears to be uniform, though often on one side more than the other; and sometimes there are partial distentions, 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 distention 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 distention of the abdomen, especially in corpulent women, an umbilical hernia is very frequently occasioned, which, depending wholly upon the degree of distention, 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 plaister 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 distention 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 distention 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 inconveniences 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 utero-gestation. 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 affection, 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

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* [It is remarkable that Dr. Denman never saw a decided instance of a child born with the venereal disease. The communication of the syphilitic virus to the fœtus in utero, is one of those facts which rests upon the best evidence, and which the observation of the latest and most accurate physicians puts beyond denial. The diseased mother may affect the fœtus while in utero, and the child be born with the venereal disorder; the diseased infant may, by sucking, infect the nurse; the infected nurse may, in turn, communicate the complaint to the infant suckling at her breast. All this has occurred, where the organs of generation, both of the male and female were unaffected. The disease may also be contracted during the act of parturition. Several instances have occurred among the patients of Mr. Hey, of Leeds, where the mother, having been once affected with the venereal disease, has communicated it to two, three, or even four children in succession; each of them having the disease in a milder form than the preceding one, and this without any ground of suspicion that the mother had received fresh infection. I have had under my care three cases of the venereal disease communicated to the fœtus in utero; two of these cases occurred where the genital system appeared in a perfectly sound state: in the other, there were ulcers of the labia, and constitutional disease.

The treatment of cases of this nature will, I believe, be best conducted by the internal use of the corrosive sublimate, either in solution or in pills. The eighth of a grain in the last form, two or three times a day, may be given with safety, both to the mother and fœtus. To the newly born infant, we may most conveniently give the solution. In one of the instances to which I have alluded, I began with five drops three times a day, and gradually increased the number to fifteen each time. This, though the most formidable case, yielded entirely to the remedy.

A valuable paper on the effects of the venereal disease on the fœtus in utero, by the late Mr. Hey, may be found in the seventh volume of the Medico-Chirurgical Transactions. See also Dr. Dyckman's elaborate Dissertation on the Pathology of the Human Fluids. F.]

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 utero-gestation, 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 toward 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.

SECTION I.

ON UTERO-GESTATION.

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 utero-gestation, or in the act of childbirth, 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

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* Adductis ad abdomen genibus, flexis retrorsum cruribus, pedibus

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 toward 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 toward 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 utero-gestation 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

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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.

influenced; and that these were most perfect and permanent in those animals which had the longest period of utero-gestation. It was also thought, and perhaps with truth, that the longer the time of utero-gestation, 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 utero-gestation 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 utero-gestation 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 utero-gestation 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

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* Spigelius Ulpianum juris consultum immerito reprehendit, quod post decimum mensem editum neminem ad legitimam hæreditatem admiserit.—Harv. Exercitat. de Partu.

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 utero-gestation 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 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 surprize; 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 impatince. 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.*

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* Great diversity occurs, both in the decisions of judicial tribunals and in the opinions of physiologists, in regard to the duration of legitimate utero-gestation. One of the earliest opinions we meet with on the subject is that of the father of medicine, who admitted that pregnancy might continue ten months, but not longer. Haller was willing to admit gestation in women of ten, eleven, twelve, thirteen, and even fourteen months. Smellie has recorded the particulars of two cases of gestation protracted in the one to "five or six weeks at least," and in the other to eight weeks beyond the usual term. Dr. William Hunter has given the following opinion: The usual period of a woman's going with child is nine calendar months; but there is very commonly a difference of one, two, or three weeks. A child may be born alive at any time from three months; but we see none born with powers of coming to manhood, or of being reared, before seven calendar months, or near that time. At six months it cannot be. I have *known*, he also says, a woman bear a living child, in a perfectly natural way, fourteen days later than nine calendar months, and believe two women to have been delivered of a child alive, in a natural way, above ten calendar months from the hour of conception.

Aristotle says, *unum pariendi tempus statutum omnibus est animalibus; homini uni multiplex datum est*; to which Pliny and others assent. But the truth is, nature has not always limited herself to a precise period for the time of parturition either among animals in general, or in the female of the human species: Tessier, who for forty years has been occupied with this investigation, ascertained that the diversity in this respect, even among inferior animals, is considerable.

The Roman law granted ten months. Prior to the revolution the French courts allowed ten months. The code Napoleon hesitated as to the legitimacy of a child born three hundred days after the dissolution of the marriage. Neither the English nor American Courts have prescribed any particular time. Their decision is determined by the opinion of the medical witnesses: according to the favourite law maxim: cuilibet in sua arte credendum est. F.]

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 the impossibility of preserving the child. If we had no other circumstance, by which the practice of the ancients would 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 incontestibly 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 be then some other principle of birth beside 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 indisputably proved, by the occurrences both in natural and difficult labours, that its truth is 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 distention; 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 dicovery 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 farther 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 toward 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

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* 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 extruant, ubi fœtus, pariant, foveant, alantque.—*Harv.* eodem loco.

act instictively; 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 expected 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 operation entertained of it by women. Concerning this opinion 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 toward 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 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 utero-gestation, 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.

SECTION I.

ON LABOUR.

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 farther 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.*

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* [*Baudelocque* has divided labour into, 1st. Natural or unassisted labour: 2d. Preternatural labour; that which requires assistance, but may be completed by the hand alone: and 3dly, Laborious labour; that which requires the use of instruments.

Burns, in his disposition of labours, has made seven classes: 1st. Natural labour: 2dly, Premature labour: 3dly, Preternatural labour: 4thly, Tedious labour: 5thly, Laborious or Instrumental labour: 6thly, Impracticable labour: 7thly, Complicated labour. It is essential to his natural labour that it does not take place until the end of the ninth month of pregnancy: his premature labour takes place considerably before the completion of the usual period of ute-

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 toward the pubis and the face toward the hollow of the sacrum. But the face is sometimes inclined toward the ossa pubis, and the hind-head toward 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 con-

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ro-gestation, but yet not so early as to prevent the child from surviving.

Merriman divides labour into two classes: 1st. Eutocia, or natural labour: 2dly. Dystocia, or difficult labour. There are in this last class fifteen sub-divisions or orders.

Hogben has distinguished labour into four kinds. 1st. Natural; 2dly. Difficult: 3dly. Preternatural: 4thly. Complex. The first two are supposed to include all labours where the head presents. *Preternatural* labour is, when any other part than the head presents; or the head descending with one or both arms. A *complex* labour is attended with intervening anomalous circumstances, meaning the different species not naturally connected with each other; such as twin cases, (or more,) presentations of the funis umbilicalis, convulsions, floodings, rupture of the uterus, &c. F.]

sidered 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 toward 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 great-

est 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 toward 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 distention 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 child-

bed; 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 before-mentioned 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 show, 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.

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* [This discharge is owing to a partial detachment of the placenta. F.]

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 toward the conclusion of pregnancy, by various causes beside 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 sufferings 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, un-

less 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 childbirth, and the action of the uterus, are terms used synonimously; 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 part resists the passage of the contents of the uterus, the exclusion of which is the effect to be produced, there will then be pain pro-

portionate 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 a 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, toward 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 distinguish 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 quiet that which was false. This opinion is, perhaps, more universally popular than any other throughout medicine; and if it have infected the minds of practitioners, as it often has those of the 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 insured by more numerous and powerful resources, than under any other circumstances, though to appearance less dangerous.*

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

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* [It is greatly to be lamented, that the excellent principles in this section are so often disregarded, and that even professional men frequently countenance the popular error which our author so strongly and so justly condemns. F.]

† [Mr. Hogben, in his Obstetric Studies, has divided labour into five stages. The first stage is from the commencement of pains; the os uteri somewhat relaxed, open, and gradually stretching by the waters pressing on the membranes; which, being ruptured, the child's head enters the brim of the pelvis, down into the cavity, (or upper chamber;) in its most favourable position, lying diagonally, with the occiput to one side of the symphysis pubis. The second stage of labour is the time in which the face is passing into the lower pelvis, the face turning into the cavity of the sacrum. The third stage is the further advance of the head out of the hollow of the sacrum, through the passage of the vagina and os externum. The fourth stage comprehends the expulsion of the body of the child and lower extremities. The fifth stage is the discharge of the placenta and membranes.

Labour has been divided by Dr. Hosack into four stages, according to the impediments to be overcome: 1st. All that may occur before the complete dilatation of the os uteri: 2dly. The passage of the child's head through the brim of the pelvis, until it has descended so low as to press on the perinæum: 3dly. The passage of the child through the soft parts; and, 4thly. The delivery of the placenta and membranes. F.]

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 farther 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

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* [Great deference is due to the opinion of our author concerning the early rupturing of the membranes. The consequences which ensue from the premature evacuation of the water, are such as fully to justify the position he maintains, as a rule of practice. Nevertheless, the membranes may, in some few instances, be artificially ruptured with advantage, previous to the complete dilatation of the os uteri: As in cases where we find the uterus makes long and ineffectual efforts to contract; while the pains are severe and not direct, and the patient is expending her strength in vain. By having thus diminished the contents of the gravid womb, its power to contract is sometimes much augmented, and what might otherwise have been a tedious and painful labour, is converted into one comparatively short and easy. F.]

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 farther 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 distention. 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 parta-

king 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. 2. 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 happen; 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 distention, 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 distention 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 reaction 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 reaction 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 distention as is occasioned by the instinctive efforts, then all the additional voluntary force is beyond what is either needful or safe (see chap. 2. 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 are 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. 2. 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 practitioner 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 judgment, 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 practice, 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 toward the body of the child. In all these different

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* [To guard against a laceration of the perinæum, is among the most essential duties of the accoucheur in a natural labour: and after all our attention, to prevent this serious occurrence is sometimes impossible. Occasionally, though very rarely, the laceration takes place in the centre of the perinæum. F.]

† See *Peu* Pratique des Accouchements, Livre I. Chap. xii. 18.

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 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

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* 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.*

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 part 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 to 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 naval 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 judgment, 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

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* [After the child shall have manifested life, by its respiration, crying, &c. we may apply the ligature to the chord. I do not see the necessity of waiting until all pulsation of the funis has ceased. On the other hand, the premature tying the chord has destroyed life. A case of this kind came under my observation several years ago. The first ligature ought to be applied about an inch and a half from the navel; the second, about two inches beyond the first. F.]

† [Immediately. F.]

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 a 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 moderate action, favour its operation and descent.

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* When the young has been a short time expelled, carnivorous animals, apparently feeling pain, lay hold of the naval-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.

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 inquiry of the laws.*

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* [In the whole extent of medical jurisprudence there is no point more frequently agitated, or one in which more serious consequences may be involved, than the subject of infanticide. The law, departing from its usual lenity, presumes the child to have been born alive, and renders it necessary that the contrary be made out by strict evidence. Of the numerous authors on forensic medicine

I know of no one who has treated this part of it with equal ability and satisfaction as Dr. John B. Beck of this city, in an Inaugural Dissertation for the doctorate in medicine in the University of New-York, published in 1817. The value of the information will justify the extent of the extracts which I have made: for further views I refer the reader to the Dissertation itself.

"In cases of *Infanticide*," says Dr. Beck, "it is only from the circulation and respiration that any thing is to be learned: the brain and nerves leave no trace of their influence behind them.

"*Of the blood having circulated after birth.*—There are two circumstances from which a conclusion on this point may be drawn;—the appearance of the blood itself, and the ecchymoses on the body of the child.

"1. The difference between the blood of the fœtus, and the child after birth, has been particularly noticed by Bichat. He made numerous dissections of young guinea pigs while yet in the womb of their mother, and he uniformly found the blood of the arteries and veins presenting the same appearance, resembling the venous blood of the adult. He made the same observations in three experiments of a similar nature which he made upon pups. He also frequently dissected human fœtuses who had died in the womb, and found the same uniformity in the arterial and venous blood. From these experiments, he concludes, that no difference exists between the arterial and venous blood of the fœtus, at least in external appearance. The chemical constitution of the blood of the fœtus appears, also, to differ from that of the child after birth, or the adult. Fourcroy, in analyzing it, found it destitute of fibrous matter, as well as of the phosphoric salts which are always detected in the blood of the adult. He also discovered, that it was incapable of becoming florid by exposure to the influence of atmospheric air."

"2 *Ecchymoses* or *extravasations* of blood on the body of the child, produced by blows or other injuries, prove that it enjoyed vitality at the time they were inflicted; for in a dead child, as the blood has ceased to circulate, it could not flow to the injured part, and, therefore, there would be no appearance of extravasation. Professor Mahon mentions another possible cause of such extravasations, which should not be overlooked. He says it may result from putrefaction, which, by means of the air that is generated, bursts the veins, and then blood from very distant parts of the body is insensibly carried along to this outlet, so as to form a considerable extravasation. It could not certainly be very difficult to discriminate in a case of this kind, yet it teaches us a practical caution of some consequence, which is, to pay particular attention to those circumstances which tend to favour the process of putrefaction, as the climate, season of the year, and place where the body is found.

"*Of the child having respired after birth.*—The act of respiration constitutes the great distinguishing feature between adult and fœtal life. Its commencement is succeeded by revolutions in the animal economy, the most wonderful and interesting. The pulmonary system is, however, principally affected by it, and it is there that

the medico-legal inquirer must search for those changes, which are indicative of the exercise of that function.

" In examining a child which has never breathed, its thorax is found flattened, or, as it were, compressed ; the lungs are dense, of a reddish brown colour, and in a collapsed state ; they are comparatively small in size, occupying only the upper part of the chest, and hence they leave the heart and percardium uncovered ; on examining the pulmonary vessels, they are found to contain little or no blood. If the lungs be taken out of the thorax and put into water, they will sink to the bottom, and if their weight be compared with the weight of the whole body of the child, they will be found to be to each other as 1 is to 67 or 70. The reverse of all this is met with in a child that has respired. The thorax is more arched, and its size augmented in every respect ; the lungs are dilated ; they fill up the cavity of the thorax, and cover the lateral parts of the pericardium ; their colour is less deep, and the pulmonary vessels are moreover distended with blood. Their specific, as well as absolute weight, is also changed, and accordingly, when put into water, they will float upon its surface, and when compared with the whole weight of the body, they will be as 2 is to 67 or 70 ; or in other words, the *absolute* weight of the lungs in a child which has breathed, will double that of the fœtus previous to respiration. In addition to this, they have an elastic feeling, and on cutting into them, there is a crepitus caused by the extrication of the air from the pulmonary cells. Beside the effects thus produced upon the lungs themselves by the admission of air into them, there are other changes effected in the neighbouring organs. The shape of the diaphragm is altered by the expansion of the lungs, pressing it down and diminishing its arch ; and from the same cause, the situation of the liver and stomach will be lower."

" *Of the floating of the lungs in water, as a test of previous vitality.*"— Dr. Beck first states the test and then considers the principal objections which may be brought against it.

" It is observed," says Dr. Beck, " that upon putting into water the lungs of a child which has never breathed, they will sink to the bottom ; but that if it has once respired, they will float. The reason of this is so obvious, that it needs no explanation. Now from these facts the general conclusion necessarily follows, that where the lungs of a child float in water, it must have respired, and therefore must have been born alive. And, on the other hand, when they are found to sink, it is an evidence that the child has not breathed, and therefore was not born alive. Such are the general propositions. Let us now see if it is safe to trust to them in all cases, by considering the different objections which have been urged against them.

" *Objection* 1. Dr. W. Hunter says, that ' a child will very commonly breathe as soon as its mouth is born, or protruded from its mother ; and in that case, may lose its life before its body be born, especially when there happens to be a considerable interval of time

between what we may call the birth of the child's head, and the protrusion of its body.'

"Morgagni and Haller appear to be of a similar opinion, and Mahon does not deny its possibility, although he considers its occurrence as not very probable. Hebenstreit, on the contrary, according to Mahon, boldly denies that it ever can take place. Notwithstanding this diversity of sentiment, the objection has obtained currency, and, therefore, deserves to be examined. It involves two cases: 1st. The mouth may be applied to the os externum, and respiration be effected without the delivery of any part of the body. 2d. The head may protrude while the rest of the body is detained, and in this position air may be inspired. In both these cases, the objection supposes that the child may die before it is delivered; and therefore, the evidence afforded by the floating of the lungs would be fallacious.

"With regard to the *first* of these, it may be remarked, that it is a case extremely improbable. The mouth may present in the manner just stated, but any efforts at breathing, so prematurely and unnaturally, must necessarily be very imperfect, and quite insufficient to dilate the lungs. Besides, if the child dies between the time of the presentation of the mouth, and the expulsion of the whole body, it must be caused by *natural debility*, or some accident during delivery, the most common of which is *pressure on the cord*, so as to interrupt the circulation. That the former cannot occasion it, is proved by the very fact of respiration having taken place; for the exercise of that function so prematurely, necessarily implies a degree of vitality and vigour inconsistent with the supposition of such original feebleness. Nor can *pressure on the cord* be the cause, for it is wholly immaterial whether the circulation in it be stopped or not, after respiration has commenced, as the fœtal circulation has then become unnecessary. The second case supposes the head of the child to be protruded while the body is detained, and in this situation, death to ensue after respiration has been effected. That a child may breathe in this position is granted; but is it likely that it will die under these circumstances? The remarks made before, on the child dying from debility, or from interrupted circulation in the cord, apply with equal, if not greater force, in the present instance, and they prove that the child cannot suffer from either of those causes. Besides, it is wholly incredible that the body should not shortly follow the protrusion of the head; because if that, being the largest part of the child, had once passed, the rest would present no obstacle to speedy delivery. But granting for a moment, that after the protrusion of the head, the body is retained by the firm contraction of the female organs around it, then it is wholly inconceivable how respiration should ever have taken place, for this very contraction would prevent that dilatation of the thorax which is necessary for the performance of that function. Practical writers remark, that there is no danger attending a child in this situation.

"*Objection* 2. The child may have been born dead, and yet the

lungs will float when put into water, either from artificial inflation or putrefaction.

"The facts here stated are true; but unless it can be proved, that there are no means of discriminating between the floating of the lungs as occasioned by these causes, and natural respiration, the objection cannot be admitted as of any weight. Let us examine each in order:

"*Artificial inflation of the lungs.*—It has been doubted by some, whether this could ever be effected. Heister states, that he proved, by actual experiments, that air blown into the lungs cannot dilate them. Hebenstreit and Roederer maintain the same doctrine. The majority of writers, however, assent to its possibility, and admit that the lungs will float in consequence of it; at any rate, there can be no question, but that a part of the lungs, at least, may be inflated artificially. And there are not wanting occasions when this might be attempted. It is not incredible that it might be the result of malice designed to injure the innocent mother, or of maternal tenderness endeavouring to resuscitate a lifeless child. It becomes, then, a question of great interest, to determine whether the existence of air in the lungs be the product of nature or of art. And it is fortunate for the cause of justice, as well as humanity, that this can be done. Buttner appears to have been the first who proposed a test for this purpose, both certain and obvious, founded upon the difference between the fœtal and adult circulation. In the former, it is well known, the blood does not pass through the lungs, whereas, as soon as respiration commences, the old passages are closed, and the whole mass is forced through those organs. If, therefore, a child has been born dead, the arteries and veins of the lungs are found destitute of blood, and in a collapsed state, notwithstanding any artificial inflation that may have been practised upon them. On the contrary, the vascular distention of the pulmonary organs, proves that the child has breathed, for nothing but natural respiration can produce this effect.

"Another method of determining this question, is by taking the absolute weight of the lungs, according to the test of M. Ploucquet, which shall be noticed more particularly hereafter.

"A third test for this purpose has been suggested by M. Marc. He considers that art can never completely inflate the lungs; and from the greater difficulty which attends the admission of air into the *left* lung, he is induced to believe, that the inferior extremity of that lung will remain in a collapsed state, and float but imperfectly, or not at all. The truth of this position, though extremely probable, does not appear to be supported by a sufficient number of experiments to allow its adoption as a general and infallible rule. With regard to the two first, they are founded on principles so just and immutable, and their practical application is so certain, that they appear to have removed all the doubt which previously existed.

"*The putrefaction of the lungs.*—It has been a question of much dispute, what the effects of putrefaction are upon lungs that have never respired: some asserting that it renders them specifically heavier than water, and consequently they will sink when thrown into that

fluid, while others, of equal respectability, maintain a contrary opinion. Both parties adduce experiments in proof of their particular doctrines. The only solution that can be given to these contradictory results, is by admitting that all the experiments have not been performed with sufficient care, so as to lead to conclusions uniformly just. Every thing depends upon the *manner* in which they are conducted. The most accurate experiments, I believe, were those performed by Mayer, as related by Mahon. From his observations it appears, that in the incipient stage of putrefaction, lungs that have never respired will float in water, whereas they will sink, if it has continued long enough to completely destroy their organization, and thus extricate all the air. These results have been corroborated by the observations and experiments of others, and their truth cannot be doubted. It seems singular, indeed, that they should ever have been questioned, when a case perfectly analogous is witnessed in every person that is drowned. The body at first sinks, afterwards rises to the surface, when putrefaction has generated air sufficient to render it specifically lighter than water, and finally descends again upon the extrication of that air.

"Such being the effect of putrefaction, it becomes a question of consequence, to determine in what way we can distinguish between the floating of the lungs as caused by natural respiration, and that which is the consequence of decomposition. Haller directs, that in a doubtful case of this kind, the other viscera of the body should be put into water as well as the lungs, and if they also float, it is a proof of putrefaction. 'Id si viderit, non aer in pulmonem per respirationem receptus causa erit natandi, sed aer ex humoribus carnibusque per communem legem putredinis expeditus.'

"This rule is not strictly correct, for it is found that the lungs, from the peculiarity of their constitution, resist putrefaction much longer than other parts of the body. Faissole and Champeau, in experiments which they made on drowned persons, observed that the lungs remained sound after the whole body had become putrified, and Mahon noticed the same fact in his dissections of dead bodies.

"Dr. William Hunter lays down the following rule, which appears to be founded in truth, and accordingly it has been adopted by Foderé, Marc, and other writers. 'If the air which is in the lungs be that of respiration, the air bubbles will hardly be visible to the naked eye; but if the air bubbles be large, or if they run in lines along the fissures, between the component lobuli of the lungs, the air is certainly emphysematous, and not air which had been taken in by breathing.'

"Two facts, then, appear to be evident, viz. that the lungs are less in danger of putrefaction than any other organ in the human system, except the bones, and therefore, that it is perfectly safe to make experiments upon them, even after decomposition has commenced in other parts of the body; and that when putrefaction has attacked them, it is possible to distinguish its effects from those of respiration.

"But suppose the lungs are found to be actually in a state of pu-

trefaction, is the physician then justified in drawing any conclusions, or in giving any opinion ? Mahon directs in such a case, that it is better for the medical witness to be silent, and to leave to the magistrates the task of finding out other grounds of accusation. Marc, however, a writer who throws light upon every subject that he touches, answers this question in the affirmative, and proposes two characteristics to enable him to make a positive decision. The *first* is, that lungs which have respired, notwithstanding they have been attacked by putrefaction, always have a crepitus when cut into ; whereas those which have never respired, although they float in water, are destitute of this peculiarity. The *second*, and which he considers the most decisive and certain, is this ; that upon squeezing out from a section of the lungs the matter developed by putrefaction, they will sink if they are from a child born dead ; but on the contrary, if they are the lungs of a child born alive, they will, notwithstanding, continue to float.

" *Objection* 3. The child may have breathed, and yet the lungs in some cases sink, as when affected by certain diseases which shall increase their specific gravity, or when the respiration has been so imperfect, as not to dilate them sufficiently to cause them to float in water.

" The first part of this objection has been deduced principally from analogy. It has been observed, that various morbid affections of the pulmonary organs of adults, as calculi, schirri, peripneumony, hydrothorax, ulcers, &c. will cause their subsidence in water ; and hence it has been inferred, that the same might take place in the fœtus. It cannot be admitted, however, that these morbid conditions will frequently occur in the fœtus, for it is not exposed to the influence of the causes which usually produce them. Haller, notwithstanding his great experience and extensive learning, relates no instance of it, and expressly asserts, that they are very rarely found in the fœtal state. ' In adulto homine aliquando, in fœtu rarissime, ut pulmo calculis, schirris, aliave materie morbose gravis in aqua subsideat, etsi quam respiraverit.' Brendelius, in speaking on this subject, relates only a single case of an abortive fœtus which had schirrous lungs, and considers it a singular occurrence. It appears, then, as well from reason as from facts, that the objection is founded upon the existence of circumstances barely possible, and by no means probable. As such, however, it demands consideration ; and it is necessary to suggest the means by which a false judgment may be prevented.

" To any one who has been accustomed to the examination of the human body in its different states of health and disease, it cannot be very difficult to decide whether the lungs are in a sound or morbid condition. It would appear, therefore, at first view, that in such cases no difficulties could occur, which a sound judgment, aided by anatomical knowledge, could not remove. But admitting that these are not always sufficient, there is still a resort left in the very test against which this objection is adduced. The objection takes it for granted that the child has breathed ; whether feebly or vigorously

is a matter of no consequence. Some part, therefore, of the lungs must contain air, and although the quantity of it may be too small to cause the whole organ to float, yet if it be divided into a number of pieces, and any one of them remain on the surface, there cannot be a moment's hesitation about the conclusion to be drawn. Foderé states, that he frequently made experiments upon lungs that were schirrous, or had congestions of blood, and he uniformly found, that although they sunk when put into water entire, yet when cut into pieces, some of them always floated.

"With regard to the second part of the objection, it is admitted, that the child when born may be so feeble, as only to be able to inhale a small quantity of air, and therefore that the whole lung will not float in water. Heister, indeed, relates the case of a very feeble infant, whose lungs sunk in water, though it lived nine hours after birth.

"The same method must here be adopted, as in cases where the lungs are diseased; they must be cut into several parts, and experiments must be instituted upon each. However imperfect the inspiration has been, some portion must be inflated, and therefore will float.

"*Objection* 4. Granting that the floating of the lungs is an evidence that the child has respired, their sinking by no means proves that the child was born dead.

"This proposition is undoubtedly true. But does it constitute a solid objection? It is well known that children may be born alive without breathing. The causes which occasion this may be divided into three classes: 1st. Those which depend upon some malformation of the thorax or abdomen, which prevents respiration. 2d. Mechanical obstructions, as mucus in the trachea, doubling back of the tongue, &c. 3d. Causes connected with delivery, as long detention in the pelvis, compression of the cord, or the head of the child being covered with the membranes. Now, in most of these cases it is obvious, that the cause of death may be detected by a careful examination of the body. But even where this cannot be done, are we not justifiable in considering as dead, every child that has not breathed? Governed by such a rule, any error that might be committed would always be on the side of mercy. It is true, that certainty is as desirable here, as in any other case; for the destruction of a feeble child is a crime as enormous as that of a vigorous and healthy one, and the punishment of the murderer of the one, is eqaully an object of public concern, with that of the other. But in the language of a distinguished writer on this subject, 'pour le punir, il faut le constater; et lorsque les limites de l'art nous refusent le degré de certitude que nous ambitionnons, la clémence, que dis-je, la crainte d'immoler l'innocence devra l'emporter sur toute autre consideration.'

"This objection, so far from showing the inconclusiveness of this test, serves only to establish more clearly its absolute necessity. It is by resorting to it alone, that the sacrifice of innocence can be prevented; for who would assume the responsibility of deciding

that a child had been born alive, when this evidence of vitality was absent ?

" If the writer has been fortunate enough to obviate the difficulties which have been raised against the test, which has just been considered, then it may be esteemed as settled, that this method of judging whether a child has been born alive or not, is not merely unattended with danger, but is founded on principles as favourable to humanity, as they are to rigid justice. It cannot, however, be otherwise than plain, that a conclusion ought never to be drawn from a superficial inspection of the lungs. The reputation of the professional witness, as well as the fate of the accused, are too deeply interested to admit of this. It may, therefore, be proper to present a summary of practical rules, for the guidance of the physician when called to the examination of a case, which, of all others, demands a combination of the exercise of the soundest judgment, and the most profound knowledge.

" 1. After having examined the general shape of the thorax, and noticed the position and colour of the lungs in its cavity, they should be taken out, together with the heart. They should then be subjected to a careful inspection, to determine if they are sound or diseased, and if they are at all affected by putrefaction.

" 2. Particular attention should be paid to the temperature of the water, in which the lungs are to be immersed. The reason of this is obvious, when it is recollected, that the specific gravity of water varies with its temperature ; thus, for instance, water at 100°, is lighter than water at 60°, and still lighter than at 40°. Besides, if the water be too hot, it will have the effect of expanding the lungs, and thus favour their floating, especially when there already exists a slight tendency to putrefaction. If, on the contrary, its temperature be too low, the air cells will be contracted, and much of the air will be thus expelled. The temperature of the water, should, therefore, be regulated by that of the surrounding air. Another precaution relative to the water is, that it should not be impregnated with *salt ;* for in consequence of the greater specific gravity of saline water, a body might float in it which would sink in fresh water. 3. The lungs, together with the heart, should then be placed in the water, and if they both float, it is a proof of complete and effectual respiration. 4. If the lungs sink with the heart, or if the floating is only partial, it is then proper to separate them, and repeat the experiment upon the lungs alone ; observing whether the whole float, or if they sink, whether any part shows a tendency to float; if so, 5. The two lobes should then be separated, and the experiment repeated upon each, noticing the difference, if any, between them. If only one floats, see if it is the *right* one. 6. If both lobes sink, or float but imperfectly, they should be cut into a number of pieces, taking care not to confound the fragments of one lobe with those of the other ; and upon each of these the same experiment should be instituted. 7. While cutting the lungs, it should be marked if there be any crepitation ; if the vessels are charged with blood ; and if there be any traces of disease.

"After having performed these different processes, the conclusions to be drawn from them are evident. If the entire lungs, as well as all the divisions, remain on the surface of the fluid, it is a proof that the infant enjoyed perfect respiration; if only the right lung or its pieces float, the respiration must have been less perfect; if some pieces only float, whilst the greater number sink, it proves that the child lived with pain, or that its lungs were diseased, or that the partial floating was owing to artificial inflation; if all the pieces sink, the inference is decisive, that the child never respired.

"Having thus noticed, at sufficient length, the various circumstances relating to the floating of the lungs, I shall next consider,

"*The test of M. Ploucquet, founded on the absolute weight of the lungs.*—From the peculiarity of the vascular system in the fœtus, only a very small portion of the blood goes the round of the pulmonary circulation. As soon as respiration commences, a change is effected, and the whole mass of the blood passes through the lungs, in order to undergo the necessary process of oxygenation. From this it appears that the fœtal lungs must be considerably inferior in weight to the same organs after respiration has been established. It is upon this fact that M. Ploucquet founded his celebrated test for determining whether a child had been born *dead* or *alive*, by comparing the weight of the lungs with the weight of the whole body. From the experiments which he made to ascertain their proportional gravity, he drew the general conclusion, that the weight of the lungs previously to respiration, is one seventieth of the weight of the whole body, whilst after that process, it amounts to one thirty-fifth; or, in other words, that the blood introduced into the lungs in consequence of respiration, doubles their absolute weight."

Before I dismiss this subject, I cannot but declare my belief in the opinion of Dr. Hunter of the practicability of the child respiring before delivery, after the rupture of the membranes, and the escape of the liquor amnii, while its mouth presents at the dilated orifice of the uterus; and yet that it may lose life before its entire exit from the womb. See Schmittd, in Dictionnaire des Sciences Medicales, tom. x. I am aware that the reasoning of Dr. Beck is supported by high authority, and that he might have still further strengthened his views by other names.

At a trial of two young women for child murder, at the Warwick assizes, England, which took place some few years ago, their defence, which proved successful, rested upon the principle that the human fœtus may respire as soon as the head is expelled in delivery. The medical witness expressed himself most anxious that "the minds of the jury should be duly impressed with the important truth, that a child may breathe and even cry audibly as soon as the head is delivered, and yet subsequently perish before the whole body is expelled." See London Medical Repository, vol. xi.

In further corroboration of the opinions of Dr. Beck, concerning the putrefaction of the lungs, the following quotation is taken from Camper: "In order to ascertain to what degree purtefaction would advance in an infant before its lungs would float in water, I

made different experiments at Amsterdam on this subject; and I have found that in those who had died before birth, the head may be so far decomposed by putrefaction, that the slightest force was sufficient to detach the bones from each other, as well as those of the arms and legs, before the lungs, which now began to participate in the putrefaction, would float in water." See also Hutchinson on Infanticide.

Ploucquet's test, depending upon the absolute weight of the lungs, is liable, I think, to several obvious and powerful objections. F.]

CHAPTER X.

CLASS SECOND.

SECTION I.

ON DIFFICULT LABOURS.

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. 1. sect. 5. and chap. 4. 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 distention. 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 distention 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 distention 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 distention; 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 distention, 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 farther 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 toward 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 irregula-

rities 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 reasons, 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 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

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* 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 provisions; 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.

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. 1. 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:

1st. All viviparous animals bring forth their young with pain.

2d. The degree of pain which they suffer, will depend upon

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* I think the late John Hunter informed me that one of the old lions in the Tower had the osteosarcosis.

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 object.

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 weak-

ness 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 judgment 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 no 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.*

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* 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.—Roderic. 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—Reverii 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 ac-

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* 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. Desaguliers' Preface.*

quiring, 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 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 principal 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,

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* [The reader will find many valuable observations and practical suggestions on difficult labour in a late publication by Dr. Dewees, of Philadelphia, entitled an Essay on the Means of lessening Pain, and facilitating certain cases of Difficult Parturition. Second edition. Philadelphia, 1819. F.]

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 distention 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 utero-gestation, and is immediately succeeded by another directly contrary, that of expulsion. (See chap. 5. 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 distention 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 distention, 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 shown, 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 distention 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

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* Clysteres injiciantur, quorum irritatione expultrix uteri facultas excitatur, et depleta intestina ampliorem locum utero relinquant.—*Riverii Prax. Medic. De Partu. Difficilis.*

† [Much has been written in favour of the efficacious powers of the ergot or spurred rye; and after a proper dilatation of the os uteri, it doubtless may occasionally be given with advantage. It is a vigorous remedy, and requires to be administered with much caution, and with great regard to circumstances. Lately I saw the child destroyed by its premature and injudicious employment. Its dose is fifteen or twenty grains, in powder, mixed with syrup, or given in infusion: sometimes it may be repeated after an interval of twenty minutes. We are indebted to Dr. Stearns, for the introduction of this potent article into the American materia medica. F.]

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 women 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.*

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* [Opium given in the small quantity recommended by our author, will prove of little service. After venesection, if it be indicated, the irritations of the system may be calmed by a dose of sixty or eighty drops of laudanum: when the parturient efforts of the patient return,

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 *sillyhow*. 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

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they will come on with greater regularity and efficacy; sometimes opiates immediately expedite the labour. I see no substantial reason for concurring in the popular opinion, that opium is detrimental to the fœtus in utero. F.]

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 membrane, 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 toward 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 sa-

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* Nocet obstetricis digitus ano immissus, item nimia festinatio.—*Ruysch.*

tisfaction 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 distention 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 naval-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 sud-

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* See Chapman—p. 63. and 85.

den 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 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

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* [We are not to conclude that the retraction of the head is always caused by the shortness of the funis. How is the accoucheur to reach the chord, when the head only of the child has protruded beyond the os externum? When the shortness of the funis is the cause of protracted labour, by changing the position of the patient, we may often expedite the delivery. F.]

† [The mere death of the child neither protracts nor facilitates labour; by putrefaction and distention its delivery may be retarded. F.]

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, however, 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 sus-

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* 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 child-bed. On this subject we shall speak again in the chapter on the puerperal fever.

[Observations of a similar kind have been made by several writers of other epidemical or malignant diseases. Dr. Rush, in his account of the yellow fever of Philadelphia in 1793, states that, "pregnancy seemed to expose women to it." F.]

pended 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 circumstanees 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.

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

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* 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.

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. xi.;) 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 judgment, 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 reaction, 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 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 toward 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 necesssity 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

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* [Frequently called the *false* waters. F.]

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 labonr, 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 backward, 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 toward 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 scissars, 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 pe-

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* [This situation of the os uteri is not so very rare an occurrence, especially in women with wide pelves. There may be a lateral obliquity of the uterus, however, and the os uteri may be situated in the hollow of either ileum without being within reach. This happened in an instance of protracted labour of late occurrence. After the labour had continued some time, attempts were made to ascertain the state of the os uteri: by the ordinary mode of examination it could not be reached; at length, by introducing the hand into the vagina, the mouth of the uterus was found in the hollow of the left ileum: the membranes were ruptured and the child turned and delivered by the feet. F.]

riod 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 reaction 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 re-

moved, 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

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* Os uteri aliquando prolabitur.—*Ruysch*, Obs. Anatom. XXV.

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 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, farther 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 circumstaces 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

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* [It would be superfluous to say any thing in recommendation of bloodletting, in the various species of rigidities noticed by our author. The practice is now generally pursued by American physicians, with a result amply justifying its still more extensive adoption. F.]

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 woman 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 1. 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 constitution, 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 judgment 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 ;* 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

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* Partus difficilis a tumoribus, è capitibus fœtuum dependentibus. —*Ruysch.* Obs. Anatom. LII.

the child, or of producing a child with a reasonable chance of living. The delay recommended is not intended, therefore, to go farther 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 toward 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 toward the pubes: the second, when the face is turned toward 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 toward 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 toward 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 exigencies 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 distention of the external parts, because the hindhead 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 toward 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 ob-

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* See Transactions, Medical and Chirurgical, Vol. ii. in which there is a paper on this subject by Dr. *J. Clark*.

servation 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 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 judgment 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 fomen-

tations 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 farther 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

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* See Chapman, page 143.; see also Medical Observations and Inquiries, vol. iv.

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 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 distention 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 toward 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 distention 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 distention of the bladder, if this were to remain many hours after delivery.

6. *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 occasioning 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 parent'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 and 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 distention 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 may 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 cervex 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 reunion 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.*

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* [Tumours within the pelvis, obstructing delivery, or rendering it impossible, have recently been noticed by several writers. The most able and satisfactory account we have, is that by Dr. Merriman, in the Transactions of the Medical and Chirurgical Society of London, Vol. X. From Dr. Merriman's enumeration of cases of this nature, it appears, that in eighteen instances of tumours in the pelvis, (comprehending thirty-eight lives,) of the women, six recovered perfectly, three imperfectly, and nine died. Of the children, two were born alive, one was born alive but incapable of living; fifteen were dead, and two were uncertain, of which probably one was alive and the other not. So that the lives actually preserved amounted to twelve, and of those not preserved, to twenty six.

In August, 1820, I was called in consultation with my friend, Dr. Dyckman, to visit a patient, aged twenty-eight years, who was represented to have been in labour nearly thirty hours. On examination we found a tumour almost of the size of a child's head, tense, and somewhat elastic, situated about an inch and a half high, between the vagina and the sacrum, but rather inclined to the right side of the pelvis. Not being able to determine its nature, and finding that it so intrenched upon the capacity of the pelvis, that the mother could not be successfully delivered, after several ineffectual efforts to displace it, by making pressure on it, and thus enlarge the aperture of the pelvis, an anodyne was administered to

7. *Enlargement of the Ovaria.*

Diseases of the ovaria, both of the schirrous 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

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quiet the irritations of the patient, and to suspend the labour pains. In the mean while it was agreed upon to see her within a few hours. An operation was now declared to be her only chance of relief. The tumour could be easily felt compressing the rectum, and greatly lessening the direct diameter of the pelvis. The tumour was punctured, but no discharge followed: the tumour was then broken down and mostly removed. The head of the child could now be readily felt, the os uteri was fully dilated; the membranes had been ruptured and the waters discharged. The head of the child, however, made but a slight descent, and the natural efforts of the mother proving of no advantage, on account of her great weakness, the child was delivered by the crotchet, as no other means could be devised. The remains of the tumour were discharged by suppuration, and the woman recovered after sixteen weeks confinement.

She has since proved pregnant. She had been the mother of two living children, previously to her unfortunate illness. F.]

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 distention, 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 distention; 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 distention; 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 something 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 beside 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 afterwards 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.*

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* [It is probable that rupture of the uterus is rarely occasioned by any peculiar disease of the organ itself, as in the recorded cases no previous symptoms appear during pregnancy from which we might apprehend the liability to such accident: it generally happens most unexpectedly. A case of rupture of the uterus in the sixth month of pregnancy, is given in the London Medical Repository, vol. 7; and Professor James has published in the New-York Medical Repository, an interesting case of a woman to whom this misfortune occurred, when there was the immediate prospect of a happy delivery: she had been the mother of several children. In a case which took place in this city several years ago, at the examination of which I was present, the accoucheur, a man of much experience, declared the patient to be doing well, half an hour before the fatal event.

Although the prognosis is sufficiently discouraging, we are not to despair, in every instance, of the ultimate safety of the patient. This opinion is supported by undoubted evidence.

Upon the whole, we may safely conclude (to use the language of Dr. James) "although a rupture of the uterus is not necessarily and inevitably fatal, though generally so, it is the most correct practice, where we are convinced that it has taken place, to proceed immediately either to the extraction of the child by the forceps, where the head is within their proper grasp, and nothing forbids; or to introduce the hand, turn the child, and deliver by the feet." If some time shall have elapsed after the rupture has occurred, the state of the womb may require the operation of gastrotomy.

In a volume of Practical Observations on Midwifery, by Dr. Ramsbotham, just published, I find recorded a case of rupture of the uterus, about the fourth month of pregnancy. Upon inspection, the uterus was found to be ruptured on its left side, and the ovum had escaped in its membranes entire into the cavity of the abdomen. Dr. R. has also given a case in which death was occasioned by a

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

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rupture of the peritoneal coat of the uterus. The rent extended several inches in length on its back surface, reaching nearly to the insertion of the left broad ligament, in which the fleshy structure of the uterus did not seem to be implicated. See also Dr. Coffin's cases in the New-England Journal, vol. 3. and Dr. M. Anthony's, in the Eclectic Repertory, vol. 4. In this last, a schirrous condition of a portion of the uterus was perceived. F.]

may be properly used for the removal of difficulties procee ling from several different causes.

But beside 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 judgment 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. Whatever 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 judgment 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 affec-

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* De la part de la mère c'est quelquefois sa mauvaise humeur, son impatience, son indocilité, la violence et l'irrégularité des mouvements.

Puy, la Pratique des Accouchements.—Livre II. Chap. 1.

tion 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 behooves 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 judgment 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 judgment 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.

SECTION I.

ON THE FILLET, FORCEPS, AND VECTIS.

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

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* 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.

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 extracting, 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 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 ex-

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Constitit ad ramos mitis Lucini dolentes;
Admovitque manus; et verba puerpera dixit,
Reddit onus; vagitque puer, quem mollibus herbis
Naiadis impositum, lachrymis unxîre parentis.

Metamorphos. Lib. x. Fab. x.

* 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.

tracted through a wound made into the part which contained it, and the manner of performing the Cesarean 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 proposal 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, 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 judgment of the contriver.

The manner of applying the fillet was, by conducting it with the finger, or an instrument contrived for the purpose, to some fixed point, as the chin, or round the circumference of the 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 judgment 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.

Beside 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, and 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 toward 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 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

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* [Haighton's forceps is the best and most popular form of this instrument now in use in this country. F.]

† 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 manum subsidio extrahere ipsos liceat.—Heister. Capt. Liij. ix. and many other writers.

us may recollect, the instances of presumption in those who by experience 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 behooveth 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 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 improper 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 toward 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

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* [I am aware how earnestly this rule is inculcated, yet must confess I cannot see the propriety of its universal application, independent of convulsions or hemorrhage. In some instances, we are justified in waiting longer than six hours; and in others it would be criminal to delay so long. F.]

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 one 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 judgment; 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 forefinger 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 farther 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 toward 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 toward 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 perinæum, 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 toward 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, increasitg 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 toward 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 toward 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 toward 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 toward 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, toward 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 toward 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 toward 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 toward 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 distention, 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 judgment, 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

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* [The original obstetrical instruments of the Chamberlens have lately been discovered, and are now deposited in the cabinet of the Medico-Chirurgical Society of London. Mr. Cansardine has amply described them in the ninth volume of the Medico-Chirurgical Transactions. F.]

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 vectis 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 midwifery, 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

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* 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.

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 kind 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 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 many 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 toward 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 forward 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, that 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 toward 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 in-

strument 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 judgment 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 farther 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.

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* [I cannot yield the superiority claimed by Dr. Denman, for the vectis over the forceps, but have only room here to refer the reader to the triumphant arguments of Dr. Osborn in favour of the latter. See his Essays on the Practice of Midwifery in Natural and Difficult Labours. London, 8vo. 1792. F.]

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 forward 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 judgment, 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 toward 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 toward 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 farther occasion to act with the instrument; or, if farther action be required, it must be extremely gentle, taking all possible care, by turning the handle toward 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 will 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 toward 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 farther on all that has been unadvisedly objected against, or advanced for, the use of the vectis, under various circumstances.*

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* See a full and accurate history of the Vectis, in Observations on Human and Comparative Parturition, by R. Bland, M. D. A. S. S.

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.

The 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 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.

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* 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.

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 judgment 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 exigencies 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 toward 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 instances 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 to 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.

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* See Dr. Osborn's Essay on Laborious Parturition.

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 inquire at the same time how far each of them 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

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* 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.

‡ Quæ corrupturæ sunt fœtus, iis mammæ extenuantur.—Gal. in Aphorism. Hippocrat.

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 judgment 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 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 judgment of the attendant was guided by this circumstance. Every allowance must be made, and every consideration had for human nature, humbled by infirmities and misery; and 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 judgment; but our greatest tenderness, and the propriety of our conduct, will be shown, not by a compliance with requests and solicitations, but by following the dictates of our own reason and judgment; for we are not to be governed or alarmed by unfounded apprehensions of danger, but by its actual existence.

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, presenting 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 judgment assisted, by what is called the tactus eruditus, or that faculty which enables us to perceive and discriminate by the touch, with greater accuracy than by any evident or describable marks. It has also been said, that 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 connection 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. Probably I may have before observed, that whenever children die in the uterus, the greater the degree of putrefaction in which they are expelled, according to the time during which they have been dead, the more favourable is the indication to the mother; showing, I suppose, that the health and vigour of her constitution in general, and of the uterus in particular, are not impaired. But if a child should remain dead in the uterus for any length of time, without becoming putrid, this circumstance might be considered as a proof that the powers of action in the mother were reduced to a state of dangerous weakness; as 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 still-born 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 communication 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 judgment or skill can do more than teach us to wait patiently for the effect to be derived from the efforts of the mother, and the accommodating construction of the head of the child. Though the degree of compression which 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 toward 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 judgment, but cannot properly be considered as the objects of art. Yet when the causes of difficulty are proved to be beyond the efforts of nature to accomplish, the assistance of art becomes justifiable because it is necessary, and we may be reconciled to the fate of the child, if the life of the mother cannot possibly be preserved by any means consistent with its safety. But we are to

be convinced of this necessity by the most substantial proofs, before we presume to decide upon an action so important both in a moral and scientific view.

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; extracting the head; and three instruments have been commonly used for these purposes. The first was the scissars 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 scissars, the blade being slightly curved in the manner of the scissars 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 judgment, 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 introduced 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 toward 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 forward, 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 he 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 various 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 couduct 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, 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

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* 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, 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.

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 judgment 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 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.

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* Essay on Laborious Parturition, by Wm. Osborn, M. D.

† [The delaying all attempts to extract the child till the head has been opened at least thirty hours, which is inculcated by Dr. Osborn as a rule of practice, must, at times, expose the mother to great danger, and does not seem justifiable. F.]

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 farther 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 head 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 toward 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. Beside 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 off 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 advantage 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 attenpt 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 judgment 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 vii. 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.*

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* [Not the least doubt can reasonably exist as to the propriety of inducing, in certain cases, premature labour, as a means of preventing the necessity of employing the perforator. The success of the practice has been, in this country, as well as abroad, confirmed in many instances; yet the popular feeling respecting it, will lead the practitioner, before having recourse to the measure, to strengthen his individual opinion, by that of some other experienced accoucheur, where it can conveniently be attained. Dr. James has furnished us with a valuable paper on this subject, in the first volume of the Eclectic Repertory; and in a communication published in the third volume of the Medico-Chirurgical Transactions of London, Dr. Merriman has laid down certain rules and cautions in adopting the practice that deserve to be extensively known. I shall here insert them:

1st. As the primary object is to preserve the life of the child, the operation should never be undertaken till *seven complete months* of utero-gestation have elapsed; and if the pelvis of the mother be not too much contracted to allow of it, the delay of another fortnight will give a greater chance to the child of surviving the birth. 2d. Thepractice should never be adopted, *till experience has decidedly*

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 symphisis 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

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proved, that the mother is incapable of bearing a full-grown fœtus alive. 3d. It is sometimes necessary to have recourse to the perforator in first labours, though there may be no considerable distortion of the pelvis; therefore, the use of this instrument in a former labour, is not *alone* to be considered as a justification of the practice. 4th. The operation ought not to be performed when the patient is labouring under any dangerous disease. 5th. If, upon examination, before the operation is performed, it should be discovered that the presentation is preternatural, it might be advisable to defer it for a few days, as it is possible that a spontaneous alteration of the child's position may take place; particularly if the presentation be of the superior extremities. 6th. The utmost care should be taken to guard against an attack of shivering and fever, which seems to be no unusual consequence of this attempt to induce uterine action, and has often proved destructive to the child, as well as alarming with regard to the mother. The peculiar circumstances under which the operation is performed, and the habit of body of the patient, will determine the accoucheur either to adopt a strictly antiphlogistic plan, or to exhibit opiates or antispasmodics and tonics. 7th. In order to give every possible chance for preserving the life of the child, it will be prudent to have a wet nurse in readiness, that the child may have a plentiful supply of breast-milk, from the very hour of its birth. Lastly, *a regard to his own character should determine the accoucheur, not to perform this operation unless some other respectable practitioner has seen the patient, and has acknowledged the operation as advisable.* F.]

year 1777, M. Sigault, a surgeon at Paris, first performed this operation on the human subject, in the time of labour, the patient recovering, and the life of the child being preserved; though it is not clear from the context, that the operation was, in that case, absolutely necessary. Some credit might have been due to M. Sigault for the spirit of enterprise which suggested the operation, and for his resolution in performing it; but the applause given to him by many of the faculty at Paris, (though, if I mistake not, the Royal Academy refused to give any testimony of their approbation,) and by the nation at large, was beyond all measure extravagant; a medal was struck 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 hastily 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 symphisis, 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 extractiug a child therein contained. In cases of extra-uterine 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 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,

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* Auspicatiùs, enecta 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.

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 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.

Parè 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 judgment of the general benefits to be derived from the operation, as well as the manner in which it ought to be performed, and of its constant or probable consequences.

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

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* See Rapin, Vol. viii. p. 17. and the note annexed to it. Also the preface to this Introduction.

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.*

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* See Bonet. Sepulch. Anatom.

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 eligibility, and therefore wished to abolish it altogether,

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* [Many cases are mentioned, more particularly by writers on medical jurisprudence, in which, after the death of the mother, the child has been extracted alive by hysterotomy, and has survived. Mullerus published a dissertation on this extraordinary circumstance, entitled *De Partu Hominis post Mortem Matris*, in which he gave an account of several instances of this kind. F.]

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, hemorrhages, 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 sub-

ject. 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 through 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 judgment, 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 judgment 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 to any particular case. Beside 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 circumstanced, 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 inflam-

mation, 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 always a probable chance of saving the life of a child. But as such an escape may happen in any case, in which the operation might be performed, we may and ought to esteem every case which can come before us, as the individual case in which a happy event is to be expected. These conclusions will lead us to the principle of necessity as the sole justification of this operation, and 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 judgment and skill for the service of the patient, as if we were certain she would survive. This operation can seldom be required, and will of course never be performed on the opinion or judgment of any one person, unless in some case of great and urgent necessity; 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 ever had 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.*

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* It is remarkable that the oldest physician or surgeon in London could not recollect a case of this operation, or had heard it spoken

"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. John Hunter was so obliging as to assist me in retaining them within the belly, whilst I cleansed away the grumous blood

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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 more 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.

(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.*

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* A uniform fatality, with a solitary exception, seems to have marked every attempt at the Cesarean operation hitherto made in Great Britain; and the pride of English surgery has yielded a silent deference to the success of the operation in the hands of their continental rivals. Of nearly thirty cases in England, one only proved fortunate; while, on the continent, out of two hundred and thirty cases, according to Baudelocque, one hundred and thirty-nine women recovered. The too great exhaustion of the constitutional powers of the mother arising from the late period at which the operation has been determined upon, may be assigned as among the causes of its unfavourable termination in Great Britain. In the case last performed in England, and published by Mr. Wood in the Medico-Chirurgical Transactions of London, the patient died of extensive peritoneal inflammation, the rapidity of which termination was hastened by the injury the external organs had received in frequent and imprudent examination, and this in a debilitated system labouring under malacosteon.

Very recently a most instructive history of a case has been communicated to the public by Dr. Albers: the operation was performed by Dr. Locher of Zurich, Switzerland, and the lives both of mother and child were preserved. I shall present an abstract of the account: The patient was a small woman, who, in early life, had been afflicted by rickets to a very great degree, and had attained the age of eight years before she could stand without assistance. It was very evident she was unable to bring forth a child. After she had been in labour many hours, the application of the forceps had been made in vain; this and other circumstances led to a consultation on two indications, viz. the perforation and the cutting of the child, particularly as its head presented itself; or, secondly, the Cesarean operation.

"There was, against the former indication," says Dr. Locher, (Medico-Chirurgical Transactions, vol. 9.) "the very probable impossibility of introducing the instruments requisite for the perforation; the unavoidable lesion of the parts adjacent, if the introduction were found practicable; and particularly the assertion of the mo-

ther, that still she felt the motion and quickness of the child, which likewise was distinctly perceptible to our hands, when laid on the mother's body. We, therefore, determined on the second, under the conviction, that by it the life of *one* at least might be saved.

"The nearest relations who were present, were apprized of the determination, and, with their approbation, the woman in labour likewise informed of it. After a few objections, she also soon came to a determination, and we prepared our apparatus, and every thing that was necessary. After the injection of a glyster there followed stools and urine.

"At five o'clock in the evening the operation was performed in the presence of several professional gentlemen, and in the manner following. I caused the patient to be placed in the position usual in herniotomy, in which the weight of the abdomen presses more against the diaphragm, and ordered her to be properly secured.

"Having performed before a similar operation, I was induced to make the incision immediately upon the linea alba, as not a single blood-vessel of any importance had been injured on that occasion. Immediately beneath the navel, the skin was pinched up into a fold, both it and the adipose membrane cut through, and the cut continued downwards to the length of from eight to ten inches. The sphere of the uterus, now appearing, extended the fat edges of the incision, so that there appeared a considerable vaulted surface of the womb. There protruded also a portion of small intestine, which, however, was easily kept back by means of linen anointed with fat. In order not to cut through the uterus exactly in a place where the placenta might accidentally be situated, and thus excite a violent bleeding, I chose a somewhat uneven part of its surface, and there made a little incision, so that I could introduce the index of the left hand, to serve as a guide for the progress of the knife. The uterus was then cut open from six to eight inches along the finger. Immediately the child presented itself, together with its membranes, yet without any water. The hemorrhage till then was a mere nothing. The nearest part of the child was an arm. This, as there was room enough, was disengaged first from the uterus, and after it carefully one part of the child after the other in succession, and, last of all, the head. Already, before the head was freed from the womb, the infant moved its limbs, and on the development of the head, to the greatest joy of the mother and all the attendants, it proved its life by loud cries, so that not the least thing was required to remove the asphyxia of the infant. The funiculus umbilicalis was severed, and the child entrusted to the waiting woman to be cleansed. In the right side of the womb was found the placenta, which, lying almost quite free, was now taken away. At this period a violent bleeding arose from the bottom of the uterus. The ligature of a blood-vessel, or any other styptical application, was not to be thought of under these circumstances; but the blood was quickly absorbed from the uterus by means of a sponge, in order to leave the organ to its own contraction, and to close the wound of the integuments. To this I was the more induced, as a couple of years previously, on dissection, I had

found in a person, who died eight days after the operation, the uterus quite contracted, and the labia of the wound in the same almost entirely united. I, therefore, joined the external teguments with five sutures, covered the wound with lint, and applied some adhesive plasters, confining the whole with a couple of compresses and a broad bandage.

" The mother was now transferred to her bed. Neither fainting, nor any other accident, befel her. On the contrary, her joy and eagerness at seeing her child, and having it by her, were so powerful, that even whilst dressing the wounds we had much trouble to keep her easy. She now was presented with some good broth, which she ate with great appetite, and the greatest tranquillity was enjoined her. An emulsion with laud. liquid. Syd. and Tinct. Cinnam. was then prescribed for her.

" At ten o'clock in the evening I again paid the patient a visit. She found herself quite tranquil, and complained of nothing but a burning in the wound. During the night, she enjoyed, at intervals, quiet sleep, which had often been interrupted by the cries of the child, for which reason it was removed to another room. The blood began to flow from the vagina. The urine passed in the natural way. In the morning she took her coffee. The belly appeared considerably protuberant and tense, but not very painful to the touch. The superior part of the dressing, which was soaked with a serous fluid, was removed, and a new one very loosely applied ; the internal remedies were continued, externally a friction of ol. anod. with hyosciamus and laudanum applied, and emollient clysters administered. The second day passed well, and without any material complaints, and also the third. The lochia flowed in due order, the belly grew softer ; yet, in spite of repeated clysters, no stool ensued. The tongue became foul, for which reason, besides the former emulsion, a decoction of tamarinds with salts and manna was given. On account of the exuberant evacuation of serum, and the appearance of suppuration with smell, the external dressing was daily renewed ; as for the rest, the real dressing was kept on. In the night, between the third and fourth day, abundance of flatulencies were developed, followed toward the morning by a stool. The belly was soft, the patient, upon the whole, well, quiet, and without fever. On the right side of the belly appeared the greatest tension, and the greatest pain was felt. Every thing was continued as before.

" On the fourth in the morning, she found herself very well. From the very moment of the operation till now, partly for the sake of observation, partly in case of any immediate help being requisite, one of my assistants had remained with her. Toward noon I was sent for, and requested to repair as quickly as possible to the patient, who was apparently dying. The better I had left the patient in the morning, the more unexpected and strange was this message to me.

" On my arrival, I, indeed, found the patient in a very indifferent situation. She experienced violent convulsive spasms, particularly in her head. She had a staring look, cold extremities, cold sweat on her brow ; the urine had been discharged involuntarily. She recollected nobody, could neither speak nor swallow : her breath was

much oppressed, the pulse low and contracted; her complexion saturine; yet the abdomen was not much collapsed, which must have been the case had gangrene existed. None of the persons present were aware of the cause, that in such a promising prognosis, had occasioned a change so sudden and so distressing to the physician. She had still taken some soup, and then said, she felt very squeamish. Under these circumstances, and the patient not being able to swallow. I had no means left but to make her smell volatile essences, and apply antispasmodic frictions, especially about the neck, to remove the convulsions and spasms, and restore the faculty of swallowing. This was effected after the space of a couple of hours, when an analeptic mixture was given to her every hour, and every two hours, some musk. Clysters and external frictions, especially round the neck, were continued. Toward evening, the evil, rather than increase, seemed to abate. Her speech returned, her warmth became equal, the skin moist, the pulse softer. Her weakness was very great. Being almost fully convinced, that too great exertion in speaking, and too great joy, in short, that passions had brought on this alteration, I prohibited all visits, and left the patient without any other company but two persons to watch her. The night was passed with varying symptoms, yet more tranquilly, and without fever or other accidents. The clysters took effect, recollection returned, the belly became rather more distended and painful. On my visit in the morning of the fifth day, she called out to me, "I have suffered severely; but at present I find myself very well." Most of the symptoms, indeed, had ceased, so that the highest state of quietude was once more to be recommended. The belly was soft; on the application of clysters there followed evacuations; the natural complexion and warmth returned; she felt much ease and comfort from changing beds. As there appeared a violent suppuration, or rather a copious oozing of a strong smelling serum, the dressing, all but the ligatures, was taken off, and put on again loosely in the same manner. The ligatures all were in the best order, and duly kept the labia of the wounds together. The interior treatment was not at all changed. From this time the patient daily improved; every day the external dressing was renewed. The belly collapsed visibly; the uterus contracted more and more; the lochia were discharged as they ought; the milk appeared in the breasts, though but in a small quantity, so that this concern was entirely left to nature.

"On the tenth day after the operation, the ligatures began to form small pustules, and thence give way. Two of them, which were the least tied, were removed, and the three remaining ones were left to hold as well as they could. The internal remedies were still continued, and especially the clysters. Four or five days later, the three other ligatures were likewise taken off, and the wound treated as a simple sore, and kept together, and supported by adhesive plasters only. Good fare, wine, &c. aided her strength.

"The same treatment was continued till the 20th of March; no disastrous accident occurred. All the functions of the body went on in the best order. The wound was cleaned and healed considerably from day to day. The patient remained without all medicines

till the 27th, when, on account of the uncleanliness of the primæ viæ, some purging medicine was thought proper for a couple of days. The patient now daily spent a few hours out of bed, began to work, mind her child, and in short, except from the sore, which was not very large, suffered not the least inconvenience. In the seventh week after the operation, the menses re-appeared, though somewhat irregularly; since that they have occurred at due periods. From day to day her strength improved, so that, in the eighth week, she transacted most of her domestic concerns, and never more was confined to her bed during the day. In the twelfth week she paid me a visit in the best health, at my house, together with her admirably handsome and stout babe.

"It appears surprising, that in the middle of this wound, a little spot, not exceeding two or three lines in length and breadth, in spite of all the remedies applied for the purpose, will not close, and when thought to be healed up will again open, yet without any detriment to the mother. The child, now eight months old, may likewise be exhibited as a pattern of health, strength, and beauty." F.]

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 labour, 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 hemorrhage, 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 distention

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 side 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 acertain 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 happy 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 distention 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, farther 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 longer continuance, the labour must be accelerated, but with skill and judgment. 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 toward 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 toward 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 pubes, 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 inconveniences 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 pur-

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* [By placing one or two of the fingers upon the face of the child, just below the orbits of the eyes, we have a much greater, and probably safer purchase, to enable us to change the position of the head. Accoucheurs do not seem to reflect upon the condition of the lower jaw; and that it may, at this early state, be easily broken or dislocated. F.]

sued, 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 toward 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 at 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 ribband, 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

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* [I have reason to believe, that this calculation is too unfavourable. According to M. Portal, a celebrated accoucheur of Paris, eighty children out of one hundred in breech presentations will be born alive. In his opinion, though the labour proceed more slowly, yet it is not more difficult. F.]

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 degree of pressure upon the sides, and toward the perinæum. The artificial dilatation of all parts should be slowly made, and an 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 toward 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 toward 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 purpose 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 toward 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 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.

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* 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.

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 toward 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 distention 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.

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* [This is too soon: the sedative effects of opium may be looked for rather after the expiration of thirty or forty minutes. F.]

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 the body be unnaturally twisted, the palm of the hand is always turned toward the inferior extremities or fore parts of the child.

It is in no case necessary, or in any wise 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 part 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 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 toward the head and toward 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.

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* 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, p. 1040.

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 toward 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 ribband 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 toward its head, and toward 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 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 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

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* 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 word 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.

† 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.

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 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 perfect 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 acknow-

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* Hoorneus sæpe laudatus adhuc peculiarem novum, eumque 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. cliij. sect. ix.

ledge, 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 knowledge of them may be of use. It may lead to an explanation of one cause at least of preternatural labours.†

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* 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.

† [It is difficult to reject the facts which Dr. Denman and other high authorities have brought forward in support of the doctrine of the spontaneous evolution of the fœtus in utero; and yet it is

SECTION IX.

To the preternatural presentation of the child, and the circumstances before mentioned, there may be added a distortion of the

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equally dangerous to confide in this resource of nature. The explanation which has been recently attempted of this occurrence by Dr. Douglas, though written with an evident leaning in its favour, is much more consistent with the idea of the expulsion, than of the evolution of the fœtus. It is to be apprehended that both views of the subject are calculated to produce a degree of passive conduct on the part of the practitioner, that experience does not warrant Difficult as the artificial turning may be, even when made use of early, and in cases in appearance best calculated for the operation, it is yet the duty of the accoucheur to attempt it, rather than to place exclusive reliance on a power which nature seldom exerts. Moreover, the safety of the child is best consulted by this practice.

On this interesting subject, Dr. Gooch has lately published in the Medical Transactions of the College of Physicians of London, the history of a case: and the account is the more valuable, as the author is the advocate neither of the doctrine of Dr. Denman, nor of Dr. Douglas. By such observations as those of Dr. Gooch, must the question be ultimately settled. The patient was a tall young woman, at the full time with her first child; she had slight pains during the night, (Saturday;) about four in the morning, (Sunday,) the membranes had broken—an arm descended. The first thing which Dr. G. observed was, that not only the arm was out its whole length, but that the shoulder had turned forward under the arch of the pubis, like the occiput just before the head is born. The next thing observed was, that when a pain came on which was very strong, the side of the thorax pressed down with great force against the perinæum. "Struck by these appearances," continues Dr. G. "I abstained from turning, and sat down by the bed-side, fully expecting what actually took place, the *spontaneous expulsion*. Resolved to know what became of the arm if this should happen, and thus fit myself for a witness on this disputed point, I laid hold of it with a napkin, and watched its movements: so far from going up into the uterus when a pain came on, it advanced as well as the shoulder still forwards under the arch of the pubis, the side of the thorax pressing more on the perinæum, and appearing still more externally: it advanced so rapidly, that in two pains, with a good deal of muscular exertion on the part of the patient, but apparently with less suffering than attends the birth of the head in a common first labour, did the side of the chest, of the abdomen, and of the breech, pass one after the other in an enormous sweep over the perinæum, till the nates and legs were completely expelled. The head and other arm were still to be extricated, but this was effected with the greatest ease: the child was dead: the mother had not felt it move since the day before at noon. Not only was the chord without a pul-

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.

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sation, but it was empty and shrunk, and looked as if it had been some time since blood had circulated through it. The side of the chest which had come foremost, was of a livid green; the skin peeled off, and the naked cutis was dark brown."

The case of arm presentation published by Dr. Bigelow in the New-England Journal of Medicine and Surgery, vol. 10. gives support to the doctrines of Dr. Gooch.

In the following account of an arm presentation, kindly communicated to me by the author, Dr. A. H. Stevens, of this city, the reader will perceive a judicious practice adopted, under circumstances of great difficulty and embarrassment, and, in like cases, he will find it advantageous to pursue a similar course.

"I was called in the night of March 9th, 1819," says Dr. Stevens, "to a village about ten miles from this city, to visit a lady who was represented to have been in labour since the morning of the preceding day. She was healthy, well-formed, and the mother of several children. For three months previous to her confinement, she had been obliged to keep her bed, in consequence of a strain in getting out of a waggon, and her feelings had led her to anticipate unusual difficulty in her accouchement. Two medical gentlemen were in attendance, one of whom had been sent for only a few hours before I arrived. What the original presentation had been, could not be ascertained; but the cord was stated to have protruded, and the waters to have been discharged in the first periods of the labour. I found the cord and the right arm protruded as far as the elbow, and the cuticle was detached upon slight pressure. There was no pulsation in the cord. Since the preceding morning the pains had been severe, and now they had the peculiar character which usually attends the last stage of parturition; the external parts were exquisitely tender.

"When she consented to an examination, I found, by the feel of the shoulder, the spine, the ribs, and the right side of the lower jaw, that the child lay with the trunk across the pelvis with the head to the left side, and the buttocks to the right of the mother; the back to the abdomen, and the sternum to the posterior surface of the uterus.

"As the bladder had emptied itself, and as there was great fulness of the pulse, it was deemed advisable to take some blood from the arm, and administer a large opiate, in the hope of gaining a truce from the unremitting pains, to turn the child, and bring down the feet. In this hope we waited from four o'clock of the morning of the 10th, until seven. But finding the pains continued, and judging that no advantage could result from further delay, as the pulsation had ceased in the cord, and the child was unquestionably dead, I cautiously introduced a blunt bistoury, and dissected off the right

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

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arm, the woman lying on her back, with her feet over the foot of the bed, one supported by each of the gentlemen, who assisted me. I then pushed firmly on the axilla with my thumb, but it could not be pressed back. I next attempted to introduce my hand and get at the feet; a pain came on, my hand was then kept quiet; it remitted; I repeated the attempt, but with no better success: I changed hands, but the contraction of the womb increased by the slightest movement, and kept the hand firmly wedged as if in a vice. In the hope of making more room, I then opened the chest and removed the contents; when introducing first two fingers, and afterwards the blunt hook, I endeavoured by that hold to bring down the body, but ineffectually.

"Another plan succeeded better, and it is chiefly with a view of suggesting this (of which I do not recollect to have heard or read,) that the present case has been drawn up. This was the making an incision as high up on the back as I safely could, with a blunt bistoury passed along the fore-finger; inserting a blunt hook into it, and pulling in a direction obliquely downwards and forwards, so as to bring the buttocks down. and having partly succeeded, I made a second incision, immediately above the hip, introduced the hook as before, and extracted the child, breech foremost. The placenta followed and was immediately removed, in a very offensive state.

"The woman bore the operation, which lasted until half past eight with great fortitude. The left leg is partially paralysed.

"*Second Day*, 5 *P. M.*—The lochial discharge has been regular. Has had several severe chills, succeeded by great heat of the skin, copious diaphoresis, thirst and dryness of the tongue. Is occasionally delirious, passes a great quantity of water from the bladder with difficulty. Bowels have been opened; fomentations have been applied to the abdomen, which is swollen and tender to the touch in the region of the uterus. Pulse frequent, and, except during the chills, full. Seeing a rigor coming on, I advised hot salt, in a woollen stocking, to be applied to the pit of the stomach and the feet; and a copious draught of catmint tea to be taken. The chill terminated sooner than any which had preceded it.

"6 *P. M.*—Pulse full and frequent; great heat of skin; general and profuse sweating; delirium. I took ℥xiv. of blood from the arm. It was agreed to apply spirituous fomentations to the abdomen, a poultice of linseed, with solution of the acetate of lead to the pudenda, and to give of the acetite of ammonia ℥ss every two hours.

"9 *P. M.* Symptoms rather improved. She was again bled to ℥xii. Sinapisms to be applied to the feet.

"*Fifth Day.*—Rigors have been less severe: tongue furred, and somewhat yellow. Skin constantly moist; occasional delirium. Bowels confined. Agreed to give three grains of calomel at night;

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 ex-

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a solution of Epsom salts on the following morning. Sinapisms to the abdomen.

"*Seventh Day.*—The medicine operated well. Tenderness of the abdomen lessened; pulse soft and frequent. Complains of want of sleep; we prescribed the effervescing draught, with forty drops of laudanum.

"*Eleventh Day.*—Continues to improve. Has taken an infusion of hops—agreed to continue it, and to give freely of nourishment.

"*Fourteenth Day.*—Better—is able for the first time to move the left leg, and to move on her knees from one bed to another. Is allowed the use of animal food.

"*Seventeenth Day.*—Appetite good—strength returning—has set up in bed several times.

"Mrs. V. has since entirely recovered." F.]

isting 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. 1. chap. ix.

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 toward 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 between 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 intended 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 suffi-

cient 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 distention 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 XV.

CLASS FOURTH.

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 judgment 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 hemorrhage 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 hemorrhage. Every discharge of blood which occurs during pregnancy, however small, may be called hemorrhage, 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 hemorrhages, 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 hemorrhages; 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 toward 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 hemorrhage, 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 accommo-

dated 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 judgment in the application of every rule.

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* Fœtûs præmatura ejectio.—*Linnæus.*

Sanguinis ex utero gravido profluvium, cum fœtu immaturo vel mola subsequendi.—*Vogel.*

Partus morbosus et symptomaticus. Fœtus ejicitur potius quam paritur.—*Harv.*

† [Another division has been adopted by some writers, which possesses the advantages of greater minuteness and accuracy: 1st. *miscarriage*, which occurs to the end of the third month; 2d. *abortion*, which occurs between the end of the third month and the close of the seventh; and, 3d. *premature labour*, which occurs between the end of the seventh month and the regular period. F.]

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 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 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 observable 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 affusion 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

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* [I have already adverted to the importance of a perfect state of one or other of the ovaria, as essential to conception. F.]

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 IV.

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, 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 hemorrhage 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 symp-

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* [Too much can scarcely be said in behalf of cold bathing, and cold lavations, for these purposes. F.]

toms 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 os 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 III.

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 hemorrhage, 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 hemorrhage 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 hemorrhage 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 hemorrhages, different from those from any other part of the body, has been entertained, and supposed to occasion the necessity of a peculiar treatment. But it is now agreed, that the general principles, which guide us in the treatment of hemorrhages from any other part of the body, are with equal propriety applicable to those from the uterus. We must however recollect, that in uterine hemorrhages, 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 hemorrhages 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.

Hemorrhages 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 hemorrhages 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 hemorrhages, 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 hemorrhages, and to pre-

vent their return. Cordials or stimulants should not therefore be given to those who are faint from hemorrhages, 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 hemorrhage, 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 hemorrhages and profuse discharges of every kind; nor does much distinction seem to have been made between those which were found useful in hemorrhages 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 hemorrhages 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 hemorrhage; 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 superacetus; 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 hemorrhages, 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 hemorrhages. 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 hemorrhage, 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 hemorrhage, 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 hemorrhage.

Opiates have been generally recommended as of principal efficacy for the prevention of abortions, and in all cases of uterine hemorrhage; 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,

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* [A lump of alum alone introduced into the vagina, will often be found, of itself, powerfully efficacious in suppressing uterine hemorrhage. F.]

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 hemorrhage, or to the more regular conduct of the abortion. But when there are the common symptoms of abortion without hemorrhage, 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 hemorrhage, 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 abortion or a premature labour; it may not be safe to rely upon the use of those means which were advised for hemorrhages 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 distention 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 hemorrhage 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 hemorrhage 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 hemorrhage. 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 hemorrhage, 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 hemorrhage, which had appear-

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* [Under such circumstances, larger doses of opium than are recommended by our author may be given with advantage. F.]

ed 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 hemorrhage 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 hemorrhage 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 observations, 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 hemorrhage; but the death of the second, though she was only in the seventh week of her pregnancy, seemed to be occasioned merely by the hemorrhage, or more probably by a convulsion.

SECTION V.

On Hemorrhages in the last three months of Pregnancy.

Under this head will be included all the hemorrhages 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 hemorrhages 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.

Hemorrhages 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 hemorrhages 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 judgment 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 hemorrhages 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 hemorrhage 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 hemorrhages 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 hemorrhage, 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 hemorrhage, 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 hemorrhages, in advanced pregnancy, by the pain with which they are attended. An equal hemorrhage 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 hemorrhages, 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 hemorrhage; 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.

Hemorrhages in which the placenta is attached over the os uteri.

Those hemorrhages, 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 hemorrhage, because such distention, or change, will necessarily separate a part of the placenta.* This hemorrhage 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 hemorrhages 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 hemorrhage, 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 hemorrhage, 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 judgment 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 hemorrhage, in advanced pregnancy, is generally expedient and necessary for the preservation of the life of the patient; and though the practitioner, who should neglect

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[* The recurrence of the hemorrhage during each pain may be considered as sufficient evidence of the attachment of the placenta to the os uteri. But this as well as other symptoms being sometimes equivocal, our most certain knowledge is derived from an examination of the os tincæ by the touch. Having ascertained the existence of such attachment, the practitioner will be the more guarded in his conduct, and scarcely wait, before he acts, for the debilitating effects of hemorrhage on the constitution, as he perhaps may justly do when the discharge arises from a different situation of the placenta.

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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 hemorrhage to a state of extreme weakness, should not then be delivered by art, even though the hemorrhage 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 hemorrhage 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 hermorrhages 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 judgment 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 hemorrhages 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 hemorrhage 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 hemorrhage 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 hemorrhage; 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 hemorrhage 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 hemorrhage, 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 hemorrhage, 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 hemorrhage, 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 be often 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 hemorrhages 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 hemorrhage. 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 hemorrhage 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 hemorrhage 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 hemorrhage, 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 hemorrhage should continue or return, the case must be managed, as will be recommended, when we speak of hemorrhage with a retained placenta. If there be no hemorrhage, and the placenta be retained, we must be particularly cautious not to hurry it away; but in these cases it is commonly expelled 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 hemorrhage, 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 hemorrhages occasioned by the separation of the placenta from any part of the uterus.

It was before observed, that those hemorrhages 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,

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[* In cases of this nature, the placenta will generally be wholly detached and forced into the vagina immediately after the delivery of the fœtus. The contractive power of the uterus is sometimes very remarkable. A case occurred to Dr. R. S. Kissam of this city, in which the placenta was thrown off and expelled entire from the mother, and in about three minutes after a living child followed. This was doubtless an instance of the attatchment of the placenta over the os uteri. F.]

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 hemorrhage 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 hemorrhage is first discovered.

If any considerable hemorrhage 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 hemorrhage, 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 hemorrhage 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 distention of the uterus will be lessened, the size of the blood-vessels of course diminished, and the hemorrhage in general immediately removed or very much abated. By the suppression or abatement of the hemorrhage, the action of the uterus will be rendered stronger, and the delivery very often completed in a short space of time without farther assistance, especially if the patient have before had children.

In every case of dangerous or considerable hemorrhage, 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 hemorrhage 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 judgment, and the greatest circumspection.

Hemorrhages 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 hemorrhage, 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 hemorrhage 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 farther assistance, if we wait patiently for the return of the pains, which we may safely do when the hemorrhage 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.

Of Hemorrhages 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 hemorrhage; 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 pla-

centa 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 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 Ge-

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* Medicus deinde sinistra manu, leniter trahire umbilicum ita, ne abrumpat, dextraque eum sequi usque ad eas, quas secundas vocant, quod velamentum infantis 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.

neration 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 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 obser-

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* 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 unâ sequens uterus procidat.

† 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.

vation: 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 judgment 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 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

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* This account I had from Dr. Hunter himself.

† [By the hazardous experiment of permitting the placenta to remain until spontaneously expelled, the celebrated Dr. William Hunter is reported to have sacrificed the lives of five mothers in one year. F.]

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 hemorrhage 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 of the uterus returns for the purpose of expelling the placenta and membranes, which collectively have the common name of secundines, or after-birth. 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 form 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 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 hemorrhage, but whenever there is a discharge of blood, the whole or a portion of it must have been previously separated; and the hemorrhage 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 hemorrhage; 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 competely devested of all power of farther 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 hemorrhage 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 hemorrhage 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 its separation and exclusion. We must, therefore, form a judgment of the necessity of extracting the placenta, by the opinion we entertain of the hemorrhage 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 hemorrhages 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 hemorrhage, means must be used for the purpose of its exclusion or extraction. If there be no hemorrhage, 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 hemorrhage, and not equal to the extraction of the placenta; and such conduct is a very frequent cause of a degree of hemorrhage, 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 authorized to employ one more precise, but certainly not within one, perhaps two, or even more hours, after the birth of the child, unless we are compelled by hemorrhage 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 toward 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 hemorrhage, 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 hemorrhage, 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 hemorrhage, 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 dan-

ger 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 hemorrhage, but cannot remove the effects of one which has already ceased.

In cases also in which there is no hemorrhage, 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 judgment, 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 hemorrhage, 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 hemorrhage. 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.

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* [Whatever may have been the success attendant on cases of this character, the practice of thus permitting the placenta to be retained cannot be justified. As a fixed principle of conduct on the part of the accoucheur, the placenta ought not to be left to the expulsive efforts of nature longer than two hours. Nor will the prudent practitioner ever leave the patient until the entire propulsion of the secundines. In Dr. Merriman's private practice, the retention of the placenta has not occurred oftener than once in three hundred labours. F.]

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 hemorrhage; 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 difficulty, 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 hemorrhage 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 hemorrhage, 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 hemorrhage, 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 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 hemorrhage, 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

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[* There does not seem any good reason for this practice. F.]

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 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 cervex, 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 hemorrhage, 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 premature 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 first insinuated along the funis, and this being turned with a semirotatory 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

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* 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 atque 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.

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 hemorrhage.

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 placenta of different women, there are not unfrequently found morbid appearances, some being disposed to a putrid, others to a scirrhous or cartilaginous state; while in others there is a degree of ossification in the vessels, and sometimes perfect concretions. The adipose substance often found upon the placenta in large quantities is not of any importance. The difficulty of the separation will depend partly upon the placenta itself, and partly upon the state of the uterus. When 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 hemorrhage 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 previously 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 on to assist others, we must determine whether the case will allow of farther waiting; 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 hemorrhage or any other untoward circumstance, for the latter method, which, if consistent with the safety of the patient, ought always to be avoided, we may consider the inconveniences 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 hemorrhages which follow the exclusion or extraction of the placenta.

The hemorrhage which follows the expulsion 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 hemorrhages; 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 hemorrhage, 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 child-bed; 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 hemorrhages 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 child-bed. For the prevention of this hemorrhage 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 hemorrhage 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 hemorrhage, 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 times the demand was made, would of course be the danger of the patient. In some cases the hemorrhage 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 hemorrhages, 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 hemorrhages of this kind, however vehement, the accession of uterine pain immediately proclaims, that the danger is passing or is passed.

With respect to this variety of hemorrhage, 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 hemorrhage 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 ensured, rather than by an officious interposition to add to the hazard, by complying 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 ex-

pelled without any assistance. In what other manner a placenta remaining in the vagina may contribute to the checking or the prevention of hemorrhage, 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 hemorrhage 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 hemorrhage, 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 hemorrhages 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 489.) as by their continuance, they were supposed to keep up the distention of the uterus, and to occasion a continuance of the hemorrhage, 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 hemorrhage. 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 is contained, to be expelled by its own action. Some have believed, that this sort of hemorrhage 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 hemorrhages was considered as an effect produced, 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 hemorrhage; 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 hemorrhage, 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 hemor-

rhage, 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 hemorrhages, 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.†

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* Douleurs du teste apres grandes pertes du sang.—*Mauriceau.*

† [I cannot pass over the important subject of uterine hemorrhage, so ably treated by our author, without inserting the following valuable case, drawn up and communicated to me, at my request, by Dr. William Handy, of this city. It strongly establishes the propriety of never abandoning our patient in any circumstances of debility, arising chiefly from excessive loss of blood. It is almost incredible how copious a sanguineous discharge from the uterine vessels may sometimes take place, and yet, by care and assiduity, the powers of the system be restored.

On the 27th of August last, at 11 P. M. I was requested by Dr. Macauley to visit with him, in consultation, Mrs. A., a lady of about forty years of age, then supposed to be in the commencement of the ninth month of her eleventh pregnancy. The account he gave me of her case was as follows: That he was called to her early in the morning of the 27th of July, when he was informed that she had been suddenly taken the night before with flooding, unattended by any pain. Her friends had given her laudanum, and made use of cold applications, which had lessened the discharge. The hemorrhage continuing, the same remedies were repeated three successive days

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 farther consideration.

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and nights, during which it was supposed she had lost from seven to eight pounds of blood. A feverish state having succeeded, with a full, hard pulse, white tongue, dry skin, and redness of the eyes, she was bled to eight ounces from the arm, with immediate relief. She continued comfortable for a fortnight, when, in consequence of violent pain in the head, fever, and great restlessness, she was again bled to ten ounces, with speedy and great benefit. She remained free from any serious indisposition, until Friday, the 24th of August, in the afternoon, when the bleeding again returned, and was arrested by external applications and rest. On Saturday and Sunday the discharge was small. On Monday it returned with greater violence, when she lost about two pounds of blood. The pulse was again excited, accompanied by headache, general uneasiness through the system, and the several symptoms of a febrile condition, which attended the first attack. She was again bled to six ounces, with sudden and great relief. The hemorrhage now ceased. In about four hours after, her strength failed, and she was seized with fainting fits.

On visiting her, I found her in a very low and languid state; her pulse 108 in a minute, and very feeble; her lips and whole countenance pale; her extremities cold, with an occasional dull pain, as she expressed herself, in the small of her back. She had considerable thirst, great nausea, and a constant desire to change her position. The hemorrhage had now nearly ceased. The vagina was filled with coagulated blood; but there was scarcely a perceptible dilatation of the os internum. Heated flannels, &c. were applied to the extremities; an anodyne with forty drops of laudanum was given, and light cordial nourishment frequently administered in such quantity as the state of her stomach would bear.

28th. 6 A. M.—Had a succession of fainting fits until two o'clock this morning. Her pulse is now depressed, feeble, and irregular; her extremities cold, her countenance very pale. Restlessness—nausea—no return of hemorrhage.

9 A. M.—Continues the same.—Agreed to meet at noon.—Labour having commenced, I was called in at about ten o'clock. She was still without hemorrhage; but as in the exhausted state of the patient, the most fatal consequence was apprehended from such an occurrence, every preparation was made to meet it. On examination, a large portion of the placenta was discovered protruding before the head of the child, and, in a little more than half an hour, the whole of it, enveloped in the membranes, was expelled by the pains. The membranes were now ruptured, and the waters discharged; when

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 abdomen, for the purpose of trying whether

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the pains, though feeble, continuing to act upon the child, it was, in half an hour, delivered, having apparently been dead many hours. Its size was such as fully to warrant the conclusion, that it had been carried the ordinary full time of gestation. No hemorrhage ensued its birth ; but the mother was exhausted nearly to death, and immediately sunk into a state of alarming syncope. Her pulse was no longer felt at the wrist, her extremities were of a deathlike coldness, and a cold sweat was generally diffused over her. A compress, supported by bandage, was applied to the abdomen, and by the diligent use of friction, and warm applications to the extremities, she so far revived as to be able to speak Her countenance was, nevertheless, most ghastly ; there was no perceptible return of circulation at the wrists, a hiccuping followed, and a constant disposition to syncope. As soon as she was able to swallow, there was given her, in small quantities at a time, light cordial nourishment, consisting of panado and gruel with wine, warm sangaree, and other cordials ; and, occasionally, beef tea. These were alternately given to her once in six or eight minutes, while several persons were employed in chafing, and in the renewal of warm applications to her feet, legs, hands, and arms. Her respiration was laborious, and although she retained what was taken into the stomach, she had constant nausea, and when able to speak, which she did with great fatigue, she complained of painful oppression and tightness across the chest, and, as she expressed it, a confusion in her head. She is very drowsy.

At half past four, P. M. though there was no distinct pulsation, a slight tremulous sensation was communicated to the fingers, on pressure of the radical artery. Her countenance was still ghastly, her respiration laborious and fatiguing ; she had hiccup ; her extremities and face were cold, she sighed frequently, and was very restless. Her intellect was entire, her speech distinct, and she greedily received the nourishment which was given to her.

8 P. M.—Pulsation at the wrist rather more distinct. Drowsiness continues, and she sleeps with her eyelids but half closed. Temperature of the skin a little encreased, but still morbidly cold. Breathing less painful. Takes sufficient nourishment, and retains it. Hiccup less frequent, and she is less restless. Lochia moderate.

29th. On entering her room this morning, she observed, with great cheerfulness, previously to being interrogated, that she was much better, and had passed a tranquil night. A natural and equal warmth is restored to the surface, and her skin possesses a healthy softness. Had a copious discharge of urine in the night. Some after pains.

My visits with Dr. M. were continued until the fourth of Sep-

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

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tember, when our patient appeared to be so far a convalescent as to induce me to retire. She still complained of an uncomfortable sensation in her head; her countenance was pallid, and there was that paleness of the tongue and lips which frequently attends the languor of circulation at the surface, consequent on an excessive loss of blood. There had been no evidence of a secretion of milk since her delivery.

On the 17th I was again requested to see her with Dr. M. It appeared that, since my last visit, she had convalesced slowly, although her appetite and rest had been natural, and she had repeatedly walked from one room to another. The confusion in her head, as she described it, and pallid countenance and lips still continued. On the 15th and 16th she had fever, preceded by slight chills, some pain, and a sense of weight and stiffness about the left hip, and a want of the usual power to move the left thigh and leg. There was now a great enlargement of the limb from the hip downwards. A swelling had suddenly appeared, white, elastic, tense, shining, warm, with the other concomitants of phlegmasia dolens, except, fortunately, extreme pain and tenderness of the diseased limb when touched. Her pulse was at 120 in a minute, and feeble; skin dry; she had thirst, and her body was costive. The swelling has been fomented with flannels wrung out in hot vinegar, and embrocated two or three times a day with a mixture of ammoniated and soap liniment and laudanum. Her bowels have been kept open, and her skin soft by the use of neutral salts combined with mild diaphoretics. The swelling is now much reduced, she has but little fever, and her appetite, spirits, and sleep, are good. Complaint in her head diminished. Secretion of urine copious. Her tongue and lips continuing to be pallid, with some œdema of the diseased leg and foot, and being free from fever, in addition to a small quantity of animal food, and porter sangaree, which have been allowed her a few days past, the muriated tincture of iron was this day prescribed. Sept. 26, 1821. F.]

not be suffered to remain in that state, even if there were no hemorrhage 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 hemorrhage with which it is almost universally attended, or merely of its continuance, or if there was no dangerous hemorrhage, the reasons for replacing it speedily would be of equal force. Not that all women would die though the uterus were inverted, but 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 hemorrhages, but without any unbearable 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 symp-

toms 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 afterwards 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 hemorrhage, 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 methods 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 hemorrhages 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

hemorrhage 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 hemorrhage 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 hemorrhage 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 hemorrhage 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 hemorrhage 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 farther 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.*

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* [In this distressing accident, an inversion of the uterus, in order to guard against the debility and exhaustion of the system, which may thence arise, an operation has been recommended and advantageously performed.

The inverted uterus has been removed, and the patient recovered. This is not a novel practice: Paré states a case where he and Mauriceau cut away the womb of a woman of thirty years of age who survived. Mr. Clarke had a woman sixty years of age under his care, who complained of a tumour which hung down from the external parts, between the thighs, attended by a discharge of mucus and of pus, so profuse in quantity as to make her exceedingly weak. Upon examination of the tumour it appeared to be an inverted uterus, the whole surface of which was in a state of ulceration. Above this tumour was the vagina, also inverted, having partial ulcerations upon it. A ligature was applied round the contracted part of the tumour, where the uterus terminated and the vagina began. It was tightened daily until about the eleventh or twelfth day, when the parts included in the ligature were observed, and the uterus fell off. During this time, the patient complained of very little pain. Adhesions had taken place between the sides of the vagina, so as to prevent the exposure of the cavity of the abdomen, and the woman recovered.

Mr. Windsor has given us the particulars of a case of excision of an inverted uterus, in the tenth volume of the Medical and Chirurgical transactions of London. Among the suggestions which he makes at the conclusion of his paper, on the best method of removing the uterus in those instances of inverted uteri, where the palliative means are not sufficient to arrest the fatal tendency of the disease,

he maintains a decided preference for the excision of the organ to the removal of it by ligature. According to Mr. W. it would probably be best, before excision is practised, first to secure the uterus above by a ligature, in order that any hemorrhage might be more easily commanded: "in a day or two the adhesive inflammation might be powerful enough to prevent any further danger of hemorrhage, and the ligature might then be safely removed." F.]

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 ex-

* 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. Mauriceau, vol. i. chap. 23.

† Naturæ partus, quoad cætera sanus, relinqui potest.—Roederer Element. Art. Obstetric. Aphorism. 679.

perience having been thought insufficient, or not so duly weighed as to satisfy our minds, or to justify our forming an irrefragable rule of practice.

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

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* 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.

Species, 2. 1. Idiopathica.
2. Symptomatica.

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 in the next pain. She threw herself back, and died instantly.

Another raised herself in bed to take nourishment, about half an hour after delivery. She fell back, and died immediately. She was opened by the celebrated Dr. Jenner.

There was no effusion of blood in the brain or any other part, in any of these; 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 farther 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 peculiar 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 farther augmented by habits of indulgence, and the eager pursuit of pleasure more in 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*, *chapter* 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 judgment 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.

Beside 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, 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

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* Ad spasmodica, quæ ex uteri vitio proveniunt, pathemata concitanda, non opus semper erit, ut materia corrupta et vitiata, utero inhærens, proxime et immediate id efficiat. Hoffmann, de Mal. Hysteric.

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 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 inconveniences. (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, beside 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, beside 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 was 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 others, which denote much disturbance of, or the lodgment 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 judgment 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,

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* Mulieri ex partu convulsione tentatæ, si febris succedat, bonum est. Hippocrat. Lib. i. de Morbis.

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 returned, 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. Broomfield 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 grain 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; farther 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 ex-

perience 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 farther 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 deterred 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 judgment 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 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 waters 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 of 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 confideuce 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 judgment. 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.*

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* [In the treatment of puerperal convulsions, special attention must be paid to the different conditions of the system from which they may arise. In the comparatively few cases which occur in consequence of great exhaustion from excessive hemorrhage, or an irritable habit, rendered more so by a tedious and painful labour, we shall find the free use of opiates of saving efficacy. That species of convulsions which is apparently of the epileptic nature, is of much more frequent occurrence, and sufficiently characterized by its peculiar symptoms. Dissection has shown the extreme commotion which it induces in the vascular system, and points out, that copious bloodletting is our principal remedy. In this form of disease, opiates must be productive of serious, if not fatal, mischief, unless preceded by active depletion. By this evacuation we most speedily unload the vessels of the brain, and fulfil other important indications. Dr. Hamilton informs us, that no patient to whose assistance he has

been called, and to whom opium had been administered before his arrival, ever recovered: and this is a result that might be anticipated in every case in which the convulsions were connected with a congested state of the brain. Camphor, as an internal remedy, has been strongly recommended, and the experience of the best practitioners warrants our having recourse to it. F.]

CHAPTER XVII.

ANOMALOUS, OR COMPLEX LABOURS.

THIRD ORDER.

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 number 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 of 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. Clarke 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. It 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 distention, 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 toward 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 distention 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 unecessary 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 distention 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 born 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 occurred 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 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 circumstance 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 pro-

bably be expelled by the natural efforts; or if farther 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 hemorrhage 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 solicitude 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 interpo-

sition, 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 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 hemorrhage, 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, hemorrhages 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 hemorrhage, 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 hemorrhage; though sometimes one placenta has been discharged before the birth of the second child, without any material loss of blood. In some cases of hemorrhage, 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 hemorrhage.

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 hemorrhage 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.*

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* [In the Transactions of the Royal Society, London, for 1787, Dr. Garthshore has published a curious and valuable paper on plurality of births.

An account of a singular instance of twins, one presenting with the feet, and the other with the head, may be seen in the London Medical and Physical Journal, vol. 25. The labour advancing slowly, the attendance of Dr. Clough was requested. The feet and body of one child, with the arms down on each side, protruded through the external orifice, and Dr. C. assisted to extract the shoulders. Still finding a difficulty, he examined again, and ascertained that the head of the second child and that of the first, were in the pelvis together. By the uterine effects, the head of the second child was expelled, and then that of the first: both had been long dead. The mother recovered. See also Merriman's Synopsis. F.]

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.

Farther 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 conse-

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* [Mr. Hopkins and Mr. Hogben have recommended sponge to be introduced, so as to keep the funis from falling below the child's head after it has been carried as far as practicable above the brim of the pelvis, either by the fingers, or by any other means. It is only under the most favourable circumstances that delivery by turning the child *in utero*, and bringing it away by the feet, can be had recourse to. Haighton has stated these circumstances to be: "1st. A pulsation of the chord, proving the life of the child. 2d. Its head not having yet entered the pelvis. 3d. Pains not strong. 4th. A relaxed state of the external parts, to admit of a ready extrication of the head." F.]

quence 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 toward 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 presentation of the child, our conduct must have regard to both these circumstances.

Should the breech present, the case will very much resemble the presentation of the head; that is, the same methods for replacing the funis may be tried, and with rather a better chance of success. If these fail, instead of considering the labour as one of those which is to be resigned to the natural efforts, it may be expedient at a proper time to bring down one or both of the inferior extremities, taking care that the funis be not entangled between the legs of the infant; and there are few cases of this kind, in which we may not conduce to the preservation of the infant, by proceeding in this manner when the funis has descended before the presenting part.

Should the arm of the child present, and such presentation be

complicated with a descent of the funis, very little difference of conduct will be required; because, for the first reason, we should determine to turn the child, and deliver by the feet, and the additional circumstance of the descended funis can require nothing more to be done. Yet when the feet of the child are brought down, if the pulsation of the arteries of the funis be lively or perceptible, it may sometimes admit of a debate whether it will be most proper to hasten the delivery, especially if the os uteri be not sufficiently dilated; or to leave it to be expelled by the returning pains. In either case it will, however, be right to attempt to return the funis within the os uteri, and, if it be in our power, out of the way of compression.

The general rules already given for the use of the forceps and vectis, and for the management of preternatural labours, make it unnecessary in this place to enlarge on this part of our subject.

SECTION V.

On Monsters.

This subject affords very little room for practical observations, because the symptoms in early pregnancy are not different from those in natural births; and because the fœtus, whatever be its structure, is usually expelled easily and regularly at the time of labour. We might indeed be mistaken in our opinion of a presenting part: but as in any case of real difficulty, the needful investigation would discover the nature of the case; and as we should have little to consider but the simple exclusion or extraction of the monstrous fœtus, without injury to the mother, the general rules of practice would be readily applied to every exigence arising from this cause.

Several books have been professedly written on monsters, but the subject, instead of being considered and cultivated as a branch of natural history, or as leading to physiological discoveries and explanations, has, by the manner of treating it, been rendered little more than a theme of superstitious wonder, of ridiculous falsehood, or of senseless curiosity. The same observation may be made on the cases published in almost every periodical work, and on collections of monsters. Yet Lord Bacon thought that a history of monsters was very much wanted for two purposes; "first, to correct the partiality of axioms and opinions, which are commonly formed on common and familiar examples; secondly, because from the wonders of nature is the nearest passage to the wonders of art; for it is no more than by following, and as it were bounding nature in her wanderings, to be able to lead her afterwards to the same place." The advantages which might be derived from the pursuit of the first intention are manifest, but those from the second seem to be problematical.

It is probable that monsters might be reduced into regular orders or systems, as they all seem to be of one or other of the following kinds :

1. Monsters from redundance, or multiplicity of parts.
2. Monsters from deficiency or want of parts.
3. Monsters from confusion of parts.

To these might perhaps be added, without impropriety, another kind, in which there is neither redundance, nor deficiency, nor confusion of parts, but an error of place, as in transpositions of the viscera. But children born with diseases, as the hydrocephalus, or their effects, as in some cases of blindness undoubtedly from previous inflammation, cannot be properly considered as monsters, though they are often so denominated.

Of the first order there may be two kinds, redundance or multiplicity of natural parts, as of two heads variously placed, and one body; of one head and two bodies; an increased number of limbs, as legs, arms, fingers, and toes; or excrescences or additions to parts, of no certain form, as those upon the head, and other parts of the body; and these are usually more or less important according to their size, or the part where they grow. But as such excrescences, whatever may be their size, have, from their texture, a disposition to enlarge, and to assume a morbid action, it is become an established rule to extirpate them as soon after the birth of the child as it can be done with safety.

2. Of monsters from deficiency or want of parts, the instances are less frequent than those of the former kind, as of the brain and back part of the head; or of the whole head, as in the acephalus; or of one eye, as in the monoculus; of the lip and palate, as in the hare-lip; of one or both arms; of the fore-arm or hand; of one or more fingers; of a portion, or of the whole of the spinal processes of the 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 conected 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 toward 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 produce 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 Extra-Uterine Fœtus.

The kind of extra-uterine 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 extra-uterine 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 utero-gestation 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 in-

flammation, 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 extra-uterine 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 extra-uterine 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 extra-uterine 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 extra-uterine, 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 pregnancy, whether the child be contained in the cavity of the uterus, or be extra-uterine.

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 utero-gestation, which shows that it is not excited by distention 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 con-

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* See Opera omnia Anatomica, Diemerbroeck, page 135.

tain 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 are a very great number of examples of the extra-uterine 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 extra-uterine 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 extra-uterine 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 already 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 extra-uterine 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 extra-uterine 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 utero-gestation; 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 utero-gestation, 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 controlled 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. It certainly does not 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 sometime 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 depaired 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.

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* [For an able exposition of the arguments against the doctrine of superfetation, see Dr. Chapman's paper in the Philadelphia Eclectic Repertory, vol. 1. F.]

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 conspicious 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 cause 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 childbearing, 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 basin of caudle.

A consideration of these two different methods of proceed-

ing 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 inconveniences 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 inconveniences, 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 recommended 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 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 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

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* [This is not, and never has been, American practice. F.]

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, or 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 judgment 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 inconveniences 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 hemorrhages; 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 toward 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 distention. 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

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* Medical Observations, London, Vol. V. See also Medical Commentaries, Edinburgh, No. xxi.

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 distention; 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 intervals and less in degree, in the manner of those of labour, excluding in due time whatever coagula might 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 vio-

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* Cum uteri cervix post partum sese modicè contrahit, et propterea sanguinis grumi cum difficultate aliqua prodeunt, doloresque faciunt, quos obstetrices nostræ enixus posteros (after-throes) 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.

lence, 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 unjustifia ble 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 vitriolat.
Syrup rosæ, *aa* unciam dimidiam,
Infus. sennæ tartarisat. uncias quatuor,
Tinct. ejusd. drachm. sex. M.
Capit 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 any wise 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 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 be-

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* 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. p. 556.

† Si mulieri pregnanti fiat in utero erysipelas, lethale est. Hippocrates.

come 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 inconveniences, 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 light obstruction cause a local plethora. Imprudent management at the time of labour, especially rude treatment of the os uteri, and a violent or 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

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* 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. Exercicat. de Partu.

delivery, be invited as it were to parts already in a very irritable state, from the violence which they have already 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 judgment 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 particular care with which they are then managed, whereas after easy ones they are more unguarded.

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* 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.

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, especially in unfavourable seasons and hot climates. Instances have occurred, in which women have died within twenty-four hours of the first attack; and I have seen a few, who never grew warm after the rigor, which then resembled a convulsion. In

some, death has followed quite unexpectedly, either from inattention or from the 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. Petechiæ or vibices are often found in the 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 toward 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 toward 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 seemed 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 farther days 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 fulness 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 afterwards 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 seemed to admit of little other relief than some alleviations 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 abscess 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 distention 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 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 he-

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* 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.*

morrhages 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 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 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 hemorrhoidal 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 hemorrhages 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 hemorrhages, 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 hemorrhage. 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 hemorrhage 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 determine 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 de-

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* [Dr. Hall has lately attempted to establish a nosological difference in these complaints, in a work, entitled, "Cases of a serious morbid affection, occurring principally after delivery, miscarriage, &c."—London, 1820. F.]

terred from giving a vomit; and that the operation is not only perfectly free from danger, but certainly answers many other good purposes beside 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 of 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 proper 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 afterward 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 contracted 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. *aa* ʒ ii.
Infus. sennæ, Aq. menj. sat. *aa* ℥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 afterwards 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 hemorrhoidal 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 julep, 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 dis-

ease, 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. ʒviij.
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, partake 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

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* 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.

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 inquiry.*

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* [There are few parts of this work more satisfactory than that portion of it which relates to puerperal fever. Our author's ideas of it are those of an acute clinical observer. Let the practitioner ever keep in mind the opposite characters which this disease assumes under different circumstances, and thereby avoid the errors so frequently committed by those heedless of such distinction. The puerperal fever, in its simple state, is one of the most formidable of inflammatory disorders; dissections strikingly illustrate this fact, and as such the disease requires prompt recourse to the antiphlogistic treatment. Among the efficient means for this purpose, venesection stands foremost; and the detraction of thirty or forty ounces of blood will frequently be demanded. It is difficult, however, to prescribe the limits of bloodletting. An excess of this evacuation is not so hazardous to the security of the patient as a temporising practice with regard to the mode of depletion. "I have employed bloodletting in this disease (says Mr. Hay) to a greater extent than any other practitioner with whose writings I am acquainted, and have hazarded the opinion that the quantity of blood is scarcely to be limited but by the removal or considerable diminution of the pain; but let it be recollected, as a necessary appendage to this opinion, that the period for bleeding is confined to an early, though not a very definite stage of the disease."

Purging and blisters are also among our best auxiliary remedies. Dr. Channing has remarked that during puerperal epidemics those women have been most frequently observed to do well who have suffered least from costiveness during pregnancy, and more especially if the bowels have been freely opened during labour. Much credit is due to American physicians in enforcing the proper method of cure in puerperal fevers. Subsequently European writers have profited by their suggestions. Yet it must be remembered that the typhoid form of this complaint is rarely to be seen in this country; while its inflammatory type is still more aggravated than we generally find it to be abroad.

In the typhoid form of the puerperal fever, our indications vary with the particular causes upon which it depends. The discharges by the skin, urinary organs, intestinal canal, &c. are to be regulated as in idiopathic typhus; repeated and extensive experience has shown, even in this complex character of the disease, the value of purgatives. In the very fatal puerperal epidemic of Aberdeen, Dr. Gordon assures us, that of those who were freely purged the day after delivery, only one died of puerperal fever. The direct prostration of the energies of the system by the lancet is also to be studiously avoided in this form of puerperal fever, nor ought the appli-

SECTION II.

Mania.

Amidst the great variety of complaints to which women in childbed are liable, there is none so distressing as that aberration

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cation of blisters to be made with the same freedom as in the pure inflammatory type of the disease. Fomentations of tepid vinegar and water are useful, both in the typhoid and inflammatory forms, and decidedly preferable to those of brandy or other spirituous applications. The sanative powers of camphor in this complaint have been too highly extolled; and the analogy by which Peruvian bark is prescribed is in this instance fallacious.

Very recently several distinguished physicians of Dublin have earnestly recommended the internal and external use of the spirits of turpentine in puerperal fevers, ascribing to it almost the efficacy of a specific. However respectable this authority, I should deem it hazardous practice in the inflammatory form of the disease: if at all admissible, it seems most applicable to the typhoid state of the disorder.

The contagious character of the puerperal fever has been denied by some writers, while others have represented it to be so in an eminent degree. The records of the Lying-in Hospitals of Great Britain confirm this latter opinion. While I visited the Royal Infirmary of Edinburgh, in 1816, Dr. Duncan, jun. informed me that six cases had at that time occurred, in three of which the disease was satisfactorily ascribed to attendance on the puerperal women. The contagion was communicated by the nurses.

"Puerperal fever," says Dr. Hosack, "ought to be divided into the idiopathic and symptomatic kinds: in the former we may observe the characteristics of an acute and pure inflammatory disorder, while in the latter are to be seen those of a typhoid affection. This typhoid state is to be considered as depending upon a peculiar condition of the system, and previous exposure to the sources of typhus. In this case, puerperal fever is not unfrequently highly contagious. The poison of typhus attacking the lying-in woman, an inflammation of the womb has been its accompaniment. A similar combination I have met with of scarlatina and hysteritis, in which the same typhoid state of body was induced. Facts of this nature have led me to distinguish hysteritis into that which is exclusively inflammatory, and that which is complicated by its union with typhus fever, scarlatina, or other forms of a malignant or typhoid character. In the hospitals of Europe, the latter type of this disease is of frequent occurrence, but in this country it is scarcely known. In this city I have never met with this union of typhus and puerperal fever. Three years ago, I am informed, upon very respectable authority, that it prevailed in Elizabeth Town and its neighbourhood, in the state of New Jersey, and proved fatal to several lying-in women. In some of those cases it was supposed to be conveyed by the accoucheurs themselves.—These two forms of the disease evidently call for different modes of treatment." F.]

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 dispositions 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

* See Sydenham.

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 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 pre-

ceding 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 pro-

cure 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, and to regulate the general functions of the body; but it is remarkable that much difference, whether that function, which we might conclude to be of principal consequence, that is, regular or defective menstruation, has not been perceived. 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 pertubation 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, farther 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 favourite 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 judgment 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 non-naturals 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 par-

ticular 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 cuisses 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 farther 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 usual-

ly 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 prov-

ed, 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. Farther, 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.
— 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 advisable 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 to 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 relieved during their confinement from some of the consequences of a former attack.*

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* [This disease, already known by many names, has recently been

Before I conclude, I must express my satisfaction at the favourable 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.

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denominated *Cruritis*, from the symptoms of an inflammatory nature which it exhibits, the causes by which it is most frequently produced, and the treatment by which it is most advantageously removed. (Hosack, System of Practical Nosology.) The phlegmasia dolens is of rare occurrence, and seldom of a formidable character. A late case is recorded, in which extensive ulceration succeeded the tumefaction. I have seen four cases of this disease: they seemed to have no connection with the severity or tediousness of the labour, or the condition of the lochial discharge. In one case, the swelling took place on the 4th day after delivery; and, in two others, on the 8th or 10th day. The fourth case occurred in a male subject, after an attack of typhus fever. In this case the disease was as strongly marked as in any puerperal woman. This fact of itself goes to prove that phlegmasia dolens may arise independent of the lochial discharge, or the absorption of the vitiated matter of the uterus. In two of these cases the patients were exposed to cold and other exciting causes of inflammation. In one case blood-letting was employed to the amount of 14 ounces. In all, the usual means, such as the saline catharthics, small doses of calomel and James' powder, and tepid fomentations of vinegar and water, were had recourse to in the first stage; in the second stage, the patient's strength was cherished by the moderate use of nutritious diet, and the application of the volatile liniment and flannel roller. F.]

APPENDIX.

I CANNOT dismiss these NOTES, without observing, that the student, who shall have attentively perused our author's pages, will have such firm confidence in the ample resources of nature, that he will be little disposed to have recourse to instruments, plainly and explicitly as Dr. Denman has pointed out their application. It is indeed painful to consider how many lives must have been sacrificed before the obstetrical powers of nature were understood; and for this salutary improvement in practice, mankind are in a great measure indebted to Dr. Denman. Immense has been the change effected in this respect in Great Britain within the last fifty years; and in our own country, where the science of obstetrics universally forms a part of a medical education, the enlightened practitioner justly considers instrumental delivery as a final resort. But it is to be regretted that instances occasionally occur within our notice, where obstinacy and ignorance, usurping the place of knowledge, have recourse to artificial aid, when neither the contracted dimensions nor the deformity of the pelvis, the presentation of the child, nor any other untoward circumstance, warrants their interference. The following case came under my care in 1815: fortunately for the medical character of our country, such instances are comparatively very rare.

Mrs. H——, of New-York, was married when within two months of fourteen years of age, and had never menstruated: a short period after, her menses came on for the first time, she became pregnant in about two months, and when she had been married eleven, was delivered of her first child, after a tedious labour, by the natural pains. The child was a female, born alive, and weighed about seven pounds. About a year after she again became pregnant, and went her full time: she was delivered by the crotchet, and the child necessarily destroyed. Fourteen months after this she miscarried; and twelve months after was delivered by the forceps of a living child. Twelve months after, again by the forceps, of a dead child; and after the expiration of another year, was again delivered by the forceps; the child alive. Again, after twelve months, she was delivered by the forceps of a dead child. Somewhat more than a year after this, she was again delivered by the forceps of a living child. She complained that some injury was done her in the delivery; yet, notwithstanding, within little more than two years, she bore a healthy child by the natural pains; and on the 28th of June, 1815, she was again delivered of a healthy well-formed child, of the ordinary size, by the natural pains. As to this last occasion, to which I was called, the membranes had broken, and the waters were discharged above a

month before the access of the labour; during which interval she suffered so much pain as repeatedly to suppose herself in labour; but by patience and careful management, and by inspiring her with confidence in the resources of her constitution, she went on to her full period, and at last was safely delivered, after a labour, in all respects natural, save its duration, which was not above thirty-six hours in continuance.

This woman, ther in her first and last two labours, bore healthy well formed children, of the common size, by the natural pains; a manifest proof of a well formed pelvis, and affording the strongest presumption, that the same management might have conducted her with equal success through the labours of the intermediate period, during which, from causes not necessary to be assigned, instruments were unnecessarily made use of in six successive births, and three human beings destroyed.

Tabular Views present facts and inferences so distinctly to the mind, that I am induced to insert the following.

TABLE I.

Statement of Presentations at the Maison d'Accouchemens, furnished by the late M. Baudelocque.

"There have been admitted into the Lying-in Hospital at Paris (Maison d'Accouchemens,) between the 9th of Dec. 1799, and the 31st of May 1809, 17,308 women, who gave birth to 17,499 children: 189 of them have been delivered of twins, and two only of three children. The proportion of twin cases to single births is 1 to 91.

"Two thousand of these women were affected afterwards with illness, or some serious accident; 700 died out of the 2000.

"Of the 17,499 births, 16,286 were presentations of the vertex to the os uteri.

No.		Proportions.
215	were presentations of the feet	1 to $81\frac{2}{3}$
296	the breach	1 — $59\frac{1}{5}$
59	the face	1 — $296\frac{1}{2}$
52	one of the shoulders	1 — $336\frac{1}{2}$
4	the side of the thorax	1 — $4374\frac{3}{4}$
4	the hip	1 — $4374\frac{3}{4}$
4	the left side of the head	1 — $4374\frac{3}{4}$
4	the knees	1 — $4374\frac{3}{4}$
4	the head, an arm, and the cord	1 — $4374\frac{3}{4}$
3	the belly	1 — 5833
3	the back	1 — 5833
3	the loins	1 — 5833
1	the occipital region	1 —17499
1	the side, with the right hand	1 —17499
1	the right hand and left foot	1 —17499

1	the head and the feet - - -	1	—17499
2	the head, the hand, and forearm -	1	— 8749½
37	the head and umbilical cord - -	1	— 473

"Of this great number of women 230 were delivered by art; the rest were natural births: being in proportion of 1 to 76½. 161 were delivered by the hand alone, the children being brought by the feet; 49 were delivered by the forceps, either on account of the small dimensions of the pelvis, the falling down of the umbilical cord, or the wrong position of the head, when the woman was exhausted, or her life was in danger by convulsions, &c.; 13 were extracted by the crotchet after perforation of the head, on account of mal-conformation of the pelvis: in these instances, the death of the child was first ascertained.

"The Cesarean operation was performed in two cases, the diameter of the pelvis being only one inch six lines from sacrum to pubes.

"In one, the section of the symphysis pubis was performed, the diameter of the pelvis from sacrum to pubis being only two inches and a quarter.

"Gastrotomy was performed once, the fœtus being extra-uterine: the child weighed 8lbs. 2 oz."

TABLE II.

Exhibiting the Result of Practice at the Hospice de la Maternité, at Paris, among 20,357 *Patients, from* 1797 *to* 1811; *taken from Madame Boivin's "Memorial de l'Art des Accouchemens,"* Ed. 2d. (1817.)

N. B. The preceding table, exhibiting the cases of 17,308 women is included in this.

20,357 women produced 20,517 children—20,200 being single, 154 twin, and 3 triplet births.

20,183 children were born without artificial assistance.

218	—— delivered by turning.
96	—— by the forceps.
16	—— by the perforator.
2	—— by the division of the symphysis pubis.
2	—— by gastrotomy.

No mention is made of the number of deaths among the children born without artificial assistance: but among the 334 where artificial aid was required, 91 were dead born; of which 68 appear to have lost their lives during the labour, and 23 were dead before the labour began. Of the deaths of the mothers we learn nothing from Madame Boivin.—See *Merriman's Synopsis.*

TABLE III.

Calculations of the Number of Accidents or Deaths which happen in consequence of Parturition; taken from the Midwifery Reports of the Westminster General Dispensary. By Robert Bland, M. D. (1781.)

Of 1897 women delivered under the care of the Dispensary,

63 (or 1 in 30) had unnatural labours: in
- 18 of these (or 1 in 105) the children presented by their feet; in
- 36 (or 1 in 52) the breech presented; in
- 8 the arms presented; and in
- 1 the funis.

} (9* or 1 in 210.)

63

17 women (or 1 in 111) had laborious labours; in
- 8† of these (or 1 in 236) the heads of the children were lessened; in
- 4 a single blade of a forceps was used; and in the remaining
- 5 in which the faces of the children were turned to the pubes, the delivery was at length accomplished by the pains.

17

1 woman had convulsions about the seventh month of her pregnancy, and was delivered a month after of a dead child and recovered.

1 woman had convulsions during labour, brought forth a live child, and recovered.

82

9‡ women (or 1 in 210) had uterine hemorrhage before and during labour.

Of these 1 died undelivered;
1 died in a few hours, and
1 ten days after delivery; and
6 recovered.

9

91

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* In all these nine cases the children were turned.

† Two of these women have since been delivered of full-sized healthy children. A third bore a very small and weakly child, who died in two or three days. A fourth was delivered of a seven months' child, without mutilating it, which died in its passage. The number of women, therefore, who from error in their conformation were incapable of bearing live children, appears to be very inconsiderable. Of the remaining four I have not been able to get any intelligence.

‡ In these nine cases, only one child was saved.

91	
5	women had the puerperal fever, of whom four died. In one of these the placenta was undelivered, and continued so to her death.
2	women were seized with mania, but recovered in about three months. In
1	woman a suppuration took place, soon after her labour, from the vagina into the bladder and rectum. This patient recovered, but the urine and stools continue to pass through the wounds. Of
1	woman the perinæum was lacerated to the sphincter ani. A suture was attempted, but without effect; she recovered but is troubled with prolapsus uteri.
5	had large and painful swellings of the legs and thighs, but recovered.
105	therefore of these (or 1 in 18) had preternatural or laborious births, or suffered in consequence of labour. Of this number of cases, 43 (or 1 in 44) were attended with particular difficulty or danger; and 7 only (or 1 in 270) died. The remaining 62 were delivered, and recovered with little more than the common assistance; and
1792	had natural labours, not attended with any particular accidents.
1897	

TABLE IV.

Statement of the Presentations of the Child in 2947 Cases of Parturition, in private Practice; with the Accidents, Deaths, &c. which happened in the whole Number.—See Merriman's Synopsis.

2947 labours produced 2988 children—1518 boys, 1470 girls.

In 2810 cases, the head presented, viz.

2735 times in the most natural and convenient posture.
44 or 1 in 67 with the forehead turned toward the pubes.
10 or 1 in 294 with the face foremost.
13 or 1 in 227 with the hand by the side of the head.
8 or 1 in 368 with the funis.

In 19 instances, or 1 in 155, the superior extremities presented, viz.

14 times, one hand or arm.
2 —— both hands.
3 —— one hand, and one or both feet.

In 78 instances, or 1 in 38, the nates or one hip presented, viz.
72 times not complicated with any other part.
5 —— together with one foot.
1 ———————— the navel string.

In 40 instances, (or 1 in 76) the lower extremities presented,
37 times one or both feet.
1 —— the knee.
2 —— the feet and funis.

In 128 cases, or 1 in 22, of natural presentations, the labour lasted more than 24 hours.

21 or 1 in 140 there was accidental hemorrhage.
7 or 1 in 421 there was unavoidable hemorrhage.
4 or 1 in 210 there was hemorrhage after delivery.
5 or 1 in 588 there were convulsions.
39 women, or 1 in 76, were delivered of twins.
1 woman had triplets.
1 ———— the hymen unruptured.
1 ———— extreme constriction of the vagina, in consequence of inflammation subsequent to a former labour.
1 ———— excessive induration of the os uteri, which in a few months terminated in carcinoma, and proved fatal.

In 9 cases, or 1 in 328, the perforator was employed.
*7 times on account of distortion of the pelvis.
2 —— in very lingering labour, when the want of pulsation in the presenting funis had fully proved the death of the children.

In 21 cases, or 1 in 140, the forceps or vectis were found necessary, viz.
twice in consequence of convulsions.
twice from wrong position of the head.
twice from repeated syncope.
15 times from want of expulsive power in the uterus.
In 16 cases it was the patient's first child.

Of the children brought into the world by the forceps,
15 were born alive.
6 ———— dead.
viz. in 1 case of wrong position of the head, the child was putrid.
2 cases the mothers were convulsed.
3 —— no other cause could be assigned than the length or difficulty of the labour.

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* In four cases, where, on account of deformity of the pelvis, it had been found necessary to use the perforator, premature labour was afterwards induced, by which means two children were preserved.

Of all the children born, 149, including the above 6, were dead.
Of these 83 were premature births, and most were dead before the occurrence of the labour.

66 appeared to die from the severity of the labour.

viz. 9 in nates case.
6 — feet ditto.
2 — arm ditto.
4 — funis ditto.
9 — accidental hemorrhage ditto.
5 — unavoidable ditto ditto.
5 — convulsion ditto.
1 — rupture of the uterus.
1 when the mother died undelivered.

24 from the long duration of the labour—this includes the 6 forceps and 9 perforator cases.

14 of the mothers, or 1 in 210, died during the month of childbed, viz.

3 of peritonitis, or puerperal fever.
1 in convulsions.
1 broke a large blood-vessel, and suddenly died undelivered.
1 of rupture of the uterus—(this was a narrow pelvis.)
1 suddenly on the fifth day after delivery, without any known cause.
1 who had vaginal stricture.
1 of hemorrhage in a placenta presentation.
1 of peripneumonia notha, which brought on premature labour.
4 of phthisis pulmonalis.

TABLE V.

Table of the average number of Deaths in Childbed in Philadelphia, taken from the Bills of Mortality.—See Dr. James' Edition of Merriman.

The population of the city of Philadelphia and its suburbs, within the bills of Mortality, may be estimated at 100,000. The average number of deaths in childbed solely, and also in childbed and puerperal fever jointly, taken from the said bills for nine years, is as follows :

	Childbed solely.	Childbed and Puerperal Fever.
For 1 year ending Jan. 2, 1808—1 in	170	1 in 107
1 - - 1, 1809—1 in	567	1 in 378
1 - - 1, 1810—1 in	2004	1 in 400*
1 - - 1, 1811—1 in	2036	1 in 156†
1 - - 1, 1812—1 in	447	1 in 265
1 - - 1, 1813—1 in	600	1 in 257
1 - - 1, 1814—1 in	408	1 in 272
1 - - 1, 1815—1 in	296	1 in 254‡
1 - - 1, 1816—1 in	291	1 in 204

The average number of deaths in childbed, exclusive of puerperal fever, for 9 years, is 1 in 418.

The average number of deaths in childbed, and puerperal fever jointly, for 9 years, is 1 in 219.

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* In this year, but 1 woman is stated to have died in parturition, and 4 of puerperal fever—the total number of deaths being 2004.

† In this year, but 1 woman is stated to have died in childbed, and 12 of puerperal fever--the total number of deaths being 2036.

‡ In this year, but 1 woman is stated to have died of puerperal fever, and 6 in childbed.

TABLE VI.

Number of Deaths in Childbed, and by Puerperal Fever, in the City of New-York, from 1814 *to* 1820, *inclusive—extracted from the Reports of the City Inspector.*

Years.	Deaths in Childbed.	By Puerperal Fever.	Total No. of deaths of Males and Females.
In 1814	12	1	1974
1815	17	3	2507
1816	22	6	2739
1817	17	1	2527
1818	8	3	3265
1819	15	4	3176
1820	20	7	3515

TABLE VII.

Dr. David R. Arnell, Physician at Goshen, State of New-York, has favoured me with the following results of twelve hundred cases, in his private practice, in a communication dated, February, 1821.

In 1200 cases of Labour, there were,

Difficult and tedious	40
Feet presentation	4
Breech cases	2
Face presentations	4
Instrumental, (the forceps)	5
Presentations requiring turning	12
Still-born	23
Diminishing the head	4
Adhesion of the placenta	2
Mothers died after delivery	8
Mother died in labour	1
Twins	16
Triplets	1
Born with teeth	1

I shall conclude with giving place to the ensuing interesting letter from WILLIAM MOORE, M. D. of the City of New-York, a gentleman long distinguished for his extensive experience in obstetrical practice.

New-York, June 26, 1821.

DEAR SIR,

In compliance with your request, and my promise made some days ago, I have examined my register of Midwifery cases, from which I find that 2866 labours have produced 1461 sons, 1435 daughters, 1 hermaphrodite, and 2 masses of hydatids.

There are 33 cases in which twins were born.

2,516 Natural Labours, in which both mother and child did well.
106 do. in which the child was dead or died.
8 do. in which the mother died.
2 do. in which both died.
65 Preternatural cases, in which both did well.
41 do. in which the child died.
5 do. in which both died.
29 Flooding cases, in which both did well.
26 do. in which the child died.
5 do. in which the mother died.
9 do. in which both died.
8 Convulsion cases, in which both did well.
9 do. in which the child died.
3 do. in which both died.
7 Forceps cases, in which both did well.
7 do. in which the child died.
1 do. in which the mother died.
4 do. in which both died.
14 Crotchet cases, 11 mothers recovered, 3 died.
1 Laborious case, in which the woman died undelivered.

Upon inspecting this list, we perceive that in 2632 Natural Labours, 10 mothers died, which is about equal to one in every 263 cases; and that 108 children died, which is about one in every 24 cases; hence it is evident that, at all times, the child is in much greater danger than the mother.

In 111 Preternatural cases, 5 mothers and 46 children died, which is about one mother in every 22 cases, and nearly one-half the children.

In 69 Flooding cases, 14 mothers and 35 children died, which is about one-fifth of the mothers, and one-half of the children.

In 20 Convulsion cases, 3 mothers and 12 children died, which is about one in 7 of the mothers, and three-fifths of the children.

In 19 Forceps cases, 5 mothers and 11 children died, or about one-fourth of the mothers, and above one-half the children.

In the Crotchet cases about one in 5 of the women died.

From taking a general view of the whole number of cases, we find that in 2866 labours, 41 mothers and 227 children have died, which is about equal to one mother in every 70 cases, and one child in every $12\frac{1}{2}$; but, in estimating the proportion of deaths to recoveries, it is proper to observe here, that the above list contains a greater

proportion of unfortunate cases than will be found to occur in ordinary practice. For, as I have made it a rule to register every case to which I have been called, I have not only recorded my own share of bad cases, but many of those, also, which have occurred in the practice of my friends, with whom I have been called in consultation. The only way to obtain a true result, in this particular, would be, to register every case of labour that should occur in some city, or district of country, and then to compare the whole.

As to the poor woman who died undelivered, I have ever regretted, that I did not recommend the Cæsarian operation as soon as she died; for I am persuaded, that, had it been promptly performed, the child might have been saved; for, after reflecting upon her symptoms, and all the circumstances of her case, I was fully convinced that there must have been a sudden rupture of the uterus, and that the child had escaped into the cavity of the abdomen.

I have but little to say upon the use of ergot, in addition to what was published in Doctor Bard's book, having seen it administered only in one case since, in which the mother was very soon relieved; but the child, as is too often the case, was born dead.

From having observed, in our bills of mortality, such an increase in the number of still-born children, I am induced to believe that some of our practitioners of Midwifery are too fond of the use of ergot, and that they give it prematurely. It is my opinion, that it ought to be administered in such cases only, as those in which we would recommend the forceps, if that should not succeed.

I am, very sincerely, yours, &c.

WM. MOORE.

DR. JOHN W. FRANCIS.

APHORISMS

ON

THE APPLICATION AND USE

OF

THE FORCEPS AND VECTIS;

ON PRETERNATURAL LABOURS; ON LABOURS ATTENDED WITH HEMORRHAGE, AND WITH CONVULSIONS.

BY THOMAS DENMAN, M. D. &c. &c.

Arrangement of Labours.

FOUR CLASSES.

I. Natural.
II. Difficult.
III. Preternatural.
IV. Anomalous, or complex.

CLASS I.

NATURAL LABOURS.

Character. Every labour in which the process is completed within twenty-four hours, the head of the child presenting, and no adventitious assistance being required.

VARIETIES.

1. The face inclined toward the sacrum.
2. The face inclined toward the ossa pubis.
3. The head presenting with one or both arms.
4. The face presenting.

That part of a child which descends lowest into the pelvis is to be esteemed the presenting part.

Circumstances attending Labours.

1. Anxiety.
2. Rigours.
3. Stranguary.
4. Diarrhœa.
5. Mucous discharge, with or without a mixture of blood.
6. Pain.

Causes of Pain.

1. Expulsatory action of the uterus.
2. Resistance made to the effect of that action.

Distinctions of Pain.

1. True.
2. False.

Causes and signs of false pain.
Means of removing them.
Means by which true pains are supposed to be regulated, and their effect promoted.

NOTE. The pains attending labour are subsequent to the action of the uterus, though in common language the word pain, and the action of the uterus, are used synonimously.

Progress of Natural Labours.

Three periods or stages.

1st period.
- Dilatation of the os uteri.
- Rupture of the membranes.
- Discharge of the waters.

2d period.
- Descent of the child.
- Dilatation of the external parts.
- Expulsion of the child.

3d period.
- Separation of the placenta.
- Expulsion or extraction of the placenta.

NOTE. It very often happens that the membranes do not break till the head of the child is on the point of being expelled. This is the natural and most desirable progress of a labour, and it is a negative proof that the labour has been well conducted; that is, not interrupted. But the description given above will answer the purpose of impressing a clear, general idea of labours.

The two circumstances which principally require attention in natural labours are, to guard the perinæum and to extract the placenta with discretion.

CLASS II.

DIFFICULT LABOURS.

CHARACTER. Every labour in which the process is prolonged beyond twenty-four hours, the head of the child presenting.

NOTE. Some objections may be made to this definition taken from time, but it will be found to apply to practical uses better than if it was taken from circumstances.

It would often be extremely difficult to say with precision when a labour actually begins, because of the number of concurrent changes; but in general some progress must be made before we can allow a labour to be commenced.

FOUR ORDERS.

ORDER I.

Labours rendered difficult from the inert or irregular action of the Uterus.

CAUSES.

1. Too great distention of the uterus.
2. Partial action of the uterus.

3. Rigidity of the membranes.
4. Imperfect discharge or dribbling of the waters.
5. Shortness of the funis umbilicalis.
6. Weakness of the constitution.
7. Fever.
8. Want of a due degree of irritability.
9. Passions of the mind.
10. General deformity.

ORDER II.

Labours rendered difficult by the Rigidity of the Parts to be dilated.

1. First child.
2. Advancement in age.
3. Too early rupture of the membranes.
4. Oblique position of the os uteri.
5. Fever or local inflammation.
6. Extreme rigidity of the os uteri.
7. Uncommon rigidity of the external parts.

ORDER III.

Labours rendered difficult from Disproportion between the Dimensions of the Cavity of the Pelvis and the Head of the Child.

1. Original smallness of the pelvis.
2. Distortion of the pelvis.
3. Head of the child unusually large, or too much ossified.
4. Head of the child enlarged by disease.
5. Face inclined toward the ossa pubis.
6. Presentation of the face.
7. Head presenting with one or both arms.

ORDER IV.

Labours rendered difficult by Diseases of the soft Parts.

1. Suppression of urine.
2. Stone in the bladder.
3. Excrescences of the os uteri.
4. Cicatrices in the vagina.
5. Adhesion of the vagina.
6. Steatomatose tumours.
7. Enlargement of the ovaria.
8. Rupture of the uterus.

NOTE. The disturbance of the natural progress of labours, more especially the premature rupture of the membranes, is the most general cause of difficulties in parturition.

Women are to be relieved in difficult labours,

1. By time and patience.
2. By encouragement to hope for a happy event.
3. By regulating their general conduct.

4. By lessening or removing the obstacles to the effects which should be produced by the pains.
5. By the assistance of instruments.

Intentions in the Use of Instruments.

1. To preserve the lives both of the mother and child.
2. To preserve the life of the mother.
3. To preserve the life of the child.

Instruments contrived to answer the first Intention.

1. Fillets. 2. Forceps. 3. Vectis.

Three things are to be considered with respect to the Forceps or Vectis, and to the use of instruments in general.

1. To make an accurate distinction of those cases which require their use.
2. Of those cases which allow their use.
3. Of the manner in which they ought to be used.

We are in the first place to speak of the application and use of the forceps.

Directions for, and Admonitions in, the Application and Use of the Forceps.

SECTION I.

1. It has long been established as a general rule, that instruments are never to be used in the practice of midwifery; the cases in which they are used are therefore to be considered merely as exceptions to this rule.

2. But such cases can very seldom occur in the practice of any one person; and when they do happen, neither the forceps nor any other instrument is ever to be used in a clandestine manner.

3. The first stage of a labour must be completed, that is, the os uteri must be dilated, and the membranes broken, before we think of applying the forceps.

4. The intention in the use of the forceps is, to preserve the lives both of the mother and child, but the necessity for using them must be decided by the circumstances of the mother only.

5. It is meant, when the forceps are used, to supply with them the insufficiency or want of labour pains; but so long as the pains continue, we have reason to hope they will produce their effect, and shall be justified in waiting.

6. Nor doth the cessation of the pains always prove the necessity of using the forceps, as there may be a total or a temporary cessation of the pains.

7. In the former, the pulse, the countenance, and the general appearances of the patient indicate extreme debility, and resemble those of a person worn out with disease or fatigue.

8. But in the latter there are no alarming symptoms, and the patient often enjoys short intervals of refreshing sleep.

9. A rule for the time of applying the forceps has been formed from the following circumstance, that, after the cessation of the pains,

the head of the child should have rested for six hours in such a situation as to allow the use of the forceps before they are used.

10. But this and every other rule intended to prevent the rash and unnecessary use of the forceps, must be subject to the judgment of the person who may have the management of any individual case.

11. Care is also to be taken that we do not, through an aversion to the use of instruments, too long delay that assistance we have the power of affording with them.

12. The difficulties which attend the application and the use of the forceps are far less than those of deciding upon the proper time when, and the cases in which, they ought to be applied.

13. The lower the head of the child has descended, and the longer the use of the forceps is deferred, the easier will in general their application be, the success of the operation more certain, and the hazard of doing mischief less.

14. The forceps should always be applied over the ears of the child; it must therefore be improper to apply them when we cannot feel an ear.

15. But when an ear can be felt by a common examination, the case is always manageable with the forceps, if the circumstances of the mother require their use.

16. The ear of the child which can be felt will be found toward the ossa pubis, or under one of the rami of the ischia.

17. The ears are not turned to the sides of the pelvis till part of the hind head has emerged under the arch of the ossa pubis, when the use of the forceps can very seldom be required.

18. When you have determined on using the forceps, and explained the necessity of using them to the patient and her friends, she is to be placed in the usual position on her left side, near to the edge of the bed; and the instruments warmed in water, and smeared with some unctuous application, are to be laid conveniently by you.

Note. Women, impelled by their fears and their sufferings in difficult labours, will very frequently implore you to deliver them with instruments, long before you will be convinced of the necessity of using them. In many cases I have found it expedient and encouraging to them to fix upon some distant time when they should be delivered, if the child were not before born; six, or eight, or twelve hours, for instance. In some cases of great apprehension I have also shown them, upon one of my knees, all that I intended to do with the forceps.

The following rules are given on the presumption that the head of the child presents with the face inclined, or verging toward the hollow of the sacrum, and that the common short forceps are intended to be used; but if any other kind of forceps should be preferred, the rules must be adapted to the instrument.

SECTION II.

1. Carry the fore finger of the right hand to the ear of the child.

2. Then take the blade of the forceps to be first introduced by the handle in the left hand, and conduct it between the head of the child and the finger already introduced, till the point reaches the ear.

3. The farther introduction must be made with a motion resembling a slight degree of semi-rotation, and the point of the blade must be kept close to the head of the child, by gently raising the handle as the instrument is advanced.

4. The blade of the forceps must be carried up, till the lock reaches the external parts near the inferior edge of the ossa pubis.

5. Should any difficulty occur in the introduction of either of the blades, we must withdraw them a little to discover the obstacle, and never strive to overcome it with violence.

6. When the first blade is introduced, it must be held steadily in its situation, as it will be a guide in the introduction and application of the second blade.

7. The second blade of the forceps must be conducted upon the fore finger of the left hand, passed between the head of the child and the perinæum, in the same cautious manner as the first, till the lock reaches the perinæum, or even presses it a little backward.

8. When the second blade is properly introduced, its situation should be opposite to the first.

9. In order to lock the forceps, the handles of which are at a considerable distance from each other, the blade first introduced must be brought down, and carried so far back that it will lock with the second blade held in its first position.

10. Care should be taken that nothing be entangled in the lock of the forceps, by carrying the finger round it.

11. It is convenient to tie the handles of the forceps together, when locked, with force sufficient to keep them from sliding or shifting their position.

12. If the blades of the forceps were introduced so as not to be opposite to each other, they could not be locked.

13. Should the handles of the forceps when applied come close together, probably the bulk of the head is not included between them, and, therefore, when we acted with them, they would slip.

14. If the handles, when locked, are at a great distance from each other, they are not well applied, and will probably slip.

15. But in these estimations allowance is to be made for the different dimensions of the heads of children.

16. The forceps will never slip if judiciously applied, if the case be proper for their use, and we act circumspectly with them.

Note. The difficulties in the application of the forceps arise from attempting to apply them too soon; from passing them in a hurry, or in a wrong direction; or from entangling the soft parts of the mother between the instrument and the head of the child. Of course we are always to be guarded against these circumstances.

SECTION III.

1. There is no occasion, and it would be hurtful to attempt to change the position of the head, when the forceps are applied, before we began to extract.

2. For if the action with the forceps be slow, the head of the child will turn in the same manner, and for the same reasons, as in a natural labour.

3. Therefore, the forceps being fixed upon the head must also change their position according to its descent, and the handles be gradually turned from the ossa pubis and sacrum, where they were first placed, to the sides of the pelvis.

4. The handles of the forceps likewise, though originally placed far back toward the sacrum, that is, in the direction of the cavity of the pelvis, will be gradually turned, as the child advances, more and more toward the pubes, that is, in the direction of the vagina.

5. The first action with the forceps must be to bring the handles, firmly grasped in one or both hands, slowly toward the pubes, till they come to a full rest.

6. After waiting till the pains return, or an imaginary interval if there should be a total want of pain, the handles are to be carried back in the same slow aud cautious manner, till the lock reaches the perinæum, using, at the same time, a certain degree of extracting force.

7. The subsequent actions must be from handle to handle, or occasionally by simple traction.

8. By a repetition of these actions, always directed according to the position of the handles, with their force increased, diminished, or continued, according to the exigence of the case, we shall in a short time perceive the head of the child descending.

9. When the head begins to descend, the force of the action with the forceps must be abated, and as that advances, the direction of the handles must change by degrees more and more to each side, and toward the pubes.

10. The lower the head of the child descends, the more gently we must proceed, in order to prevent any injury or laceration of the perinæum or external parts, which are likewise to be supported in the same manner as in a natural labour.

11. In some cases, the mere excitement occasioned by the application of the forceps, or the very expectation of their being applied, will bring on a return or an increase of the pains sufficient to expel the child without their assistance.

12. In other cases we are obliged to exert very considerable force, and to continue it for a long time; so that one operation may be safely and easily finished in twenty minutes, or even a less tim , and another may require more than an hour for its completion, and the repeated exertions of very considerable force.

13. In some cases it happens also, that the obstacle to the delivery exists at one particular part of the pelvis, and when that is surmounted, the remainder of the operation is easy; but in other cases there is some difficulty through the whole course of the pelvis.

14. Before the exertion of much force, we are always to be convinced that a small or moderate degree of force is not equal to our purpose.

15. In every case in which the forceps have been applied, they are not to be moved before the head is extracted, even though we might have little or no occasion for them.

16. When the head of the child is born, the forceps are to be re-

moved, and the remaining circumstances are to be managed as if the labour had been natural.

Note. The general arguments against the use of instruments have been drawn from their abuse : It appears, however, that necessity will, in some instances, justify the use of the forceps ; that when such necessity exists, their use is not only justifiable, but often highly advantageous ; that delay to apply them, and slowness in their application and use, will secure, as far as is possible, both the mother and child from untoward accidents ; but that mischief cannot be prevented if they are applied too soon, or the operation with them be performed in a hurry.

It would be a very desirable thing that every student should have an opportunity of seeing the operation with the forceps performed before he goes into practice ; but that is not always possible. Yet if he has been properly instructed in the principles of the application and use of the forceps, reflects seriously before he determines on performing the operation, and proceeds slowly but not timidly in it, he can hardly fail to succeed. Hurry in any operation, is a very common sign both of want of information and of fear ; and attention is to be paid to the order of the rule in Celsus 1. tuto, 2. cito, 3. jucunde.

SECTION IV.

On the application and use of the Vectis.

1. We shall have a just idea of the vectis by considering it as one blade of the forceps, a little lengthened and enlarged, with the handle placed in a direct line with the blade, that is, without any lateral curvature.

2. The general condition and circumstances of labours before stated, as requiring and allowing the use of the forceps, will hold equally good when the vectis is intended to be used.

3. In the application of the vectis, two fingers, or the fore-finger of the right hand, is to be passed to the ear of the child.

4. Then taking the vectis by the handle, or with the blade shortened, in the left hand, conduct it slowly till the point of the vectis reaches the ear, however that may be situated.

5. The instrument is then to be advanced, as was advised with the forceps, till, according to your judgment, the extremity of the blade reaches as far, or a little beyond, the chin of the child.

6. Then grasping the handle of the instrument firmly in the right hand, wait for the accession of a pain.

7. During the continuance of the pain, raise the handle of the instrument gently but firmly toward the pubes, drawing at the same time with some degree of extracting force.

8. When the pain ceases let the instrument rest, and on its return repeat the same kind of action, alternately resting and acting in imitation of the manner of the pains.

9. By a repetition of this kind and manner of action, the head of the child is usually advanced, and the face turning gradually toward the hollow of the sacrum, the position of the handle of the vectis

will be altered, and the direction of the action with it of course should be changed.

10. When the head is perceived to descend, we must proceed more slowly and carefully, according to the degree of descent, in order to prevent any injury to the external parts, which is to be prevented, as was directed when the forceps are used.

11. But if by the continuance of the moderate force before recommended, the head should not descend, it must be gradually and cautiously increased till it becomes sufficient to bring down the head.

12. In the action with the vectis, the back part of the instrument must rest upon the symphysis of the ossa pubis, or upon the ramus of the ischium, according to its position, as upon a fulcrum, for its support.

13. By passing the flat part of the hand to the back of the blade of the instrument when in action, we shall be occasionably able to lessen or take off this pressure, which must otherwise be made upon the parts of the mother.

14. Some have recommended the vectis to be used when the head of the child was higher up in the pelvis than is before stated, as justifying the use either of this instrument or the forceps.

15. They have also recommended the vectis when the head of the child was firmly locked in the pelvis, and have asserted that by its use there is often obtained a very good chance of preserving the life of a child, which must otherwise be inevitably lost.

16. Others have by frequent use acquired such dexterity, as to be able to extract the head of a child, in the situation first stated, with a single sweep of the instrument.

17. Some have also advised the introduction of the vectis between the sacrum, or sacrosciatic ligaments, and the head of the child, from a belief that it could be equally or more advantageously used in this position than in that first stated.

18. But having ever considered the use of all instruments as a thing to be lamented, and when I did use them, esteemed the safety of using them as my principal object, I cannot deviate from these principles, or enter upon a discussion of points of practice, of which, as far as I am competent to judge, I cannot approve.

Note. Before, and immediately after the publication of my second Essay on Difficult Labours, several gentlemen, with whom I converse, and to whom I ought to pay great respect, reprehended in very decided terms what I have advanced with regard to the forceps and vectis. Some maintained that the forceps is an instrument far superior to the vectis, of which I was accused of speaking too favourably. Others, of equal respectability, accused me of speaking with timidity or restraint, of those advantages which they asserted the vectis had over the forceps. This very strong evidence could only be invalidated by its contradiction, but the very respect which I bear to the witnesses compelled me to pass over their evidence, and to rely upon my own experience and judgment.

I did not speak of the mechanism of the instruments, or of the operation performed when we had applied, and acted with them, as these have hitherto been very imperfectly and often erroneously ex-

plained. The subject came under consideration in the ordinary course of the work, and having frequently used both the instruments, I stated the matter equitably, according to the best of my abilities, and in such a way that, I thought, students, who were principally concerned in the discussion, being left with the choice of either instrument, according to the doctrines of the particular professors whom they might attend, could not be misled. It is not to be expected that men versed in the practice should change their opinions or alter their practice, or, in short, pay much regard to disputes about instruments, if any were disposed to raise them.

It then was, and yet remains my opinion, founded, as I before observed, on my experience with both instruments, that the superior excellence which has been attributed to each of these instruments, ought chiefly to be ascribed to the dexterity which may be acquired by the habit of using either of them. It is also my opinion that we may, in general, either with the forceps or vectis, effectually and conveniently give that assistance which is required in cases of difficult parturition, allowing and justifying their use. In particular cases it may perhaps be proved that one instrument is more commodious than another.

But if the vectis be depreciated by those who have never used it, and are not expert in its use, because they prefer the forceps; or if the known properties of the forceps be not allowed by those who do not use them, because they prefer the vectis, the proper inference would not be, that either of the instruments ought to be condemned; but that we are in possession of two instruments well adapted to answer the same purpose, if they are prudently used; or, that neither of them ought to be used.

CLASS III.

PRETERNATURAL LABOURS.

CHARACTER.—Labours in which any part of the child presents, except the head.

TWO ORDERS.

ORDER I.

Presentations of the Breech, or inferior extremities.

ORDER II.

Presentations of the Shoulder, or superior extremities.

SECTION I.

1. The presentation of children at the time of birth may be of three kinds. 1. With the head. 2. With the breech, or inferior extremities. 3. With the shoulder, or superior extremities.

2. Presentations of the first kind are called natural, those of the second and third kind, preternatural.

3. Preternatural presentations have been subdivided into a much greater variety, but without any practical advantage.

4. The presumptive signs of the preternatural presentation of children are very uncertain, nor can it ever be determined what the presentation is, till we are able to feel the presenting part.

5. When any part of a child can be felt, we may form our judgment of the presenting part by the following marks.

6. The head may be distinguished by its roundness, its firmness, and its bulk.

7. The breech may be known by its bulk, by the cleft between the buttocks, by the parts of generation, and by the discharge of meconium.

8. The foot may be distinguished by its length, by the heel, by the shortness of the toes, and the want of a thumb; and the hand by its flatness, by the thumb, and the length of the fingers.

SECTION II.

On the first Order of Preternatural Presentations.

1. In this kind of presentation, the breech, one hip, the knees, and one or both legs are to be included.

2. In these presentations it was formerly supposed necessary, as soon as they were discovered, to introduce the hand to bring down the feet, and to extract the child with expedition.

3. But, according to the present practice, such labours are not to be interrupted, but allowed to proceed as if the presentation were natural; unless the necessity of giving assistance should arise from some circumstance independent of the presentation.

4. By acting on this principle, when the breech of the child is expelled by the pains, the parts are sufficiently distended to allow the body and head to follow without any danger from delay.

5. But if the feet of the child were to be brought down in the beginning of labour, the difficulty with which it would be expelled or could be extracted, increasing as it advanced, the child would probably die before the woman was delivered, and she would be in danger of suffering mischief.

6. In cases of this kind there is also equal reason, when the breech is on the point of being excluded, for our guarding the perinæum from the hazard of laceration, as in presentations of the head.

7. In first labours, the child, unless it be small, will not unfrequently be born dead, when the breech, or inferior extremities present; but in subsequent labours they will usually be born living, if there be no other impediment than that which is occasioned by the presentation.

8. The injuries which the presenting part of the child, especially the penis and scrotum, may sustain, will often be alarming, and appear dangerous, but by soothing and gentle treatment they are soon recovered.

9. Should there be reason to think the child dead, or the powers of the mother insufficient to expel it, we must then give such assistance as may be required.

10. This assistance must be given with the hand, or with a blunt

hook or crotchet, hitched in the groin of the child; or, which I prefer, by passing a ligature round the bent part of the child at the groin, with which we can hardly fail to extract it.

11. But every assistance of this kind must be given with discretion, and we must first be convinced of the necessity before we interfere.

12. Should a child presenting with the breech advance, though slowly, it is better to be satisfied with this slow progress; or, we might break, without much force, the neck of the thigh bone, or separate the bones of the pelvis of the child, by either of which accidents future lameness would be occasioned.

SECTION III.

Of the second order of Preternatural Presentations.

1. In this kind of presentation are included the shoulders, the elbows, and one or both arms.

2 In all these presentations we shall be under the necessity of turning the child, but as they may be attended with circumstances widely different, it is necessary to make the following distinctions.

3.—I. When the os uteri is fully dilated, the membranes unbroken, or the waters lately discharged, a superior extremity being perceived to present before the uterus is contracted.

4.—II. When the membranes break in the beginning of labour, the os uteri being little dilated.

5.—III. When the os uteri has been fully dilated, the membranes broken, and the waters long discharged, the uterus being at the same time strongly contracted, and the body of the child jammed at the superior aperture of the pelvis.

6.—IV. When together with any of these circumstances; there is a great disproportion between the size of the head of the child, and the dimensions of the cavity of the pelvis.

SECTION IV.

On the Cases which come under the first Distinction.

1. Whenever there is a necessity of turning a child, the patient is to be placed upon her left side, near the edge of the bed; or sometimes, when we expect to find much difficulty, in a prone position, resting upon her elbows and knees.

2. All the advantage to be gained from any particular position of the patient is, to allow us the free and dexterous use of our hands; the situation of the child not being altered by the position of the patient.

3. The os externum is then to be dilated with the fingers reduced into a conical form, acting with a semi-rotatory motion of the hand.

4. The artificial dilatation of all parts must be made slowly, in imitation of the manner of natural dilatation.

5. The os externum should be amply distended before the hand is carried farther, or its contraction round the wrist will be an impediment in the subsequent part of the operation.

6. When the hand is passed through the os externum, it must be

slowly conducted to the os uteri, which being wholly or sufficiently dilated, we must break the membranes by perforating them with a finger, or by grasping them firmly in the hand.

7. The hand must then be passed along the sides, thighs, and legs of the child, till we come to the feet.

8. If both the feet lie together we must grasp them firmly in our hand; but if they are distant from each other, and we cannot conveniently lay hold of both feet, we may deliver by one foot without much additional difficulty.

9. Before we begin to extract we must be assured that we do not mistake a hand for a foot.

10. The feet must be brought down, with a slow waving motion, into the pelvis; when we are to rest and wait till the uterus begins to contract, still retaining them in our hand.

11. When the action of the uterus comes on, the feet are to be brought lower at each return of pain, till they are extracted through the external orifice, and the labour may then be finished, partly by the efforts of the mother, and partly by art.

12. If the toes are turned toward the pubes, the back of the child is toward the back of the mother, which is an unfavourable position.

13. But if the toes are toward the sacrum, the back of the child is toward the abdomen of the mother, which is proper, and all other positions of the child must be gradually turned to this as the body is extracting.

14. Yet this position of the child is only advantageous when the head comes to be extracted.

15. When the feet of the child have passed through the os externum, wrap them in a cloth, and holding them firm, wait till there is a contraction of the uterus, or a pain, during the continuance of which gently draw down the feet.

16. When the pain ceases we must rest, and proceed in this manner through the delivery, assisting the efforts of the patient, but not making the delivery wholly artificial.

17. When the breech comes to the os externum, the child must be extracted very slowly through it, and in the proper direction, or there will be danger of lacerating the perinæum.

18. When the child is brought so low that the funis reaches the os externum, a small portion of it is to be drawn out, to slacken it to lessen the chance of compression, or to prevent the separation of it from the body of the child, or of the placenta from the uterus; and from this time the operation should be finished as speedily as it can with safety.

19. But if the circulation in the funis be undisturbed there is no occasion for haste, as the child, we are then assured, is in safety.

20. The child may be extracted without much difficulty if we act alternately from side to side, by making a lever of its body, and sometimes by pressing it from the ossa pubis with the fingers.

21. If the child should stick at the shoulders, the arms must be successively brought down.

22. This is to be done by raising the body the opposite way, and

by successively bending them at the elbow very slowly, lest they should be broken, and the hand must be cleared toward the pubes.

23. When both the arms are brought down, the body of the child must be supported upon our left hand placed under the breast, the fingers on each side of the neck, and the body supported upon our left arm.

24. Then placing the right hand over the shoulders, and pressing with our fingers the head toward the sacrum, we must ease the head along, gradually turning the body of the child as it advances the abdomen of the mother.

25. If the head should not come easily away, we must introduce the fore-finger of the left hand into the mouth of the child, by which the position of the head will be rendered more convenient.

26. When the head begins to enter the os externum we must proceed very slowly, and support the perinæum by spreading the fingers of the left hand over it.

27. In some cases there may be a necessity of speedily extracting the child in order to preserve its life, but we must also recollect, that the child is often lost by endeavouring to extract it too hastily.

28. When a child has been extracted by the feet, the placenta usually separates very soon and very easily ; but in the management of this we are to be guided by the general rules.

SECTION V.

On the Cases which come under the second Distinction.

1. We are first to ascertain the presenting part, and if, together with the arm, the head is perceived by a common examination, there may be no occasion to turn the child, such case only constituting the third variety of natural labour.

2. But if the case should be such as to require the child to be turned, it might be doubted whether it were proper to dilate the os uteri by art, or to wait for its spontaneous dilatation.

3. Perhaps neither of the methods can be constantly followed, but we may generally say, that there is, under these circumstances, neither danger nor increase of difficulty, from waiting for the spontaneous dilatation, which is therefore in general to be preferred.

4. But if more speedy dilatation should be required, whatever is done by art should be done slowly, and in imitation of nature.

5. The os uteri is always to be considered as completely dilated when we judge it will allow of the easy introduction of the hand.

6. When we have fixed upon the proper time, and begin the operation, the os externum must be dilated in the manner before advised.

7. The hand must always be introduced into the uterus, on that side of the pelvis where it will pass most conveniently ; and there is usually most room at that part which lead to the feet.

8. It is generally most convenient to pass the hand between the body of the child and the ossa pubis, the feet being most commonly found lying toward the belly of the mother.

9. In cases which come under this distinction the uterus is seldom

contracted very strongly upon the body of the child, but always in some degree.

10. But the difficulties which may occur in the operation of turning the child, in these cases, will be fully explained under the following distinction.

SECTION VI.

On the Cases which come under the third Distinction.

1. The difficulty in the management of these cases depends upon the degree of contraction of the uterus, and upon the distance or awkward position of the feet of the child, but chiefly upon the former circumstance.

2. The uterus is in some cases contracted in a globular, and in others in a longitudinal form.

3. It is always easier, with an equal degree of contraction, to turn the child when the uterus is contracted in a globular than in a longitudinal form.

4. When we are called to a case of this kind, it is better not to form or to give a hasty opinion, nor to attempt to deliver the patient immediately, but to deliberate upon it, and then to make a second examination.

5. If the second examination should confirm our first opinion, we may prepare for the operation.

6. We shall be able to judge in what part of the uterus the feet of the child lie, if we consider whether it be the right or left hand which presents, which may be known by the direction of the thumb and the palm of the hand.

7. But the contraction of the uterus is the principal difficulty to be surmounted, and the danger in turning the child is in proportion to the difficulty.

8. The danger of turning a child when there is a strong contraction of the uterus, is a single danger, that of rupturing the uterus.

9. The contraction of the uterus is of two kinds; first, the permanent contraction, in consequence of the waters having been long drained off, which may occur when there has been little or no pain.

10. Second, the extraordinary contraction arising from the action of the uterus, returning at intervals, and always attended with pain.

11. The hand must be introduced with a degree of force sufficient gradually to overcome the permanent contraction of the uterus, or the operation could never be performed.

12. But if we were to attempt to overcome the extraordinary contraction, it must follow that we can or cannot overcome it.

13. In the first instance we should be in danger of rupturing the uterus, and in the second, the hand would be cramped, and we should be unable to proceed with the operation.

14. The deduction is therefore clear, that we ought not to proceed in our attempts to turn the child, while the uterus is acting with violence.

15. The action of the uterus is rendered more frequent and strong by the generally increased irritability of the patient.

16. Before we attempt to deliver, it will be prudent to endeavour to lessen this irritability, in many cases by bleeding, by clysters, and by an opiate, which, to answer this purpose, should be given in two or three times the usual quantity.

17. When the opiate takes effect, and the patient becomes disposed to sleep, we must consider this state as extremely favourable, and proceed without loss of time to the delivery.

18. There never can be occasion to separate the arm which presents from the body of the child; and when this has been done, instead of facilitating, it has impeded the operation.

19. Without regarding the arm, the right or left hand, as may be most convenient to ourselves, must be introduced in the manner before directed, and conducted slowly into the uterus, if there be sufficient room.

20. But if the child be jammed at the superior aperture of the pelvis, the hand cannot be introduced.

21. We must then fix our fore-finger and thumb in the form of a crutch in the armpit of the child, and pushing the shoulders toward the head, and toward the fundus of the uterus, we must by degrees raise the body of the child till there be room for the introduction of the hand.

22. If while we are introducing our hand, we perceive the action of the uterus come on, we must not proceed till that ceases or is abated.

23. The hand, when introduced, is also to be laid flat during the continuance of the action of the uterus, lest the uterus be injured by its own action on the knuckles.

24. When the action ceases or is abated, we must renew our attempts to carry up our hand to the feet of the child.

25. In this manner we are to proceed, alternately resting and exerting ourselves, till we can lay hold of one or both feet.

26. There is sometimes much difficulty in getting to the feet, and sometimes in extracting them, especially when the uterus is contracted in a longitudinal form.

27. In such cases it is often convenient, when we can reach the knees, to bend them cautiously, and to bring down the legs and feet together.

28. But before we begin to extract we should examine the parts we hold, and be assured they are the feet; and we must extract slowly and steadily.

29. If we hurry to bring down the feet they may slip from us, and return to the place from which they were brought.

30. We must then carry up the hand again, and grasping the foot or feet more firmly, bring them down in the cautious manner before advised.

31. When the feet are brought down, if there be any difficulty in extracting them, we must endeavour to slide a noose, first formed upon our wrist, over the hand to secure the feet, by which the hazard of their return will be prevented, and the succeeding part of the operation much facilitated.

32. When the noose is fixed over the ancles, we must pull by

both ends of it with one hand, and grasp the feet with the other, but we must not attempt to proceed hastily.

33. When there is afterwards much difficulty in extracting the child, it is probably owing to the body of the child being jammed across the superior aperture of the pelvis.

34. It will then be proper to pass the finger and thumb as directed at 21, to raise the shoulders and body of the child toward the fundus of the uterus with one hand, and with the other extract at the same time with the noose.

35. When the breech of the child has entered the pelvis, we must proceed with deliberation; but there will be little further difficulty, except from the smallness of the pelvis, of which we shall speak in the next section.

SECTION VII.

On those Cases which come under the fourth Distinction.

1. The disproportion between the head of the child and the dimensions of the pelvis, may be added to any of the circumstances mentioned under the preceding distinctions.

2. But as the management of these has been already directed, there is now occasion to speak only of the peculiar difficulties arising from that cause.

3. The degree of difficulty in these cases is greater or less according to the degree of disproportion; but the difficulty of extracting any part of the body of the child is little, compared with that which attends the extracting of the head.

4. We will, therefore, suppose the body of the child to be brought down, but that the head cannot be extracted by any of the methods before recommended.

5. The force with which we endeavour to extract must then be increased, till it is sufficient to overcome the difficulty or resistance.

6. But as the necessity of using great force can only be known by the failure of a less degree to produce the desired effect, we must begin our attempts with moderation, and gradually increase our efforts according to the exigence of the case.

7. The force exerted should also be uniform, controlled or commanded, and exerted by intervals, in the manner of the natural pains.

8. If the head should not descend with the force which we judge can be safely exerted, we must rest, and give it time to collapse.

9. We may then renew our attempts, extracting from side to side, or backwards and forwards, as may best conduce to ease the head through the distorted pelvis, alternately resting and endeavouring to extract.

10. But if the head should descend in ever so small a degree, the force is not to be increased with the view of finishing the delivery expeditiously, but we must be satisfied with our success, and proceed circumspectly.

11. When the head once begins to descend, there is seldom much

subsequent difficulty in finishing the delivery, as the cause of the difficulty usually exists at one particular part of the pelvis.

12. But should the head rest in this situation for several hours, no additional inconvenience would thence arise to the mother, and the longer it rested the greater advantage we should probably gain when we renewed our attempts to extract it.

13. It may be presumed, when the head of the child has been wedged for a long time in the position we are supposing, and great force has been used to extract it, that there is little reason to expect the child should be born alive ; yet instances of this are said to have occurred in practice.

14. When we can hook a finger on the lower jaw of the child, the direction of the head may be changed to one more favourable, and the delivery thereby facilitated.

15. But we must not extract with so much force as to incur the hazard of breaking or tearing away the jaw.

16. Pressing the head of the child from the ossa pubis to the sacrum, with the fingers or thumbs carried up as high as we can reach, will often be of great use in these cases.

17. If the difficulty of extracting the head arises from its enormous size, occasioned by some disease, as the hydrocephalus, &c. these methods steadily pursued will answer our intention ; as by a prudent use of the force in our power, the integuments will burst, or even the bones be broken.

18. Cases of this kind, in which it might be necessary or expedient to use one or both blades of the forceps, or to lessen the head, very seldom occur.

19. But if such cases should occur, the latter operation is preferable to the use of the forceps, and the utmost case must be taken that we do no injury to the mother.

20. Under these circumstances, should it be absolutely necessary to lessen the head of the child, the perforation may be conveniently made behind either of the ears, or in any part where we can most conveniently fix the point of the perforator, and the general rules of the operation must be followed.

21. By the force used should the neck of the child have given way, we are not to separate the body from the head altogether, but we must rest longer and act more moderately.

22. But should the body be separated from the head by the force we have used, or should we be called to a case of this kind, there will be no occasion, for this reason alone, to act hastily or rashly, as the head may even then be expelled by the pains.

23. But if this should be impossible, or if it be absolutely necessary to extract the head speedily, on account of the state of the mother;

24. Then the general rules for lessening the head must be accommodated to the exigencies of this particular case, and the head may be confined to a proper situation, by compressing the abdomen with a napkin passed across it, or by the hands of an assistant.

SECTION VIII.

Miscellaneous Observations.

1. It sometimes happens that no part of the child can be perceived before the membranes break, though the os uteri be fully dilated.

2. In such cases we should not be absent when the membranes break, lest it should prove a preternatural presentation, requiring the child to be turned.

3. In some cases, even when the os uteri is dilated, the membranes broken, and the waters discharged, no part of the child can be felt.

4. It will then be prudent, in the cautious manner before directed, to introduce the hand far enough into the uterus, to discover the part which does present.

5. If the head be found to present we should withdraw our hand, and suffer the labour to proceed in a natural way.

6. If the inferior extremities should present, we may bring down the feet, and then suffer the labour to go on uninterruptedly.

7. But if the shoulder or superior extremities should present, we must proceed to the feet, and turn the child as was before directed.

8. By this conduct we shall guard against the danger of turning a child in a contracted uterus.

9. If we should be called to a case in which the arm presented, and much force had been used to extract the child in that position, the arm perhaps having been mistaken for a leg, and the pains being at the same time violent, it may be impossible, without giving much pain, and incurring some danger of rupturing the uterus, to turn the child, or even to introduce the hand into the uterus, the shoulder of the child being pushed low down in the pelvis.

10. Under such circumstances, it is improper to attempt to introduce the hand into the uterus, or to turn the child, as it will generally be expelled by the efforts of the mother; or it may be extracted by methods less painful and hazardous to the mother.

11. Yet in these cases the body of the child does not come doubled, but the breech is the first part delivered, and the head the last, the body turning, as it were, upon its own axis.

12. Nor is this observation made with regard to a small child coming prematurely, as it will apply to a child of common size, and when a woman is at her full time, provided the pelvis be well formed.

13. This fact, of the possibility of a child being expelled in this position, though originally contradicted with great confidence, is now confirmed in the most satisfactory manner by many cases which have been recorded, in some of which the children have been born living.

14. From these it might be inferred, that a woman in a state of nature, or in perfect health, would not die undelivered, though the arm of the child might present, supposing that she was not assisted by art.

15. Yet it is always requisite and proper to turn children when the superior extremities present, if the operation can be performed without the hazard of injuring the mother, and we have a better chance of lessening the sufferings of the mother, and of preserving the child.

16. But when there is no chance of preserving the child, and yet it cannot be turned without the greatest danger to the mother, knowing the possibility of its being expelled in this position, it is necessary to consider the propriety of the operation before we perform it.

17. It remains, however, to be proved by future experience, how far, and in what cases, the preceding observations ought to be a guide in practice.

18. In cases of presentation of the superior extremities, in which the difficulty of turning the child would be very dangerous, and great or insurmountable, another method has been recommended.

19. But of this method, which has been practised by one gentleman to whose knowledge and experience I pay great respect, I am not a competent judge, having never tried it.

20. I, therefore, refer to the annexed note for an explanation and history of the method to which I allude.

NOTE. Hoorneus, sæpe laudatus, adhuc peculiarem, novum eumque breviorem modum, fœtum mortuum cum brachio arctissime in vagina uteri hærente extrahendi, 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 cautissime auferat. Hoc enim facto, vel sponte mox prorumpit ex utero fœtus, vel tamen, dum brachium propendens attrahitur, quod medico loco habenæ inservit, quam facilime excutitur. Caput vero deinde seorsim mox vel manu, vel aliis propositis artificiis, si manus parum esset, ejiciendum.

HEISTER, cap. cliii. sect. ix.

The latter part of this description is further explained in the next section.

SECTION IX.

I am induced to reprint the following, as they were the very cases which first gave me an opportunity of observing the spontaneous evolution.

CASE I.

In the year 1772, I was called to a poor woman in Oxford Street, who had been in labour all the preceding night, under the care of a midwife. Mr. Kingston, now living in Charlotte Street, and Mr. Goodwin, surgeon, at Wirksworth in Derbyshire, who were at that time students in midwifery, had been sent for some hours before I was called. The arm of the child presenting, they attempted to turn and extract it by the feet, but the pains were so strong as to prevent the introduction of the hand into the uterus. I found the arm much swelled, and pushed through the external parts in such a

manner that the shoulder nearly reached the perinæum. The woman struggled vehemently with her pains, and, during their continuance, I perceived the shoulder of the child to descend. Concluding the child was small, and would pass doubled through the pelvis, I desired one of the gentlemen to sit down and receive it, but the friends of the woman would not permit me to move. I remained by the bed-side till the child was expelled, and I was very much surprised to find, that the breech and inferior extremities were expelled before the head, as if the case had been originally a presentation of the inferior extremities.

The child was dead, but the mother recovered as soon and as well as she could have done after the most natural labour.

CASE II.

In the year 1773, I was called to a woman in Castle Street, Oxford Market, who was attended by a midwife. Many hours after it was discovered that the arm of the child presented, Mr. Burosse, surgeon, in Poland Street, was sent for, and I was called into consultation. When I examined, I found the shoulder of the child pressed into the superior aperture of the pelvis. The pains were strong, and returned at short intervals. Having agreed upon the necessity of turning the child, and extracting it by the feet, I sat down and made repeated attempts to raise the shoulder, with all the force which I thought could be safely used; but the action of the uterus was so powerful that I was obliged to desist. I then called to mind the circumstances of the case before related, mentioned them to Mr. Burosse, and proposed that we should wait for the effect, which a continuance of the pains might produce, or till they were abated, when the child might be turned with less difficulty. No further attempts were made to turn the child. Then every pain propelled it lower into the pelvis, and in a little more than one hour the child was born, the breech being expelled, as in the first case.

This child was also dead, but the mother recovered in the most favourable manner.

Having been prepared for observing the progress of this labour, I understood it more clearly, and attempted to explain, both in my lecture on the subject, and in the aphorisms which were printed for the use of the students, my opinion of the manner in which the body of the child turned, as it were, upon its own axis. I also pointed out the circumstances in which, I supposed, the knowledge of the fact might be rendered useful in practice; but with great circumspection.

CASE III.

January the 2d, 1774, I was called to Mrs. Davis, who keeps a toy-shop in Crown Court, Windmill Street. She had been a long time in labour, and the arm of the child presented.

The late Mr. Eustace had been called on the preceding evening, and had made attempts to turn the child, which he had continued for several hours without success. I was sent for about one o'clock in

the morning, and on examination found the arm pushed through the external parts, the shoulder pressing firmly upon the perinæum. The exertions of the mother were wonderfully strong. I sat down while she had two pains; by the latter of which the child was doubled, and the breech expelled. I extracted the shoulders and head, and left the child in the bed. Mr. Eustace expressed great astonishment at the sudden change; but I assured him that I could claim no other merit on account of this delivery, except that I had not impeded an effect which was wholly produced by the pains.

This child was also dead, but the mother recovered in the most favourable manner.

In all these cases, the women were at the full period of utero-gestation, and the children were of the usual size.

Many other cases of the same kind have occurred to me; and with the histories of several, varying in the time or manner in which the evolution of the child was made, I have lately been favoured by gentlemen of eminence in the profession, and many others have been published in different countries. But these are sufficient to prove the fact, that in cases in which children present with the arm, women would not necessarily die undelivered, though they were not assisted by art.

With respect to the benefit we can, in practice, derive from the knowledge of this fact, I may be permitted to repeat, that the custom of turning and delivering by the feet in presentations of the arm, will remain necessary and proper, in all cases in which the operation can be performed with safety to the mother, or give a chance of preserving the life of the child. But when the child is dead, and when we have no other view but merely to extract the child, to remove the danger thence arising to the mother, it is of great importance to know the child may be turned spontaneously, by the action of the uterus. If we avail ourselves of that knowledge, the pain and danger which sometimes attend the operation of turning a child may be avoided. Nor would any person, fixing upon a case of preternatural presentation, in which he might expect the child to be turned spontaneously, be involved in difficulty, if, from a defect of the pains, or any other cause, he should be disappointed in his expectations. Nor would the suffering or chance of danger to the patient be increased by such proceeding, as the usual methods of extracting the child could, under any such circumstances be safely and successfully practised.

CLASS IV.

ANOMALOUS OR COMPLEX LABOURS.

FOUR ORDERS.

ORDER I.

Labours attended with Hemorrhage.

ORDER II.

Labours attended with Convulsions.

ORDER III.

Labours with two or more Children.

ORDER IV.

Labours in which the Funis Umbilicalis presents before the Child.

On Labours attended with Hemorrhage.

HEMORRHAGE. A discharge of blood from the uterus, inordinate with respect to time or quantity.

VARIETIES.

1. In abortions.
2. At the full period of utero-gestation.
3. After the birth of the child.
4. After the expulsion of the placenta.

Note. No general description or character can be given to Anomalous Labours as a class, because the different orders bear no resemblance to each other. They are brought together merely to prevent the multiplication of classes.

ON ABORTIONS.

SECTION I.

1. With respect to the time of pregnancy, all expulsions of the fœtus may be reduced under two distinctions.
2. In the first will be included all those which occur before the uterus is sufficiently distended to allow of any manual operation, and these may be properly called abortions.
3. In the second may be classed all those which allow of manual assistance, if required, and which are therefore to be esteemed as labours, premature or at the full time.
4. But no precise period of pregnancy can be fixed as a line for these distinctions.

5. We may, however, in general say, that all expulsions of the fœtus, before the end of the sixth month, are to be considered as abortions.

6. But all expulsions of the fœtus, after the expiration of the sixth month, are to be esteemed as labours, and, if attended with the same circumstances, should be managed upon the same principles.

7. Yet expulsions of the fœtus sometimes happen so critically, as to make it doubtful to which distinction they should be ascribed, especially in cases in which there are two or more children.

8. When manual assistance is thought needful, the longer the time wanting to complete the full period of pregnancy, the more difficult must be any operation.

SECTION II.

On the Causes of Abortion.

1. The predisposing causes of abortion are, 1st, general indisposition of the constitution ; 2d, infirmity of the uterus.

2. The general state of women who are disposed to abortion is very different, some being weak and reduced, and others plethoric.

3. Weakly women become more liable to abortion, beause they are susceptible of violent impressions from slight external causes.

4. Plethoric women are more liable to abortion, from the peculiar disposition which the vessels of the uterus have, from structure and habit, to discharge their contents.

5. Every action in common life has been assigned as a cause of abortion.

6. But it is to the access of these actions that we are to attribute their effects, for women in health seldom abort, unless from violent external causes.

SECTION III.

On the Prevention of Abortion.

1. As every disease to which women are liable may dispose to abortion, the method instituted to prevent it must be accommodated to the disease, or to the state of the constitution.

2. In some constitutions, abortions may be prevented by repeated bleeding in small quantities, by antiphlogistic medicines, and sometimes by warm bathing.

3. In others, abortion may be prevented by nourishing and invigorating diet and medicines, by bark, by the liberal use of wine, especially claret, and often by cold bathing.

4. But it will be proper, in every case, to avoid all violent exercise, to keep the mind composed, and to rest frequently in a horizontal position.

5. Women seldom abort while they have the vomiting which usually attends early pregnancy.

6. In women who have no spontaneous vomiting, this may be excited with safety and advantage, by frequently giving small doses of Ipecacuanha.

7. Pregnant women are usually costive, and abortions have been

very often occasioned by too great assiduity to remove this costiveness, which is a natural and proper state, in the early part of pregnancy.

SECTION IV.

On the Signs of Abortion.

1. The signs of abortion are, frequent micturition, tenesmus, pains in the back, abdomen, and groins, with a sense of weight in the region of the uterus.

2. But the most certain sign is, a discharge of blood, which proves that some part of the ovum is separated from the uterus.

3. It has been supposed when this last sign appears, that there is scarcely a possibility of the patient proceeding in her pregnancy

4. But I have met with an infinite number of cases in practice, in which, notwithstanding this appearance, once or oftener, to a considerable degree, the discharge has ceased, and no ill consequences have followed.

5. We are therefore to persevere in the use of those means of prevention which are thought reasonable and proper, till the abortion has actually happened.

6. It is not always prudent to give a decided opinion of the probable event of those cases in which abortion is threatened, as their termination is often different from what might have been expected from the symptoms.

SECTION V.

On the Treatment of Women at the time of Abortion.

1. The treatment must vary according to the nature and degree of the symptoms.

2. There is an endless variety in the manner in which abortion takes place. Some women abort with sharp and long continued pains, others with little or no pain; some with a profuse and alarming hemorrhage, others with very little discharge. In some the ovum has been soon and perfectly expelled, in others after a long time, in small portions, or very much decayed; but the only alarming symptom is the hemorrhage.

3. The hemorrhage in abortion is not always in proportion to the period of pregnancy, this being in some advanced cases very small; and in others, though very early, abundant.

4. The hemorrhage usually depends upon the difficulty with which the ovum may be expelled, and upon the state of the constitution of the patient naturally prone to hemorrhage.

5. The general principles which should guide us in the treatment of hemorrhages, from any other part of the body, are applicable to those of the uterus, regard being had to the structure of the uterus.

6. If the patient be plethoric, some blood should be taken from the arm at the commencement of the hemorrhage, and the saline draughts with nitre, or acids of any kind, may be given in as large a quantity, and as often as the stomach will bear.

7. These may also be given during its continuance, and cloths wet with cold vinegar may be applied to the abdomen and loins, and

renewed as they become warm. The patient should be exposed to, and suffered to breathe the cold air.

8. Every application or medicine, actually or potentially cold, may be used. A large draught of cold water or ice may be given with great propriety; and it is the custom in Italy to sprinkle ice over the body of the patient if the danger of the case be imminent.

9. Every medicine or application which has the power of slackening the circulation of the blood, eventually becomes an astringent; but astringents, properly so called, can have no power in stopping hemorrhages from the uterus.

10. Hemorrhages are stayed by the contraction of the coats of the blood vessels, or by the formation of coagula, plugging up the orifices of the open blood vessels.

11. Both these effects are produced more favourably during a state of faintness, which, though occasioned by the loss of blood, becomes a remedy in stopping hemorrhages.

12. Cordials are not therefore to be hastily given to those who are faint from loss of blood; unless the faintness should continue so long as to make us apprehensive for the immediate safety of the patient.

13. The introduction of lint, a piece of sponge, or any other soft substance, into the vagina, has been recommended, and sometimes used with advantage, by favouring the formation of coagula.

14. Cold or astringent injections into the vagina, or even a piece of ice introduced into the vagina, have also been recommended.

15. Opiates have been advised in abortions attended with profuse discharges, and they may sometimes be proper to ease pain, or to quiet the patient, especially where there is a chance of preventing the abortion, or after the accident has happened.

16. But when there is no hope of preventing the abortion, the degree of pain proving the degree of action of the uterus, and the action of the uterus producing and favouring the contractile power of the blood vessels, if by opiates the action of the uterus should be prevented or checked, they may contribute to the continuance of the hemorrhage.

17. Hemorrhages in abortions, independent of other complaints, though sometimes very alarming, are not dangerous.

18. But if women abort in consequence of acute diseases, or if they are attended with violent spasms, there will be real and great danger.

19. For they abort because they are already in great danger, and the danger is increased and accelerated by the abortion.

20. The ovum has been sometimes retained in the uterus for many months after the symptoms of abortion had appeared, and when it had lost the principle of increasing.

21. But it is not now thought necessary or proper in abortions, to use any means for bringing away the ovum, or any portion of it which may be retained, with instruments or manual assistance.

SECTION VI.

On Hemorrhages at the full Period of Utero-gestation.

1. Under this section will be included all those hemorrhages which may happen in the three last months of the pregnancy.

2. These are occasioned first by the attachment of the placenta over the os uteri ; secondly, by the separation of a part, or of the whole placenta, which had been attached to some other part of the uterus.

3. Hemorrhages arising from the first cause are more dangerous than from the second ; but those from the second have sometimes proved fatal.

4. The danger attending hemorrhages is to be estimated from a consideration of the general state of the patient, of their cause, of the quantity of blood discharged, and of the effect of the loss of blood, which will vary in different constitutions.

5. Hemorrhages are infinitely more dangerous with sudden than with slow discharges of blood, even though the quantity lost may be equal.

6. The danger arising from hemorrhages is indicated by the weakness or quickness of the pulse, or by its becoming imperceptible, by the paleness of the lips, and a ghastly countenance, by inquietude, by continued fainting, by a high and laborious respiration, and by convulsions.

7. The two last symptoms are usually mortal, though when women are extremely reduced, they are liable to hysteric affections of a similar kind, that are not dangerous.

8. The vomiting, which generally follows violent hemorrhages, indicates the injury which the constitution has sustained by the loss of blood, but by the action of vomiting the patient is always relieved, and it contributes to the suppression of hemorrhages.

9. Near the full period of utero-gestation, women are always in greater danger in those hemorrhages which are not accompanied with pain.

10. For the pain proving the contraction of the uterus, and this proving that the strength of the constitution is not exhausted, the danger in hemorrhages may often be estimated by the absence or degree of pain.

On those Hemorrhages which are occasioned by the Attachment of the Placenta over the Os Uteri.

1. Though the placenta, which may easily be distinguished from the membranes, or from coagulated blood, as soon as the os uteri is a little opened, be attached over the os uteri, the woman usually passes through the early part of pregnancy without any inconvenience or symptom which denotes the circumstance.

2. But before or when the changes previous to labour come on, there must be an hemorrhage, because a separation of a part of the placenta is thereby occasioned, and as the disposition to labour advanceth, the hemorrhage is generally, though not universally, increased.

3. With this circumstance very slight external causes are also apt to occasion hemorrhage.

4. When an hermorrhage from this cause has once come on, the patient is never free from danger till she is delivered.

5. The powers of the constitution are undermined by hemorrhages profuse or often returning, so that no efforts, or only very feeble and insufficient ones, are commonly made for the expulsion of the child.

6. We are therefore often obliged to free the patient from the imminent danger she is in by artificial delivery.

7. Of the propriety of this delivery, in cases of dangerous hemorrhage, there is no doubt, or can be any dispute, except as to the precise time when the patient ought to be delivered.

8. On the first appearance of the hemorrhage, unless it be prodigious in quantity, or unusually terrifying in its effect, it is seldom either requisite or proper to attempt to deliver by art.

9. Nor does it often happen that a second or a third return of the discharge compel us to the delivery by art.

10. But as a patient with this circumstance cannot be secured till she is delivered, and as the delivery is seldom completed by the natural efforts, and as the artificial delivery, though performed before it is absolutely necessary, is not dangerous, if performed with care, we must be on our guard not to delay the delivery too long.

11. In some cases in which it might be thought eligible to deliver on account of the hemorrhage, the parts are so unyielding as not to allow of the operation itself without some hazard.

12. Yet when the parts requiring dilatation make no resistance to the passage of the hand, the event of the operation is always more precarious, the operation having been deferred too long.

13. But though it may be proper in some cases to determine on immediate delivery, the operation must always be performed with the utmost deliberation.

14. The first part of the operation has been described under preternatural presentations.

15. When the hand is carried to the placenta attached over the os uteri, it is of little consequence whether we perforate the placenta with our fingers, or separate it on one side till we come to the edge, though the latter is generally preferable.

16. If the hand be passed through the placenta, we shall come directly to the part of the child which presents.

17. But if we separate the placenta to the edge, the hand will be on the outside of the membranes, which must be ruptured before we lay hold of the feet of the child.

18. No regard is to be paid to the part of the child which may present, as it must always be delivered by the feet.

19. The feet of the child being brought slowly into the pelvis, we must wait till the uterus is contracted to the body of the child, which will be indicated by pain, and known by the application of our hand to the abdomen.

20. The delivery must then be finished very slowly, to give the uterus time to contract as the child is withdrawn from its cavity; but this part of the operation has likewise been described under preternatural presentations.

21. An assistant should make a moderate pressure upon the abdomen during the operation, to aid the contraction of the uterus, and

to prevent ill consequences from the sudden emptying of the abdomen.

22. When the child is born, the hemorrhage will be generally stayed, if the operation has been performed slowly.

23. But if the hemorrhage should continue or return, the placenta is to be managed as will be afterwards directed.

24. Should no uncommon difficulty attend the delivery, children will be often born living in cases of hemorrhage which are attended with the utmost danger to the mother; or, as it has sometimes happened, after the death of the mother.

25. Before, during, or after delivery, in cases of hemorrhage, the means and applications before recommended, may be occasionally used with advantage.

SECTION VII.

On those Hemorrhages which are occasioned by the separation of a part, or of the whole placenta, before or in the time of labour.

1. Hemorrhages arising from this cause are seldom so alarming or dangerous as the preceding.

2. But if the separation of the placenta be sudden and extensive, the danger may be equal, and the same mode of proceeding required.

3. Our conduct must be guided by a consideration of the degree and effect of the hemorrhage, and of the state of the labour when it occurs.

4. Should the hemorrhage from this cause occur in the first period of labour, the action of the uterus will be weakened, but it may be sufficient to dilate the os uteri.

5. If the quantity of blood lost in these cases be very considerable when the os uteri is sufficiently dilated, the greater the degree the better, if the case will allow us to wait so long, the membranes containing the waters may be ruptured.

6. By the discharge of the waters the distention of the uterus will be lessened, and by the consequent contraction, the size of the vessels being diminished, the hemorrhage will of course be abated or removed.

7. After the abatement or suppression of the hemorrhage, the action of the uterus will become stronger, so that the delivery will, in general, be completed without further assistance.

8. But if the hemorrhage should continue after the discharge of the waters in such a degree as to threaten danger, or if it should commence in the second period of the labour, the interposition on our part must vary according to the circumstances, and chiefly according to the situation of the child.

9. It may in some cases be necessary to deliver by art, as in the preceding section, and in others to deliver with the forceps or vectis, if the hemorrhage be profuse, and we despair of the child being expelled by the natural efforts.

10. The proper management of all such cases may be collected from what will be generally said on the subject, being always on our guard to distinguish between fear and real danger.

SECTION VIII.

On those Hemorrhages which occur when the Placenta is retained after the birth of the Child.

1. The placenta is generally expelled by the spontaneous action of the uterus in a short time after the birth of the child.

2. But sometimes the placenta is retained, 1st, from the inaction or insufficient action of the uterus; 2d, by the irregular action of the uterus; 3d, by the scirrhous adhesion of the placenta to the uterus.

3. Sometimes there is a profuse discharge of blood, when no action is exerted by the uterus to expel the placenta, and this is found in practice to be far the most common cause of hemorrhage at the time of delivery.

4. Whenever there is a hemorrhage, the whole or a portion of the placenta must have been previously separated, and the hemorrhage usually continues, or returns till the placenta is expelled or extracted out of the cavity of the uterus.

SECTION IX.

On the retention of the Placenta from the inaction or insufficient action of the Uterus.

1. Though the placenta be retained after the birth of the child, if there be no hemorrhage, we are to wait without any interposition on our part, in expectation of the action of the uterus.

2. The time which it may be proper and expedient to wait, will depend upon the state of the patient, and the state of the patient generally depends upon the previous circumstances of the labour; so that it may not be proper to wait in one case for any length of time, and in another we may safely wait four, six, or even twelve hours.

3. But no patient ought to be left before the placenta is brought away, because though there may be no existing hemorrhage, a dangerous one may at any time come on.

4. When the patient complains of pain, the expulsion of the placenta may be safely forwarded, by aiding the contraction of the uterus by moderate pressure with the hand upon the abdomen, and by pulling very gently by the funis.

5. But if the first pains, with the aid we think it prudent to give, should not bring down the placenta, we are to wait for a return of the pains, proceeding in the same cautious manner.

6. When that part of the placenta into which the funis is inserted can be felt, little danger or difficulty is to be apprehended; but we are either to wait longer, or to extract it very slowly.

7. But if a hemorrhage were to come on, the placenta being retained, it would be equally necessary to extract the placenta as it would be to extract the child, provided the degree of hemorrhage was equally profuse or sudden.

8. After the birth of the child, the extraction of the placenta is therefore to be considered as the only method by which an appre-

hended or present dangerous hemorrhage is to be prevented or avoided.

9. Yet all discharges of blood do not require a speedy extraction of the placenta, but such only as by their violence or continuance, or frequent returns, threaten danger.

10. If much force be used in pulling by the funis, there will be danger; 1st, of tearing it from the placenta; 2d, of inverting the uterus; 3d, of injuring the uterus by the violence; 4th, of increasing the hemorrhage.

11. The danger of these consequences is greater when force is used to extract the placenta by the funis, than by the prudent introduction of the hand into the uterus for that purpose.

12. In cases in which the uterus acts insufficiently, by attending to the respiration you will sometimes be able to bring down the placenta, just using so much force, in pulling by the funis, as will prevent the retrocession of it in the act of inspiration.

13. But in whatever manner the placenta may be brought into the pelvis, it should be suffered to remain there till the action of the uterus comes on, or so long as there is reason to fear a return of the hemorrhage, and it must then be carefully withdrawn, or until it drop away.

SECTION X.

On the retention of the Placenta from the irregular action of the Uterus.

1. When all the parts of the uterus act with equivalent force, and at the same time, the combined power will contribute to the expulsion of whatever is contained in its cavity.

2. But if the uterus should act irregularly, the contrary effect might be produced.

3. If the fundus uteri should not act when the other parts are in action, the longitudinal contraction of the uterus would be produced; but if the central parts could only act, the uterus would then be contracted in the form of an hour glass.

4. As the placenta cannot be excluded when the uterus acts in this irregular manner, it must be extracted by introducing the hand into the uterus, provided the state of the hemorrhage should require it; and when it cannot be extracted by using the means before mentioned.

5. The hand ought never to be introduced into the uterus except in cases of real necessity, and then with the utmost circumspection and care; and the hand when introduced should not be withdrawn until the placenta is detached and brought into the pelvis.

6. If the whole placenta be loosened, this is easily effected; but if a portion of it should be found adhering, this must be separated by bending it back from the uterus, or by passing gently the fingers between it and the uterus.

7. When the uterus is found contracted in the form of an hour-glass, and this is the most common cause of the retention of the placenta, the contracted part must be dilated in the manner recommend-

ed for the dilatation of the os uteri, and it must be amply dilated, or it will immediately contract again round the wrist.

8. We must then proceed as before advised.

SECTION XI.

On the retention of the Placenta from the scirrhous adhesion of it to the Uterus.

1. Should there be a degree of hemorrhage sufficient to make it necessary to introduce the hand to extract the placenta, a part of it must be separated, though there may be a scirrhous adhesion of the remainder to the uterus.

2. Then the method advised in the last section must be put in practice, and the firmer we find the adhesion, the slower the separation ought to be made.

3. But if there should be no hemorrhage of importance, and merely a retention of the placenta beyond its due time, we may say, for example, more than four hours, and the means before recommended are insufficient to bring down the placenta;

4. It may then be necessary to introduce the hand carefully to separate and extract the placenta, and the difficulty will not be increased by the delay.

5. Following the navel string as our guide, we must then pass the hand to the placenta ; and if it should be found almost wholly adhering, we must begin with great caution to separate at the edge, and gradually proceed as before directed until the separation is completed.

6. Then grasping the placenta, we must slowly withdraw our hand, that the uterus may contract accordingly, and the chance of subsequent hemorrhage be prevented.

7. The irritation made by the introduction of the hand, will often occasion a return of the action of the uterus, before dormant, that will greatly facilitate the separation.

8. Yet it is possible that a portion of the placenta may adhere so firmly as to make it unsafe to separate it with our fingers.

9. Should this circumstance occur notwithstanding the most deliberate and firm proceeding, it may sometimes be more justifiable to leave the adhering part remaining, than to use violence in separating it.

10. But though hemorrhages are stayed when the greater portion of the placenta is brought away, it is always a desirable thing to bring away the placenta and membranes in a perfect state ; and if these are slowly extracted, any coagula formed in the uterus will usually be enveloped in them.

SECTION XII.

On those Hemorrhages which follow the expulsion or extraction of the Placenta.

1. The hemorrhages in these cases may be either a continuation of that which existed before the exclusion of the placenta, or it may only follow the exclusion of the placenta.

2. When it is of the former kind, we may presume that it was not

within our power to prevent it; but the latter kind may often be attributed to the violence or hurry with which the placenta has been extracted.

3. This is not so dangerous as either of the varieties of hemorrhage of which we have last spoken, though with imprudent management, or under particular circumstances, it has sometimes proved fatal.

4. All the cautions given with respect to the general management of the placenta, relate to the prevention of this kind of hemorrhage.

5. When the strength of women is much reduced by any cause which existed previous to labour, or when they have gone through much fatigue in the course of it, there is usually great heat and a rapid circulation of the blood at the time of delivery.

6. While they are in this situation, if the placenta were to be brought away hastily, an extraordinary quantity of blood must of necessity be discharged.

7. The interval of time which passeth between the birth of the child and the expulsion of the placenta, should therefore be employed in cooling the patient, and recovering her from her fatigue.

8. Even when the placenta is excluded out of the cavity of the uterus, it should be suffered to remain till all tumult is quieted, and then, with the membranes, slowly extracted.

9. The quantity of blood discharged in consequence of the separation of the placenta will vary in different women, or in the same woman, in different labours, independently of the manner in which the placenta may come away.

10. The less the quantity of blood discharged, the better women in general recover, provided there be no morbid cause of its diminution.

11. Some women are always prone to a great discharge of blood after the separation of the placenta, whatever care may be taken in extracting it.

12. This may often be prevented by keeping the patient out of bed till the membranes are broken and the waters discharged, to the very moment of the child being born, rather retarding than forwarding its expulsion.

13. In all cases of dangerous hemorrhage, after the extraction of the placenta, it is first necessary that we should be assured, by an examination per vaginam, that the uterus is not inverted.

14. Should there be an alarming hemorrhage after the separation and exclusion of the placenta, notwithstanding all the care which can be taken according to the methods before mentioned,

15. The doctrine of hemorrhages before given, and the general treatment already recommended, will enable you to fix upon the line of conduct it will be expedient to pursue, and to restrain or suppress them as far as they are under the influence of art.

16. In cases of hemorrhage so very profuse as to occasion frightful faintings, continuing so long as to raise great solicitude for the immediate safety of the patient, it was generally said, that cordials ought not to be given.

17. But this requires explanation. When the patient has continued

faint so long as to give time according to our judgment, for the vessels of the uterus to contract, then cordials and nourishment in small quantities, very often repeated, are really needful.

18. Other means are also to be used for the purpose of recovering women from this long continued fainting; and one of the most effectual is, sprinkling the face freely with cold water.

19. After a profuse hemorrhage, the patient will frequently have a disposition to sleep, which has generally been considered as dangerous.

20. But short sleeps are very refreshing; though long ones, in a very weak state, are, under every circumstance, found to be injurious.

21. When there has been a dangerous hemorrhage, the patient should remain for many hours undisturbed, and in an horizontal position; and our attention must be continued as long as any danger is to be apprehended.

ON LABOURS

ATTENDED WITH CONVULSIONS.

1. The convulsions which occur in pregnancy very much resemble the epilepsy; but to the symptoms, which these have in common, may be added, the peculiar hisping noise which women almost universally make with their lips during the convulsions.

2. When convulsions happen to women with child, they are generally, but not constantly, accompanied or followed with symptoms of labour, but though the convulsions may be removed, the child is most frequently afterwards born dead.

3. These convulsions are indicated by a piercing pain in the head, by giddiness and other vertiginous complaints, by blindness, by vacillation of the mind, or a slight delirium, by violent cramp or pain at the stomach, by a fulness or apparent strangulation of the neck and fauces, and other affections of the vascular and nervous system.

4. The means to be used for the prevention or cure of convulsions when threatened or existing, must be regulated according to the constitution of the patient and the violence of the symptoms.

5. It will always be necessary to take away some blood, and commonly to repeat the bleeding; and it has been found particularly serviceable to open the jugular vein; or to take away blood by cupping; and by applying leeches to the temples. Emetics, when they could be given, have been useful, as has sometimes also the warm bath. Clysters may be frequently exhibited. Opiates, joined with nervous medicines, may be given; and the patient is, by all the means in our power, to be soothed and restrained from violent exertions.

6. During the convulsions, the means by which contrary irritations may be excited are to be used; and of these the most powerful is, the dashing of cold water in the face, which has been known to prevent, or even to cure, convulsions.

7. Some writers have recommended the speedy delivery of the patient, as the most eligible and only effectual method of removing

puerperal convulsions; but others have insisted that the labour should be uninterrupted.

8. From the histories of all the cases of puerperal convulsions which have been hitherto recorded, it appears, that a greater number have died of those who were delivered by art, than when the labours were resigned to nature.

9. As far as my experience enables me to judge, we ought not to attempt to deliver women with convulsions before some progress is made in the labour.

10. But when the os uteri becomes dilated sufficiently, or to a certain degree, the patient safely may, and ought to be delivered by art, if from the urgency of the convulsions, and the general danger of the case, delivery should appear necessary.

11. The manner of delivering women in these cases, whether the operation be performed with the forceps or vectis, or by turning and extracting the child by the feet, has already been fully explained.

12. The event of the operation, both to the mother and child, will also very much depend upon the skill and circumspection with which it may be performed.

13. When dangerous convulsions come on in the early part of pregnancy, it is often clear that they arise from excessive uterine irritation.

14. It will then be justifiable and proper to forward the exclusion of the fœtus, by puncturing the membranes as soon as it can be done with safety.

A

Series of Engravings,

WITH

ILLUSTRATIONS.


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PLATE I.

REPRESENTS, IN A FRONT VIEW, THE BONES OF A WELL FORMED PELVIS.

The five vertebræ of the loins.
The os sacrum.
A The os coccygis.
B The os ilium.
C.C The ossa ischia.
D The ossa pubis.
E The foramina magna.
F The acetabula.
G.G.G. The brim of the pelvis, or that circumference of its cavity, which is described at the sides by the inferior parts of the ossa ilium, and at the back and fore parts by the superior parts of the ossa pubis and sacrum.

In this Table, besides the general structure and figure of the several bones, the dimensions of the brim of the pelvis, and the distance between the under part of the ossa ischium, are particularly to be attended to ; from which it will appear that the cavity of the brim is commonly wider from side to side than from the back to the fore-part, but that the sides below are in the contrary proportion. The reader, however, ought not from this to conclude, that every pelvis is similar in figure and dimensions, since even well formed ones differ in some degree from each other. In general, the brim of the pelvis measures about five inches and a quarter from side to side, and four inches and a quarter from the back to the fore-part ; there being likewise the same distance between the inferior parts of the ossa ischium. All these measures, however, must be understood as taken from the skeleton ; for, in the subject, the cavity of the pelvis is considerably diminished by its integuments and contents. Correspondent also to this diminution, the usual dimensions of the head of the full-grown fœtus are but three inches and a half from ear to ear, and four inches and a quarter from the fore to the hind head.

PLATE II.

REPRESENTS THE UTERUS IN THE EIGHTH OR NINTH MONTH OF PREGNANCY.

The uterus, as stretched to near its full extent, with the waters, and containing the fœtus entangled in the funis, the head presenting at the upper part of the pelvis.

A.A The superior part of the ossa ilium.
B.B The acetabula.
C The remaining posterior parts of the ossa ischium.
D The coccyx.
E The inferior part of the rectum.
F.F The vagina stretched on each side.
G The os uteri, the neck of the womb being stretched to its full extent, or entirely obliterated.
H Part of the vesica urinaria.
I The placenta at the superior and posterior part of the uterus.
K.K The membranes.

This plate shows in what manner the uterus stretches, and how its neck grows shorter, in the different periods of pregnancy.

Notwithstanding it has been handed down as an invariable truth, from the earliest accounts of the art to the present times, that when the head of the fœtus presented, the face was turned to the posterior part of the pelvis; yet, from Mr. Ould's observation, as well as from some late dissections of the gravid uterus, and what I myself have observed in practice, I am led to believe, that the head presents, for the most part, as is here delineated, with one ear to the pubes, and the other to the os sacrum; though sometimes this may vary, according to the form of the head, as well as that of the pelvis.

Consult Dr. Hunter's elegant plates of the gravid uterus.


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PLATE III.

GIVES A FRONT VIEW OF TWINS IN UTERO IN THE BEGINNING OF LABOUR; THE ANTERIOR PARTS BEING REMOVED.

The uterus as stretched with the membranes and waters.

A.A The superior part of the ossa ilium.

B The acetabula.

C.C The ossa ischium.

D The coccyx.

E The lower part of the rectum.

F.F The vagina.

G The os internum stretched open about a finger's breadth with the membranes and waters in the time of labour-pains.

H The inferior part of the uterus stretched with the waters which are below the head of the child that presents.

I.I The two placentas adhering to the posterior part of the uterus, the two fœtuses lying before them; one with its head in a proper position, at the inferior part of the uterus, and the other situated preternaturally, with the head to the fundus: the bodies of each are here entangled in their proper funis, which frequently happens in the natural as well as preternatural positions.

K.K The membranes belonging to each placenta.

This representation of twins I have placed here, in order to show the os uteri grown much thinner than in the former figure, a little open, and stretched by the waters and membranes which are pushed down before the head of one of the fœtuses in time of a labour-pain.

PLATE IV.

EXHIBITS ANOTHER FRONT VIEW OF THE GRAVID UTERUS IN THE BEGINNING OF LABOUR; THE ANTERIOR PARTS BEING REMOVED, AS IN THE FORMER PLATE; BUT IN THIS THE MEMBRANES, NOT BEING BROKEN, FORM A LARGE BAG, CONTAINING THE WATERS AND FŒTUS.

The substance of the uterus.
The bones of the pelvis.
A The coccyx.
B The inferior part of the rectum.
C.C The vagina.
D.D The mouth of the womb largely stretched in time of a pain; with E, the membranes and waters. This circumstance makes it usually certain that labour is begun; whereas, from the degree of dilatation represented in the former Plate, there is little to be ascertained, unless the pains are regular and strong, the os uteri being often found more open several days, and even weeks, before labour commences.
F The chorion.
G The same dissected off at the inferior part of the uterus, in order to show the head of the fœtus through the amnios. N. B. This hint is taken from one of Dr. Albinus's Tables of the gravid uterus.
The placenta; the external convex surface of which, divided into a number of lobes, is here represented, its concave internal parts being covered by the chorion.

The placenta has been found adhering to all the different parts of the internal surface of the uterus, and sometimes even over the inside of the os uteri; this last manner of adhesion, however, always occasions floodings as soon as the same begins to dilate.

See a valuable essay on Uterine Hemorrhage in advanced gestation, by E. Rigby, third edition, London, 1784; in which the distinction between those floodings that require immediate delivery, and those which may be expected to yield to a more simple treatment, is properly ascertained.

Plate II. III. show the internal surface of the placenta toward the fœtus, with the vessels composing its substance proceeding from the funis, which is inserted in different placentas, into all the different parts of the same, as well as in the middle.


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PLATE V.

SHOWS (IN A LATERAL VIEW AND LONGITUDINAL DIVISION OF THE PARTS) THE GRAVID UTERUS WHEN LABOUR IS SOMEWHAT ADVANCED.

A The lowest vertebra of the back.
B The scrobiculus cordis; the distance from which to the last mentioned vertebra is here shown by dotted lines; as also part of the region below the diaphragm.
C.C The usual thickness and figure of the uterus when extended with the waters at the latter end of pregnancy.
D The same, contracted and grown thicker after the waters are evacuated.
E.E The figure of the uterus when pendulous. In this case, if the membranes break when the patient is in an erect position, the head of the fœtus runs a risk of sliding over and above the ossa pubis, whence the shoulders will be pushed into the pelvis.
F.F The figure of the uterus, when stretched higher than usual, which generally occasions vomitings, and difficulty of breathing. Consult on this subject Mr. Levret, sur le Mechanisme de Differentes Grossesses.
G The os pubis of the left side.
H.H The os internum.
I The vagina.
K The left nympha.
L The labium pudendi of the same side.
M The remaining portion of the bladder.
N The anus.

In this period of labour, the os uteri being more and more stretched by the membranes pushing down, and beginning to extend to the vagina, a great quantity of waters is forced down at the same time, and (if the membranes break) is discharged; whence the uterus contracts itself nearer to the body of the fœtus, which is here represented in a natural position, with the vertex resting at the superior part of the ossa pubis, and the forehead toward the right os ilium. As soon as the uterus is in contact with the body of the fœtus, the head of the same is forced backward toward the os sacrum from the line of the abdomen B G into that of the pelvis, viz. from the uppermost F. to near the end of the coccyx, and is gradually pushed lower, as in the following plate.

PLATE VI.

SHOWS THE NATURAL POSITION OF THE HEAD OF THE FŒTUS WHEN SUNK DOWN INTO THE MIDDLE OF THE PELVIS AFTER THE OS INTERNUM IS FULLY OPENED; A LARGE QUANTITY OF THE WATERS BEING PROTRUDED WITH THE MEMBRANES THROUGH THE OS EXTERNUM, BUT PREVENTED FROM BEING ALL DISCHARGED, BY THE HEAD'S FILLING UP THE VAGINA.

The uterus a little contracted, and thicker, from some of the waters being sunk down before the child, or discharged.

A The superior parts of the ossa ilium.

B The inferior part of the rectum.

C.C The vagina largely stretched with the head of the fœtus.

D.D The os internum fully opened.

E A portion of the placenta.

F The membranes.

G.G The ligamenta lata.

H.H The ligamenta rotunda. Both these last stretched upwards with the uterus.

The vertex of the fœtus being now down at the inferior part of the right os ischium, and the wide part of the head at the narrow and inferior part of the pelvis, the forehead, by the force of the pains, is gradually moved backwards; and, as it advances lower, the vertex and occiput turn out below the pubes, as in the next plate. Hence may be learnt of what consequence it is to know, that it is wider from side to side at the brim of the pelvis, than from the back to the fore part; and that it is wider from the fore to the hind head of the child, than from ear to ear.

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PLATE VII.

SHOWS THE FOREHEAD OF THE FŒTUS TURNED (IN ITS PROGRESSION DOWNWARDS, FROM ITS POSITION IN THE FORMER PLATE) BACKWARDS TO THE OS SACRUM, AND THE OCCIPUT BELOW THE PUBES; BY WHICH MEANS THE NARROW PART OF THE HEAD IS TO THE NARROW PART OF THE PELVIS, THAT IS, BETWEEN THE INFERIOR PARTS OF THE OSSA ISCHIUM. HENCE IT MAY BE OBSERVED, THAT, THOUGH THE DISTANCE BETWEEN THE INFERIOR PARTS OF THE LAST MENTIONED BONES IS MUCH THE SAME AS BETWEEN THE COCCYX AND PUBES; YET, AS THE CAVITY OF THE PELVIS IS MUCH SHALLOWER AT THE ANTERIOR THAN LATERAL PART, THE OCCIPUT OF THE FŒTUS, WHEN COME DOWN TO THE INFERIOR PART OF EITHER OS ISCHIUM, TURNS OUT BELOW THE PUBES. THIS ANSWERS THE SAME END AS IF THE PELVIS ITSELF HAD BEEN WIDER FROM THE POSTERIOR PART THAN FROM SIDE TO SIDE; THE HEAD LIKEWISE ENLARGING THE CAVITY BY FORCING BACK THE COCCYX, AND PUSHING OUT THE EXTERNAL PARTS IN FORM OF A LARGE TUMOUR.

The uterus contracted closely to the fœtus after the waters are evacuated.

The vertebræ of the loins, os sacrum, and coccyx.

A The anus.
B The left hip.
C The perinæum.
D The os externum beginning to dilate.
E The os pubis of the left side.
F The remaining portion of the bladder.
G The posterior part of the os uteri.

PLATE VIII.

SHOWS IN WHAT MANNER THE HEAD OF THE FŒTUS IS HELPED ALONG WITH THE FORCEPS, AS ARTIFICIAL HANDS, WHEN IT IS NECESSARY TO ASSIST WITH THE SAME FOR THE SAFETY OF EITHER MOTHER OR CHILD.

The vertebræ of the loins, os sacrum, and coccyx.
A The os pubis of the left side.
B The remaining part of the bladder.
C The intestinum rectum.
D The mons veneris.
E The clitoris, with the left nympha.
F The corpus cavernosum clitoridis.
X The meatus urinarius.
H The left labium pudendi.
I The anus.
K The perinæum.
L.M The left hip and thigh.

The patient, in this case, may be placed as in this plate, on her side, with her breech a little over the side or foot of the bed, her knees being likewise pulled up to her belly, and a pillow placed between them, care being taken, at the same time, that the parts are, by a proper covering, defended from the external air. If the hairy scalp of the fœtus is so swelled, that the situation of the head cannot be distinguished by the sutures, as in plate V.; or if, by introducing a finger between the head of the child and the pubes, or groins, the ear or back part of the neck cannot be felt, the os externum must be gradually dilated in the time of the pains, with the operator's fingers, (previously lubicrated with hog's lard,) till the whole hand can be introduced into the vagina, and slipped up, in a flattish form, between the posterior part of the pelvis and child's head. This last is then to be raised up as high as possible, to allow room for the fingers to reach the ear and posterior part of the neck. When the position of the head is known, the operator must withdraw his hand, and wait to see if the stretching of the parts will renew or increase the labour-pains, and allow more space for the advancement of the head in the pelvis. If this, however, proves of no effect, the fingers are again to be introduced as before, and one of the blades of the forceps (lubricated with lard) is then to be applied along the inside of the hand or fingers, and left ear of the child, as represented in the plate. But, if the pelvis is distorted, and projects forward at the superior part of the os sacrum, and the forehead, therefore, cannot be moved a little backwards, in order to turn the ear from that part of the pelvis which prevents the end of the forceps to pass the same; in that case, I say, the blade must be introduced along the posterior part of the ear at the side of the distorted bone. The hand that was introduced is then to be withdrawn, and


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the handle of the introduced blade held with it as far back as the perinæum will allow, whilst the fingers of the other hand are introduced to the os uteri, at the pubes or right groin, and the other blade placed exactly opposite to the former. This done, the handles being taken hold of and joined together, the head is to be pulled lower and lower every pain, till the vertex, as in this plate, is brought down to the inferior part of the left ischium, or below the same. The wide part of the head being now advanced to the narrow part of the pelvis betwixt the tuberosities of the ossa ischium, it is to be turned from the left ischium, out below the pubes, and the forehead backwards to the concave part of the os sacrum and coccyx, and afterwards the head brought along and delivered, as in plate IX. and X. But, if it is found that the delivery will require a considerable degree of force, from the head being large, or the pelvis narrow, the handles of the forceps are to be tied together with a fillet, as represented in this table, to prevent their position being changed, whilst the woman is turned on her back, as in plate XV. which is then more convenient for delivering the head, than when laying on the side.

N. B. When the head is wedged in the pelvis, and the basis not yet protruded below the brain, the forceps can neither be employed with advantage nor safety; and to attempt the mechanical turns *recommended here* would be difficult and hazardous.

This plate shows that the handles of the forceps ought to be held as far back as the os externum will allow, that the blades may be in an imaginary line between that and the middle space between the umbilicus and the scrobiculus cordis. When the forceps are applied along the ears and sides of the head, they are nearer to one another, have a better hold, and mark less, than when over the occipital and frontal bones.

PLATE IX.

IN THIS, THE OS EXTERNUM IS OPEN, THE OCCIPUT COMES LOW DOWN FROM BELOW THE PUBES, AND THE FOREHEAD PAST THE COCCYX, BY WHICH BOTH THE ANUS AND PERINÆUM ARE STRETCHED OUT IN FORM OF A LARGE TUMOUR.

When the head is so far advanced, the operator ought to extract with great caution, lest the parts should be torn. If the labour-pains are sufficient, the forehead may be kept down, and helped along, in a slow manner, by pressing against it with the fingers on the external parts below the coccyx; at the same time, the forceps being taken off, the head may be allowed to stretch the os externum more and more, in a gradual manner, from the force of the labour-pains, as well as assistance of the fingers. But, if the former are weak and insufficient, the assistance of the forceps must be continued. (Vide the description of the parts in plate VIII.) S.T. in this, represent the left side of the os uteri. The dotted lines demonstrate the situation of the bones of the pelvis on the right side, and may serve as an example for all the lateral views of the same.

A.B.C.H. The outlines of the os ilium.

D.E. F. The same of the pubis and ischium.

M.N. The foramen magnum.


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PLATE X.

IN THE SAME SECTION OF THE PARTS, BUT WITH A VIEW OF THE RIGHT SIDE, SHOWS THE HEAD OF THE FŒTUS IN THE CONTRARY POSITION TO THE THREE LAST FIGURES, THE VERTEX BEING HERE IN THE CONCAVITY OF THE SACRUM, AND THE FOREHEAD TURNED TO THE PUBES.

A The anus.
B The os externum not yet begun to stretch.
C The nympha.
D The labium pudendi of the right side.

When the head is small, and the pelvis large, the parietal bones and the forehead will, in this case, as they are forced downwards by the labour-pains, gradually dilate the os externum, and stretch the parts between that and the coccyx, in form of a large tumour, till the face comes down below the pubes, when the head will be safely delivered. But, if the same be large, and the pelvis narrow, the difficulty will be greater, and the child in danger ; as in the following plate.

PLATE XI.

SHOWS, IN A LATERAL VIEW, THE FACE OF THE CHILD PRESENTING, AND FORCED DOWN INTO THE LOWER PART OF THE PELVIS, THE CHIN BEING BELOW THE PUBES, AND THE VERTEX IN THE CONCAVITY OF THE OS SACRUM; THE WATERS LIKEWISE BEING ALL DISCHARGED, THE UTERUS APPEARS CLOSELY JOINED TO THE BODY OF THE CHILD, ROUND THE NECK OF WHICH IS ONE CIRCUMVOLUTION OF THE FUNIS.

A The inferior part of the rectum.
B The perinæum.
C The left labium pudendi.

When the pelvis is large, the head, if small, will come along in this position, and the child be saved; for, as the head advances lower, the face and forehead will stretch the parts between the frænum labiorum and coccyx, in form of a large tumour. As the os externum likewise is dilated, the face will be forced through it; the under part of the chin will rise upwards over the anterior part of the pubes; and the forehead, vertex, and occiput, turn from the parts below. If the head, however, is large, it will be detained, either when higher, or in this position. In this case, if the position cannot be altered to the natural, the child ought to be turned and delivered footling.

Plate II.


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D
C
C
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PLATE XII.

SHOWS, IN A FRONT VIEW OF THE PARTS, THE FOREHEAD OF THE FŒTUS PRESENTING AT THE BRIM OF THE PELVIS, THE FACE BEING TURNED TO ONE SIDE, THE FONTANELLE TO THE OTHER, AND THE FEET AND BREECH STRETCHED TOWARD THE FUNDUS UTERI.

A The perinæum.
B The os externum ; the thickness of the posterior part before it is stretched with the head of the child.
C.C.C The vagina.
D The os uteri not yet fully dilated.

If the face is not forced down, the head will sometimes come along in this manner ; in which case the vertex will be flattened, and the forehead raised in a conical form ; and when the head comes down to the lower part of the pelvis, the face or occiput will be turned from the side, and come out below the pubes. But, if the head is large, and cannot be delivered by the pains, or if the wrong position cannot be altered, the child must be delivered with the forceps. If they should fail, recourse must be had to embryulcia.

PLATE XIII.

SHOWS, IN A LATERAL VIEW OF THE RIGHT SIDE, THE FACE OF THE FŒTUS PRESENTING, AS IN PLATE XI. BUT IN A CONTRARY POSITION; THAT IS, WITH THE CHIN TO THE OS SACRUM, AND THE BREGMA TO THE PUBES, THE WATERS EVACUATED, AND THE UTERUS CONTRACTED.

In such cases, as well as in those described in the last Plate, if the child is small, the head will be pushed lower with the labour-pains, and gradually stretch the lower part of the vagina and the external parts; by which means the os externum will be more and more dilated, till the vertex comes out below the pubes, and rises up on the outside; in which case the delivery is then the same as in natural labours. But, if the head is large, it will pass along with great difficulty, whence the brain, and vessels of the neck, will be so much compressed and obstructed, as to destroy the child. To prevent which, if called in time, before the head is far advanced in the pelvis, the child ought to be turned, and brought footling. If the head, however, is low down, and cannot be turned, the delivery is then to be performed with the forceps, either by bringing along the head as it presents, or as in the following Plate. See the references in Plate XI.

N. B. Alarming floodings only excepted, it is bad practice to turn the child when the head presents; and, in cases of relative disproportion between it and the pelvis, we can never propose to save the child by turning.

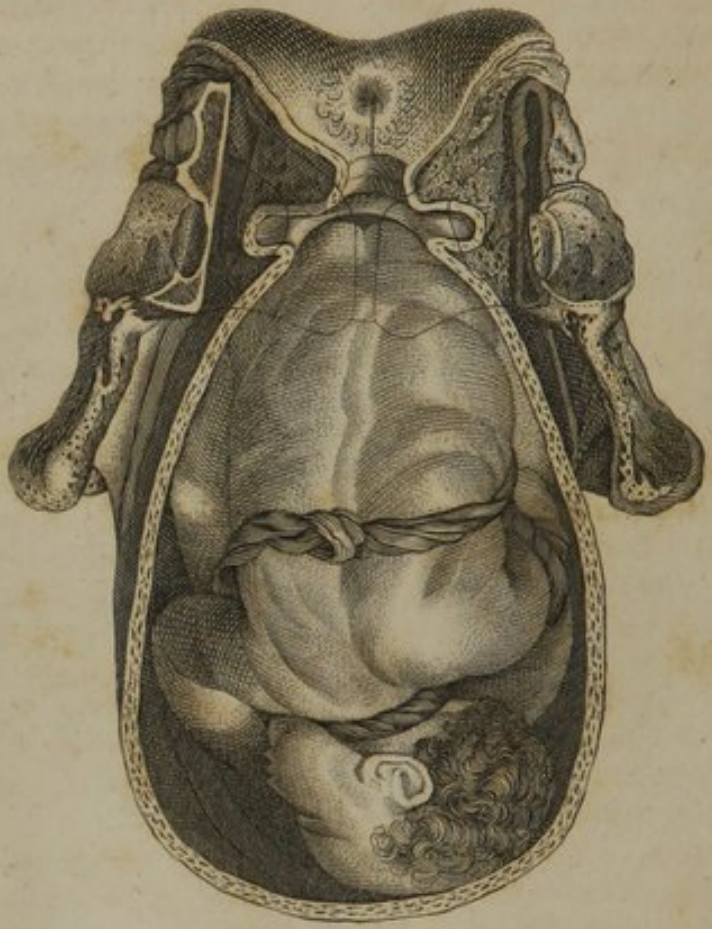

PLATE XIV.

REPRESENTS, IN A FRONT VIEW OF THE PELVIS, THE BREECH OF THE FOETUS PRESENTING, AND DILATING THE OS INTERNUM, THE MEMBRANES BEING TOO SOON BROKEN. THE FORE-PARTS OF THE CHILD ARE TO THE POSTERIOR PART OF THE UTERUS; AND THE FUNIS, WITH A KNOT UPON IT, SURROUNDS THE NECK, ARM, AND BODY.

Sometime after this and the other Plates were engraved, Doctor Kelly showed me a subject he had opened, where the breech presented, and the child lay much in the same position with its body as in the second plate, supposing the breech in that figure turned down to the pelvis, and the head up to the fundus uteri.

I have sometimes felt, in these cases, (when labour was begun, and before the breech was advanced into the pelvis,) one hip at the sacrum, the other resting above the os pubis, and the private parts to one side; but, before they could advance lower, the nates were turned to the sides and wide part of the brim of the pelvis with the private parts to the sacrum, as in this plate; though sometimes to the pubes. As soon as the breech advances to the lower part of the basin, the hips again return to their former position, viz. one hip turned out below the os pubis, and the other at the back parts of the os externum.

In this case, the child, if not very large, or the pelvis narrow, may be often delivered alive by the labour pains; but, if long detained at the inferior part of the pelvis, the long pressure of the funis may obstruct the circulation. In most cases where the breech presents, the effect of the labour-pains ought to be waited for, till at least they have fully dilated the os internum and vagina, if the same have not been stretched before with the waters and membranes. In the mean time, whilst the breech advances, the os externum may be dilated gently during every pain, to allow room for introducing a finger or two of each hand to the outside of each groin of the fœtus, in order to assist the delivery when the nates are advanced to the lower part of the vagina. But, if the fœtus is larger than usual, or the pelvis narrow, and after a long time, and many repeated pains, the breech is not forced down into the pelvis, the patient's strength at the same time failing, the operator must, in a gradual manner, open the parts, and, having introduced a hand into the vagina, raise or push up the breech of the fœtus, and bring down the legs and thighs. If the uterus is so strongly contracted that the legs cannot be got down, the largest end of the blunt hook is to be introduced. As soon as the breech or legs are brought down, the body and head are to be delivered, as described elsewhere, only there is no necessity here to alter the position of the child's body.

The description of the parts in this plate is the same as in that of plate XIII. only the dotted lines in this describe the place of the ossa pubis, and anterior parts of the ossa ischium which are removed, and may serve in this respect as an example for all the other front views, where, without disfiguring the plate, they could not be so well put in.

N. B. The use of the blunt hook, in breech cases, is a hazardous expedient; and manual assistance of every kind should be avoided, the most urgent cases only excepted.

See Dr. Hamilton's Outlines of Midwifery, page 370. et seq.

Francis' Cases of Tumours of the Uterus.

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PLATE XV.

EXTRAORDINARY TUMOURS FORMED ON THE EXTERNAL SURFACE OF THE UTERUS.

[In the NOTES on pages 124—6, I have described two cases of remarkable tumours growing from the external surface of the uterus. The annexed Engravings will convey a better idea of the situation and extent of these tumours, than any description. Tumours of this nature, I apprehend, are of more frequent occurrence than is generally supposed.—See the Philadelphia Medical Recorder, vol. IV. F.]

A. The os tincæ.
B. The uterus and its appendages.
C. The neck of the tumour.
D. The tumour.
E. F. G. H. I. K. L. Smaller tumours or excrescences growing from the great tumour.

PLATE XVI.

EXTRAORDINARY TUMOURS FORMED ON THE EXTERNAL SURFACE OF THE UTERUS.

A. The os tincæ.
B. The bladder contracted.
C. The uterus.
D. D. The parietes of the uterus, thickened, and in several parts ossified.
E. The bony tumour, growing internally from its fundus.
F. The tumour in the fallopian tube.
G. The enlarged ovarium.
H. A small tumour from the fundus of the uterus.
I. K. L. M. N. O. Six large tumours attached near the cervix uteri.
P. A portion of the peritonæum.

Francis: Cases of Tumours of the Uterus.

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